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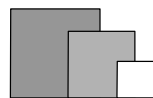
Leadership as a determinant of innovative behaviour

A conceptual framework

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Contents

Abstract

Knowledge-intensive service firms have boosted in the past 10-15 years. The nature of these services implies that such firms must realize a continuous flow of innovations to ensure continuity and to keep up with economic development. Incremental innovation is part of daily work, since customers tend to have needs that are always slightly different. To realize incremental innovation it is desirable that individual co-workers behave innovatively.

Leadership is widely recognized as a critical success factor for the development of new services. This study makes an inventory of leader behaviours and other factors that may enhance innovative behaviour of co-workers. On the basis of in-depth interviews and literature research we have made a broad inventory of innovation-enhancing leader behaviours. The research revealed no less than thirteen relevant behaviour constructs: role-modelling, intellectual stimulation, stimulating knowledge diffusion, providing vision, consulting, delegating, providing support for innovation, organizing feedback, recognizing, rewarding, providing resources, monitoring and task assignment. The research also revealed two situational characteristics that are likely to affect innovative behaviour: climate and external contacts.

Since each construct can have a different impact on the initiation and implementation of bottom-up innovations, we elaborate on their proposed effects. In future research one should execute a quantitative study to find empirical evidence.

1   Introduction[1]

1.1   Motivation

Importance of innovation in services
Recently innovation in service firms has become an important topic. For a long time, service firms were not considered to be innovative. Major changes seemed invisible and certainly not worth the qualification 'innovation'. However, in the advanced economies of the OECD, services account for roughly two-thirds of value added, a share that is still growing, whereas that of manufacturing is in decline (OECD, 2000; Anxo & Storrie, 2001). Moreover, a large share of innovative efforts in business is related to the development of new services (OECD, 2000; Suijker *et al.,* 2002; Howells, 2000). Innovation in services is now believed to be an important driver of productivity growth (Kox, 2002), and this has boosted research into this phenomenon.

In the past fifteen years people have started to investigate innovation in services. It has resulted in an impressive amount of literature on the success factors of service innovation *(e.g.,* De Brentani, 2001; Atuahene-Gima, 1996; De Jong & Kemp, 2001; De Jong *et al.,* 2002; Johne & Storey, 1998). Researchers also pay a lot of attention on defining and constructing typologies to describe what innovation in services is about (*e.g.,* Van der Aa, 2000; Menor, 2000; Sundbo, 1997).

Various authors have stressed that despite this growing attention, some questions remain *(e.g.,* De Jong *et al.,* 2002; Johne & Storey, 1998). In this study we focus on the effects of leadership on the innovative behaviour of co-workers in knowledge-intensive service firms. Below we shall further explain the why of these points of departure.

Leadership needs more attention ...
Leadership is widely recognized as a critical success factor for the development of new services (*e.g.,* Atuahene-Gima, 1996; Martin & Horne, 1995; Bass & Avolio, 1994; Howell & Avolio, 1993; Yukl, 2002; Waldman & Bass, 1991; Manz *et al.,* 1989). It can help sensitive and fragile ideas at various stages of the new service development (NSD) process. Despite agreement on the importance of leadership, research has failed to systematically study the relationship with innovation (Basu & Green, 1997). Theorists agree that some leader behaviours are desirable. Some examples include having confidence in employees (Martin & Horne, 1995; Atuahene-Gima, 1996) and a participating leadership style (*e.g.,* Axtell *et al.,* 2000; Kanter, 1983). Yet, not much is known about specific leadership behaviours that influence innovation. Besides, the context of service usually lacks completely. Empirical research tends to focus on the effects of leadership on innovation in manufacturing firms (*e.g.,* Valle & Avella, 2003) or on the effectiveness of R&D-teams (*e.g.,* Stoker *et al.,* 2001).

... It determines innovative behaviour in knowledge-intensive services
Knowledge-intensive service firms have boosted in the past 10-15 years and their importance for economic development is significant (Tidd *et al.,* 2001; Anxo & Storrie,

2001). The nature of knowledge-intensive services implies that such firms must realize a continuous flow of innovations to ensure continuity and to keep up with economic development (Bilderbeek *et al.,* 1998). Incremental innovation is part of daily work, since customer demands are always slightly different (Den Hertog, 2000; Soete & Miozzo, 1989).

To realize incremental innovation it is desirable that individual co-workers behave innovatively (Van de Ven, 1986). Co-workers are at the heart of the innovation process in knowledge-intensive service firms. They are the ones who have to come up with vague ideas, concepts and specifications, and turn these into successful innovations (Van de Ven, 1986; De Brentani, 2001). Innovative behaviour includes all individual actions directed at the generation, introduction and application of beneficial novelty at any organizational level (West & Farr, 1989). The perspective of innovative behaviour is a key element of many popular principles of management today, such as total quality management and continuous improvement schemes (McLoughlin & Harris, 1997).

1.2   Objective and research questions

Objective

All in all, this study explores which particular leader behaviours will enhance innovative behaviour of co-workers in knowledge-intensive services. We have made an inventory of the current insights on the role of co-workers in the new service development (NSD) process, effective leader practices to stimulate innovative behaviour, and other factors that may affect this relationship. This report summarizes our findings and lists some propositions that we shall empirically test in a future study.

Research questions

This report discusses current insights on the relation between leadership and innovative behaviour of co-workers. It provides answers to five (groups of) research questions:

A.   What is innovation in service firms? How can it be defined? What are its main characteristics?

B.   What does the new service development (NSD) process look like? What is innovative behaviour of co-workers, and how is it related to this process?

C.   What is leadership? How can it be defined?

D.   What leader behaviours can be distinguished that may enhance innovative behaviour of co-workers?

E.   What other (situational) characteristics may influence innovative behaviour of co-workers?

Answering these research questions provides a framework for the relationship between leadership, innovative behaviour of co-workers in the NSD process and situational characteristics. The relationships between our research questions are made clear in figure 1. This figure integrates the various subjects of our study.

figure 1   Relationships between research questions
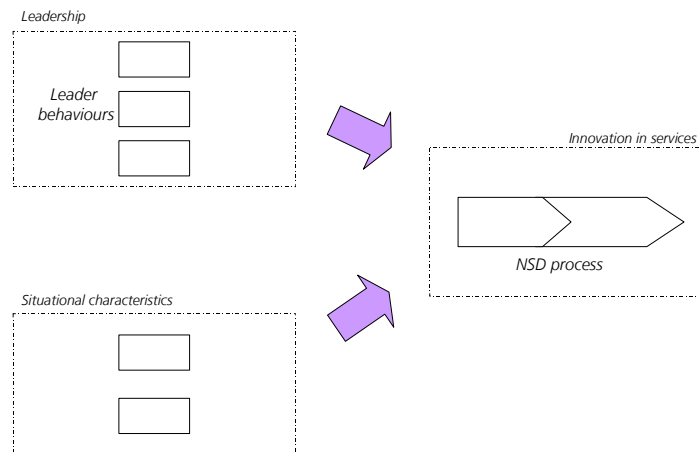
1.3   Limitations

To prevent us from studying and summarizing the full plethora of innovation and leadership literature, it is useful to narrow the scope of our research. Limitations include our focus on knowledge-intensive services, incremental innovations and medium-sized firms.

Focus on knowledge-intensive services

Sectoral differences will probably affect the relationship between leadership and innovative behaviour. Such differences can be captured with classifications of service firms (*e.g.,* Soete & Miozzo, 1989; Hulshoff *et al.,* 1998; Evangelista & Savona, 1998; Silvestrou *et al.,* 1992; Evangelista, 2000). In general, one can distinguish between three types of service firms (De Jong *et al.,* 2002):
–   knowledge-intensive
–   supplier-dominated and
–   production-intensive.

Above we have already stressed that our focus is on knowledge-intensive services. This sector seems most important for economic development (Kox, 2002). Typical sectors include accounting and bookkeeping, R&D services, engineering, computing and management consultancy. In such sectors innovation depends heavily on the knowledge and skills of co-workers. Knowledge-intensive service firms operate in a business-to-business environment, having only a few customers with relatively long client-contact times (Silvestrou *et al.,* 1992). The main source of innovation consists of their ability to provide outputs designed to suit the needs of particular users (Miles *et al.,* 1995; Den Hertog, 2000). The innovation process happens rather unstructured. Most innovations have an incremental nature. Separate R&D departments are not found because usually the co-workers are responsible for innovation in their daily work (Sundbo, 1996).

Knowledge-intensive services should not be confused with supplier-dominated or production-intensive services. Examples of supplier-dominated services include retail trade, personal services (such as haircuts) and hotels and restaurants (Soete & Miozzo, 1989). Transactions typically involve short client-contact times and little client-specific judge-

ment (Silvestrou *et al.,* 1992). Acquiring knowledge is less important for supplier-dominated firms. Innovations are usually initiated by suppliers of machinery and other inputs.

Examples of production-intensive service sectors include banks, insurance providers, telecommunication services, transport and wholesale (Soete & Miozzo, 1989). In these sectors firms put considerable effort into the simplification of their service offerings and work processes. One of their main goals is to keep an eye on efficiency. These firms usually initiate innovations by themselves. The new service development (NSD) process resembles most with traditional manufacturing companies. They tend to organize innovation in separate R&D departments.

Focus on incremental innovations

In most research it is radical innovation that captures the imagination. This kind of innovation, however, is relatively rare in knowledge-intensive service firms. Due to frequent contacts with customers, the quality and nature of a knowledge-intensive service can alter continuously (Chase *et al.,* 1998; Avlonitis *et al.,* 2001). Bottom-up, incremental innovation is the prevailing type. Therefore, we have chosen to abstract from radical, often top-down dictated innovations such as large-scale change processes and reorganizations. In chapter 2 we shall further elaborate on this.

Focus on medium-sized firms

In both innovation and leadership research small and medium-sized firms do not get much attention (King & Anderson, 2002; Yukl, 2002; Johne & Storey, 1998). This is due to pragmatic reasons. Academic researchers can contact representatives from larger firms more easily. In this study we partly fill this gap, since our focus is on medium-sized firms (firms with at least ten co-workers and at the most a hundred co-workers). The reason to refrain from investigating small firms (< 10 co-workers) is rather straightforward. In small firms leadership behaviour and innovative behaviour will often coincide. Because entrepreneurs tend to have a strong need for achievement (*e.g.,* Van Gelderen, 2003) and can manage and control the activities of co-workers directly (Risseeuw, 2003), a leader's influence on the innovation process is expected to be extremely powerful. This would ask for a separate study that accounts for the fact that a leader will be among the ones executing innovative activities.

On the contrary, in medium-sized firms an entrepreneur meets the boundaries of his 'span of control' (Risseeuw, 2003). Medium-sized firms tend to introduce additional organizational arrangements to manage work processes effectively. Innovation tends not to the sole responsibility of the entrepreneur, but every co-worker can be involved (Bilderbeek *et al.,* 1998). In this context, the question of which leadership behaviours enhance the innovative behaviour of co-workers is most relevant.

Finally, when firms grow even larger, the innovation process tends to become formalized itself. Large firms usually organize innovation in separate R&D departments (Sundbo, 1996). In our study we refrain from such firms as well.

1.4   Methodology

The research consisted of three activities: literature research, interviews with leaders in knowledge-intensive service firms, and writing this report.

Our main activity was to study relevant articles, books and reports for answers to our research questions. We have addressed both Dutch and international scientific literature sources by searching in relevant sources for relevant publications (*e.g.,* databases such as Proquest, ScienceDirect and Econlit, journals such as the International Journal of Services Innovation Management, LeadershipQuarterly, Academy of Management Journal, etc.). It appeared that innovation researchers pay little attention to the actual behaviour of the leader, while leadership researchers barely explore the effects of leadership on innovation.

Apart from literature research, we have performed in-depth interviews with leaders from knowledge-intensive service firms. Its purpose was to explore what leader behaviours are regarded to stimulate innovative behaviour. These interviews helped us to identify innovation-enhancing leader behaviours and other situational characteristics that may affect innovative behaviour. More details on our interview methodology will follow in section 5.2.

We have summarized our findings in this report. It provides an overview of the literature on the research questions and our propositions that we have planned to test empirically in a future study.

1.5   Content of this report

In chapter 2, we aim to describe what innovation in knowledge-intensive service firms is about. We briefly focus on the characteristics of knowledge-intensive services, list some definitions of innovation, and discuss the main research streams in the field of innovation. Next, we further characterize what innovation in knowledge-intensive services is about by looking at possible objects of innovation and the distinction between radical and incremental innovations. Finally, we briefly discuss the results of innovation in knowledge-intensive services.

In chapter 3 we take a look at the new service development (NSD) process and its successive stages. We use a two-stage model to describe the process of innovation. It consists of an initiation stage in which ideas are generated, and an implementation stage to develop and commercialize them. Then we elaborate on the role of co-workers in this process. They fulfil a key role in developing innovative services, and our discussion is on their innovative behaviour. These are the typical behaviours that are necessary to realize incremental, bottom-up innovations. We also discuss the main differences between innovative behaviour and creativity.

Chapter 4 provides a brief overview of the field of leadership research. We define what leadership is about and provide an overview of research traditions in the field. We also briefly discuss some current research on the relationship between leadership and innovation, and present some of its drawbacks.

In chapter 5 we reveal the backbone of our study. We have made an inventory of leader behaviours that are potentially relevant for the innovative behaviour of co-workers. By means of in-depth interviews with leaders in knowledge-intensive service firms (section 5.2) and literature research (section 5.3) we have derived thirteen behaviour constructs. Based on our findings we make some propositions on their link with innovative behaviour. We intend to test these propositions in future research.

Chapter 6 discusses some factors that may substitute for or complement the effect of innovation-enhancing leadership. We discuss the effects of climate and external contacts, and do some propositions as well.

Chapter 7 ends with an overview of our findings and a discussion of its implications for leaders in knowledge-intensive service firms. We also present our points of departure for an empirical test in the near future by constructing a conceptual model to describe the expected relationships between leader behaviour, situational characteristics and the innovative behaviour of co-workers.

2 Innovation in knowledge-intensive services

2.1 Introduction

Before we start our discussion on the relationship between leader behaviours and the innovative behaviour of co-workers, it will be useful to define our terms. This chapter describes what innovation in knowledge-intensive services is about and how it can be defined (figure 2).

figure 2   Content of this chapter
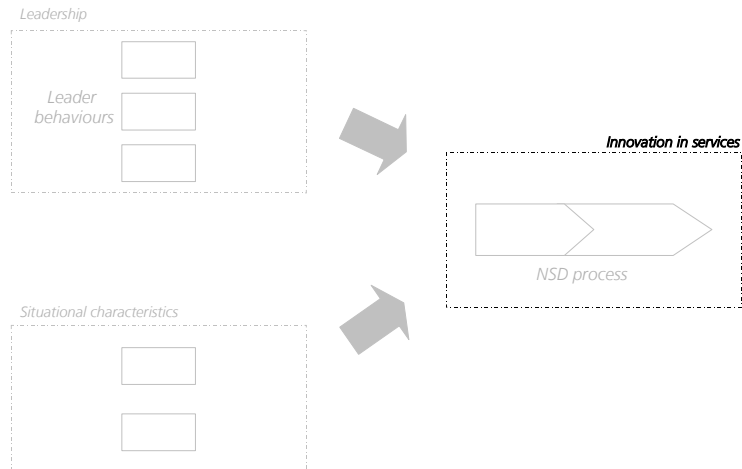
We first present some basic features of knowledge-intensive services, which tend to be intangible, heterogeneous and produced in interaction with customers (section 2.2). Then we turn our discussion to innovation in knowledge-intensive service firms. Section 2.3 lists some definitions of innovation. From these we derived some common features that seem to be applicable to innovative knowledge-intensive services as well. Section 2.4 presents the main research streams in the field of innovation. It can be studied at four levels: individual, group, organizational and socio-economical. We use these levels to mark the context of our study. In section 2.5 we further discuss the nature of innovation in knowledge-intensive services by looking at the object of innovation, the distinction between radical and incremental innovations, and the results of innovation.

2.2 The nature of knowledge-intensive services

What is a service?

Services can be described and classified in several ways. According to Cook *et al.* (1999), no single definition is capable of encompassing the full diversity of services and complex attributes that accompany them. Some examples are presented in table 1.

table 1   Defining services: examples of definitions

– An activity or series of activities of more or less intangible nature that normally, but not
  necessarily, take place in interactions between the customer and service employees
  and/or physical resources and/or systems of the service provider, which are provided as
  solutions for customer problems (Grönroos, 1990).
– Any act or performance that one party can offer to another that is essentially intangible
  and does not result in the ownership of anything (Kotler, 1994).
– The delivery of help, utility or care, and experience, information or other intellectual con-
  tent - and the majority of the value is intangible rather than residing in any physical prod-
  uct (DISR, 1999).
– A service is to organise a solution to a problem (a treatment, an operation) which does not
  principally involve supplying a good. It is to place a bundle of capabilities and compe-
  tences (human, technological, organisational) at the disposal of a client to organise a solu-
  tion, which may be given to varying degrees of precision (Gadrey *et al.,* 1995).

The differences with manufactured products have been the subject of debate for some
time (*e.g.,* Vermeulen, 2002; Ennew *et al.,* 1992; Levitt, 1981; Zeithaml, 1981). Unlike
with manufactured products, customers will find it more difficult to make a quality
judgement beforehand. In knowledge-intensive services there are less possibilities for
standardization. Knowledge-intensive services, like services from engineers, consultants
or researchers, are to a large extent based on trust and reputation. Service quality and
delivery depend heavily on the knowledge and skills of co-workers. Transactions are of-
ten not realized on a single point in time, instead, there is usually an interactive process
of service production and delivery. Usually, a customer makes significant additions to
the production process as well.

Some basic features
Theorists usually define services by looking at some basic features of services (*e.g.,*
Grönroos, 1990; Easingwood, 1986; De Brentani, 1991; Vermeulen, 2001). From the
literature we have derived three common features that are typical for knowledge-
intensive services. Such services are usually
–   of a more or less intangible nature (intangibility),
–   produced and consumed in interaction with customers (simultaneity),
–   customized to a client's needs (heterogeneity).

One could debate if these features are truly applicable to all kinds of knowledge-
intensive services. In the context of our study on knowledge-intensive firms they seem
applicable, but we note that these features are of a gradual nature. Easingwood (1986)
argues that 'not all services are intangible, produced simultaneously, heterogeneous,
and perishable, and manufactured goods may possess one or more of these characteris-
tics as well'. For instance, software service providers tend to offer homogeneous prod-
ucts that are not produced and consumed simultaneously. Below, we further elaborate
on these features.

Intangibility. The intangibility of services has been discussed many times (*e.g.,* De
Brentani, 1991; Kotler, 1994; Van der Aa, 2000; Avlonitis *et al.,* 2001), and this feature
certainly applies to knowledge-intensive services. Such services can be seen as perform-
ances instead of objects, because they usually cannot be seen or touched (Zeithaml,
1981). Customers do not know *exactly* what they purchase; there usually is no transfer
of ownership. Due to Dutch law, intellectual property rights cannot be transferred.
However, we stress that the degree of intangibility can differ between various types of
knowledge-intensive services. Some services contain a mix of tangible and intangible

attributes that constitute a service package (Chase *et al.,* 1998). Tangible elements (for instance, installation disks for new software releases) can accompany a knowledge-intensive service.

Simultaneity. Some services are usually produced in the presence of customers, almost directly consumed, or require 'substantial interaction' (*e.g.,* Zeithaml, 1981; De Brentani, 1991; Van der Aa, 2000; Cooper & De Brentani, 1991). This seems also applicable to knowledge-intensive services. In knowledge-intensive services the customer usually takes part in the production process (*e.g.,* consultancy, research, ICT), while this is rarely the case in manufacturing. We note that in other types of service sectors, for instance financial services, the degree of overlap between production and consumption will be much smaller. For instance, mortgage or life insurances are produced in interaction with the customer, but once a contract has been signed, the actual consumption lacks substantial interaction.

Heterogeneity. Heterogeneity is concerned with the variability of services. Gadrey *et al.* (1995) state that the customized aspect is more significant in services than in manufacturing goods. According to several researchers (*e.g.,* De Brentani, 1991; Kotler, 1994) various deliveries of one particular service differ substantially because of the personal wishes of clients. We claim this holds for knowledge-intensive services as well. In these firms, the role of co-workers is often crucial as they 'deliver' the service to the customer (De Brentani, 1989). Again, we stress that in other types of services as well as manufactured products the degree of heterogeneity is less pronounced. In the example of financial services, firms are often able to standardize the output (the actual service). For instance, a cash machine (ATM), as an equipment-based service, is able to provide exactly the same service over and over again. Customers will perceive this type of service as less heterogeneous.

2.3 Defining innovation

What is innovation?

Schumpeter (1934) is generally considered to be among the first to recognize the process of innovation in organizations. He described innovation as the creation and implementation of 'new combinations'. These new combinations can be related to new products, services, work processes, markets, delivery systems and policies. Due to innovation, one can create added value, not only to the firm itself but also to its stakeholders and to society. Most definitions of innovation include the development and implementation of 'something new'. In table 2 we have listed some examples of definitions.

table 2   Defining innovation: some examples of definitions

- The successful implementation of creative ideas within an organization (Amabile, 1988).
- A process that involves the generation, adoption, implementation and incorporation of new ideas, practices or artefacts within organizations (Van de Ven *et al.,* 1989).
- A complex activity that proceeds from the conceptualization of a new idea to a solution of the problem and then to the actual utilization of economic or social value. Innovation is not just the conception of a new idea, nor the development of a new market. The process is all of those things acting together in an integrated fashion (Myers & Marquis, 1969).
- The process of bringing any new problem-solving idea into use. Ideas for reorganizing, cutting costs, putting in new budgeting systems, improving communication, or assembling products in teams are also innovations. Innovation is the generation, acceptance and implementation of new ideas, processes, products or services (Kanter, 1983).
- Encompassing ideas, practices or objects which are new to the organization and to the relevant environment, that is to say to the reference groups of that innovator (Van der Aa & Elfring, 2002).
- The intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society (West & Farr, 1990).

Some common features

Except that an innovation apparently is 'something new', one can note that definitions of innovation have some more characteristics in common (King & Anderson, 2002). From table 2 the following features of innovation can be derived:
- An innovation is new to the social setting within which it is introduced (*e.g.,* a service firm) although not necessarily new to the co-worker introducing it.
- An idea is a necessary condition for an innovation. It is the starting point, but it cannot be called an innovation in itself.
- An innovation is aimed at producing some kind of benefit. Apart from financial to the service firm, possible benefits might be personal growth, increased satisfaction, improved cohesiveness, or better interpersonal communication. The definition also includes the creation of new ideas not to benefit the role, group or organization but to benefit the wider society.
- Innovation is restricted to intentional attempts to derive anticipated benefits from change. Suppose that a service firms' co-workers cannot use e-mail due to a breakdown of their computers. It appears that they increase their sales results because they pick up the phone more often to communicate with customers. This would not be an innovative action. If, however, the service firm takes the same action in order to improve client relations, one could describe it as innovative.
- Innovation is not a routine change. The appointment of a new member of staff to replace one who retired cannot be considered an innovative change. The creation of an entirely new post could.
- Innovation involves an application component, so just developing something new cannot be regarded as an innovation unless it is used.

These common features apply to innovation in a knowledge-intensive services context as well. Researchers who are conformed to innovation in knowledge-intensive services maintain definitions with similar features (*e.g.,* Miles *et al.,* 1995; Den Hertog, 2000; De Brentani, 1991; 2001).

2.4   Overview of research traditions

Economics-oriented research

Brown & Eisenhardt (1995) discuss two complementary trends in innovation research. The first tradition is economics-oriented. It examines differences in the patterns of innovation across countries and industrial sectors, the evolution of particular technologies over time, and intra-sector differences in the propensity of companies to innovate. This stream of research is sometimes named as 'innovation at the socio-cultural level' (*e.g.,* West & Altink, 1996). It takes account of extra-firm environmental conditions that may affect innovation processes and outcomes. Examples include market conditions, cultural differences, and social and political trends. The innovation process itself remains a black box. Although external conditions may affect innovation processes in knowledge-intensive service firms, in our context of medium-sized firms we have regarded the external conditions as given.

Business-oriented research

The second research tradition, which is business-oriented, attempts to open up the black box of the innovation process. It examines how specific new products and services are developed, and indicates how organizational structure, roles and processes are related to enhanced innovation success. Entrepreneurship and the development of innovations are placed in the centre of analysis. In this tradition, we can obtain more detail by discerning three levels at which innovation may occur: the individual, group and organizational level (*e.g.,* West & Altink, 1996; West & Farr, 1989).

Individual level. Part of the innovation literature concentrates on the innovative behaviour, attitudes and characteristics of individual co-workers. Innovative behaviour of co-workers is related to their ability to generate ideas and their willingness and skill to work with these ideas (Scott & Bruce, 1994; West & Farr, 1989). Some researchers mention it as shop-floor innovation (*e.g.,* Axtell *et al.,* 2000) or individual innovation (*e.g.,* West & Altink, 1996). In chapter 3 follows a detailed discussion of the literature on innovative behaviour. Part of it reveals a reasonable consensus about some personality characteristics associated with innovative behaviour (*e.g.,* Nicholson & West, 1988; Amabile, 1997; Rushton & West, 1988). For instance, we can identify traits like tolerance of uncertainty and ambiguity, desire for stability and self-confidence. In our research we have refrained from the innate part of innovative behaviour.

Group level. Research on innovation in work groups used to be limited, but in the past few years the tide is turning (*e.g.,* Stoker *et al.,* 2001). Except for firms with no personnel, co-workers are usually not working solitary. In practice, the skills, attitudes and characteristics of co-workers are brought together, including those of the leader (West & Altink, 1996). Such gatherings can be expected to stimulate innovative behaviour. For example, many service managers can use multifunctional teams of co-workers to perform specific tasks. They expect this increases effectiveness and adaptability, and that it promotes creativity and innovation (Fröhle *et al.,* 2000; Ancona & Caldwell, 1992). A number of factors are necessary for team level innovation, including that a team has clear objectives, group members participate in the setting of those objectives, and practical support is provided for innovation attempts (Agrell & Gustafson, 1996).

Organizational level. Except for innovation among individuals and co-workers in groups, researchers study innovation at the organizational level by investigating its main characteristics, development processes, determinants and consequences for business results. For example, it appears that organizations with flat structures and high levels of communication between departments and functions are likely to be more innovative

than traditional hierarchical organizations (Burns & Stalker, 1961; Kanter, 1983). At this level, we find an enormous amount of writing. Yet, according to West & Altink (1996), there is little hard empirical evidence to support the wealth of assertions offered by researchers.

Our primary target was the literature on individual innovation. An important point to note is that although the three levels of analysis provide a convenient way of organizing the literature, they also impose something of a false boundary between each of the levels. One of the most significant contributions we can offer to the understanding of innovative behaviour is by using literature from different levels of analysis (King & Anderson, 2002; Axtell *et al.,* 2000). Therefore, we also use insights from the group and organizational level, for instance by looking at the effects of climate and external contacts (see chapter 6).

2.5 Nature of innovation in knowledge-intensive services

Most researchers agree that innovation in service firms has a different character than in manufacturing (*e.g.,* Bernardt, 2000; OECD, 2000; Johne & Storey, 1998). We argue that this also applies to innovation in knowledge-intensive services. It usually involves small and incremental changes in processes and procedures. Many innovations have a 'me-too' character because competitors have already implemented them, or shop-floor employees are the ones who take the initiative. We guide our discussion by looking at the
1 object of innovation
2 distinction between radical and incremental innovations
3 results of innovation.

Ad 1. Object of innovation
Innovation can be related to various objects. In this context, Schumpeter (1934) mentioned new products, processes, services, markets, delivery systems and policies as potential objects for innovation. The distinction between the first of these objects (product versus process innovations) has become most recognized. In a context of manufacturing firms, it includes changes in the things (products, goods) that an organization offers, and changes in the ways in which they are created and delivered (Tidd *et al.,* 2001).

In knowledge-intensive services, however, the distinction between product and process innovations tends to be blurred (Bitran & Pedrosa, 1998). For example, a new approach of doing consultancy implies both a product and process innovation. Because of the simultaneity of knowledge-intensive services, product- and process innovations usually coincide. New services often go together with new patterns of distribution, client interaction, quality control and assurance, etc. But there are huge differences in the specific patterns involved: what is important for introducing one new service into the market might be totally irrelevant for others.

Instead of product and process innovations, current research in services focuses on listing objects of innovation that account for the typical features of services. Examples include innovation in (1) the service concept, (2) the client interface, (3) the service delivery system, and (4) technological options (Den Hertog, 2000). Below, we shortly elaborate on these objects.

Service concept. In general, a service concept is put together of various characteristics (cf. Lancaster, 1966) and can include new combinations of existing service activities (Van der Aa & Elfring, 2002). Knowledge-intensive service firms often choose for changes in the service concept to imitate innovations of their competitors. Competitors are an important source of innovation in service firms (Easingwood, 1986). An example of a new service concept is the rise of call centre services. These service firms recruit, organize and install staff for their clients' call centres - which have emerged from temporary staffing offices.

Client interface. The client interface is the focus of many innovations in knowledge-intensive services. Service offerings are usually produced in a client-specific way (even with client-specific pricing). Often, the characteristics and desires of existing and potential clients may tempt a service firm to make adjustments in the client interface. This dimension of innovation can even entail clients acting as co-producers of the service offering (Van der Aa & Elfring, 2002). An example of a renewed client interface is the delivery of database products (for instance, the Yellow Pages) by means of the Internet instead of via a hardcopy.

Service delivery system. A service delivery system refers to the internal organizational arrangements that have to be present to allow service workers to do their work. The service delivery system consists of work structures and processes, available knowledge, etc. It facilitates co-workers to deliver high-quality service products (Den Hertog, 2000). Of course, innovation in knowledge-intensive services can be related to the delivery system as well. Maybe this object resembles most to the traditional type of process innovation. An example includes the introduction of e-commerce. This may require serious business process re-engineering. E-commerce has a substantial impact not only on the way in which actual commercial transactions occur, but also on the processes preceding and following the transaction.

Technological options. Information technology is applied in many new services offered today (Bruins & De Jong, 2000). It is generally perceived to be a great enabler of new services. In this context, Van der Aa & Elfring (2002) describe technological innovations as the development and implementation of new forms of technology and related reconfigurations of service concepts and processes. Innovation in knowledge-intensive service firms will often entail a technological component, but it is also possible without new technology. Examples that include technological change are the above-mentioned introduction of e-commerce, but also the introduction of flexible workplaces in consultancy firms. This latter example is often accompanied by the introduction of laptops and mobile phones.

Summarizing, innovation in knowledge-intensive services can be related to a wide range of objects. Due to the simultaneous nature of services, supplying real-life pure examples for the objects mentioned above is difficult (Den Hertog, 2000). Innovative knowledge-intensive services are often a mixture of renewal in various objects.

Ad 2. Radical versus incremental innovation

An innovation can be viewed in terms of the degree of novelty, ranging from a radical, totally new innovation to an incremental innovation involving simple line extensions or minor adaptations/adjustments that are of an evolutionary nature. The former type may involve innovations that are new to the sector or even new-to-the-world. Incremental innovation is mostly limited to innovations that are new to the developing firm only (Booz *et al.,* 1982; Tidd *et al.,* 2001). In this context, Abernathy & Clark (1985) distinguish various types of innovation. Architectural innovation is considered to be the most

radical type. It involves innovations that depart from established systems of know-how, and at the same time open up new markets. On the other hand, regular innovations have an incremental nature. Although this type seems almost invisible, it often has a most dramatic cumulative effect on business performance.

In most research it is often more radical innovations which capture the imagination. These kinds of innovation, however, are relatively rare in small knowledge-intensive service firms. In knowledge-intensive services, due to frequent contacts with customers, the quality and nature of a service can alter continuously (Chase *et al.,* 1998; Avlonitis *et al.,* 2001). Incremental, regular innovations will be the prevailing type. In this context, Sundbo (1996) presents two systems to organize the innovation process. The expert system is mostly used to develop radical innovations. These are usually developed in large-scale, formally managed processes, or via new ventures (Tidd *et al.,* 2001). This way of developing innovations is often found among manufacturers and financial service providers. In such firms, specialists from R&D departments are responsible for the development of promising ideas, while they do not have to bother about daily operations (Vermeulen, 2001). The empowerment system is most suitable for incremental innovations. In this system, shop-floor employees are (implicitly) responsible for making suggestions and implementing minor improvements. This system is often found in low-tech manufacturing industries and the largest part of the services sector, including knowledge-intensive services (Sundbo, 1996). When exploring effective leader behaviours that stimulate innovative behaviour of co-workers, we especially have incremental, bottom-up innovations in mind. In chapter 3, we further discuss the construct of innovative behaviour that precedes incremental innovation.

Ad 3. Results of innovation in service firms

Innovation in services typically results in increased customer satisfaction and loyalty (relationship enhancement). This will eventually have an impact on the financial results because of repeat purchases by the customer, and because of recommendations to other potential customers (Narver & Slater, 1990; Kotler, 1994). The effects of innovation in knowledge-intensive service firms seem rather straightforward. Based on the literature review of Johne & Storey (1998), we hold that innovation in knowledge-intensive service firms will increase
– financial results (achieving high overall profitability, substantially lowering costs for the firm, achieving important cost efficiencies, increasing revenues),
– competitiveness (exceeding market share objectives, achieving high relative market share, having a strong positive impact on company image/reputation, enhanced sales/customer use of other products or services), and
– quality performance (superior service outcomes in comparison with competitors, receiving less complaints, increasing reliability).

Johne & Storey (1998) stress that success on one dimension of performance does not necessarily mean success on the other two dimensions. No single measure is adequate on its own: managers should use a complex of measures to assess performance improvement through NSD.
Some research evidence suggests a strong correlation between market performance and innovation (Luchs, 1990). Emphasizing innovation in business development leads to better company performance in terms of revenue growth (Klomp & Van Leeuwen, 1999). Although it seems that knowledge-intensive service firms are no exception to this (Kelly & Storey 2000; De Brentani, 1989), empirical evidence for this relationship is still very scarce for knowledge-intensive services. This is definitely a gap that future researchers should address.

3 Innovative behaviour of co-workers

3.1 Introduction

In this chapter we take a look at the new service development (NSD) process (figure 3) and the role of co-workers in this process.

figure 3   Content of this chapter
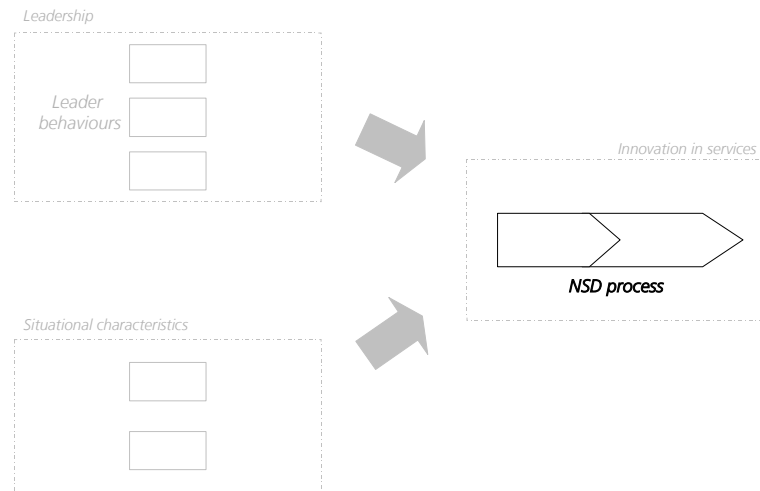
Various models can be identified to describe the NSD process. The so-called activity-stage model is the most widely recognized one, and we use a two-stage version of this model to depict how new knowledge-intensive services are developed. This distinction is necessary because effective leadership and the desired behaviour of co-workers may differ between both stages (section 3.2).
In section 3.3 we elaborate on the role of co-workers in the NSD process. They fulfil a key role in developing innovative services. First, we define what innovative behaviour is about and discuss its potential multi-dimensionality. We also reveal four dimensions of innovative behaviours that co-workers can display.
Section 3.4 discusses the basic innovative behaviours of co-workers in the initiation stage: opportunity exploration and idea generation. Section 3.5 does the same for the implementation stage. Its basic behaviours include championing and application.
In section 3.6, we end with a discussion on the differences between innovative behaviour and creativity. Innovative behaviour is a broader construct than creativity, which generally only refers to the generation of new ideas.

3.2 New service development (NSD) process

Activity-stage model to describe the innovation process
The introduction of innovations in an organization involves much more than taking a single decision to implement a promising idea. Commonly, it requires a range of activities prior to and following the adoption decision. Writers have been proposing numerous models describing the sequences of events in the innovation process (*e.g.,* Saren, 1984). The activity-stage model is most widely recognized to describe the process of developing innovations (King & Anderson, 2002). It focuses on the actual development

activities that are carried out to develop a new product, service or work process. The innovation process is broken down into a number of activities that are conducted sequentially.

A widely recognized version of the activity-stage model is developed by Zaltman *et al.* (1973), which describes the innovation process in two main stages:
– initiation and
– implementation.

This model has been applied in many other studies (*e.g.,* Staw, 1990; Duncan, 1976; Unsworth & West, 1998; Unsworth, 1999; Wolfe, 1994; Axtell *et al.,* 2000). The division between the two main stages is believed to be the point of the first adoption of the innovation; that is, the point at which the organization makes the decision to implement the innovation (figure 4).

figure 4   Two-stage model of the innovation process
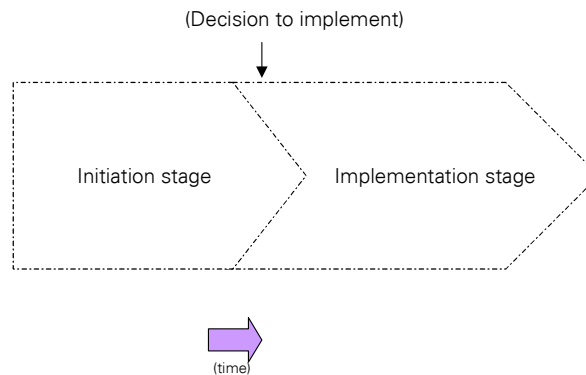
Source: Zaltman et al. (1973).

The stages of initiation and implementation may be broken down into various substages. This has led to a wide range of activity-stage models. Where they vary is in the extent to which they focus on the process before and after the decision to implement an idea. Some describe the pre-adoption process in much more detail, focusing on activities such as idea generation, screening and evaluation (*e.g.,* Wilson, 1966; Mumford, 2000). Others concentrate as much or more on what happens after the decision to implement (*e.g.,* Rogers, 1983). Finally, some researchers use models that pay attention to both phases (*e.g.,* Wheelwright & Clark, 1992).

A famous example of a more detailed activity-stage model is the one developed by Booz *et al.* (1982). It identifies six stages: idea generation, screening, commercial evaluation, development, testing, and market launch (figure 5).

figure 5   Example of an activity-stage model: Booz, Allen & Hamilton

```
        ┌──────────────────────┐
        │   Idea generation    │
        └──────────────────────┘
                   │
                   ▼
        ┌──────────────────────┐
        │      Screening       │
        └──────────────────────┘
                   │
                   ▼
        ┌──────────────────────┐
        │ Commercial evaluation│
        └──────────────────────┘
                   │                          ← Decision to implement
                   ▼
        ┌──────────────────────┐
        │     Development      │
        └──────────────────────┘
                   │
                   ▼
        ┌──────────────────────┐
        │       Testing        │
        └──────────────────────┘
                   │
                   ▼
        ┌──────────────────────┐
        │    Market launch     │
        └──────────────────────┘
```
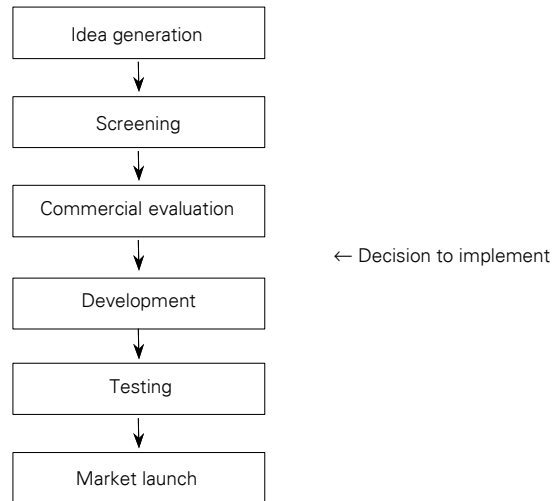
Source: Booz et al. (1982).

Except for the activity-stage model, some other innovation models have been described at length in the literature. Some examples include
– departmental-stage models. These are irrelevant for our study. Most small firms do not have any departments.
– conversion models. They describe the innovation process by means of inputs which are transformed into outputs. It is quite popular among economic-oriented researchers. For our purposes it is less suitable because the process of development is regarded as a 'black box'.

For a detailed discussion of alternative innovation models we refer to Saren (1984) and Vermeulen (2001).

Some drawbacks of the activity-stage model
A point of criticism is that activity-stage models are based largely or solely on theoretical speculation, rather than observations of real innovation processes (King & Anderson, 2002; Schroeder *et al.,* 1989). The evidence so far certainly raises serious doubts as to whether the innovation process passes through discrete stages (King & Anderson, 2002). A recent study on entrepreneurial decision-making suggests that it is less evident or even impossible to determine the dividing line between initiation and implementation. Usually, an informal decision to implement a major change precedes the official decision (Gibcus & Van Hoesel, 2003). Moreover, Pelz (1983) found that there are some signs of progression through a set of stages, but a clear progression occurs only in a minority of cases. It is more likely that various activities can overlap and coincide.

All in all, one could wonder if the activity-stage model is suitable to describe the process of developing new knowledge-intensive services. Taken to an extreme, as some popular writers have done, it might be tempting to conclude that it is impossible to plan for innovation, manage it, or design an organization structure to support it. Despite the drawbacks mentioned above, Kanter (1988) proposes that the conditions for innovation can be understood best if the innovation process is divided into its major tasks.

Two-stage model for innovation in knowledge-intensive services
In our study we use the two-stage model of Zaltman *et al.* (1973). Although we are aware that no single model will perfectly fit the niceties of innovation in knowledge-intensive service firms, we propose that the two-stage model provides a suitable framework for investigating innovation-enhancing leadership behaviour. We distinguish between two main stages: initiation and implementation. A two-stage model enables us to account for the fact that effective leader behaviours may differ between different phases of the NSD process. When studying the effects of leadership on innovation, most researchers collapsed the suggestion and implementation of ideas into single measures (*e.g.,* Scott & Bruce, 1994). The problem this poses is that, if the factors that influence successful implementation differ from those that influence the initiation of ideas, this will not become evident. Various researchers have recommended to account for such differences when studying the determinants of innovation (*e.g.,* Rogers, 1983; King & Anderson, 2002; Waldman & Bass, 1991), but this type of research is still in a nascent phase (Janssen *et al.,* 1997). Some authors have even suggested that effective leader behaviours may differ between the two stages (*e.g.,* Van de Ven *et al.,* 1999; Anderson & King, 1991). In the next sections, we discuss the specific behaviours of co-workers in both stages of the NSD process.

Besides, we argue that the incremental and unstructured nature of innovation in knowledge-intensive services calls for a simple model with only few details. New service development tends to be a haphazard process: it simply 'happens'. Rather than developing formal structures to elicit ideas for new services, develop and select among them concurrently, it is mostly ad hoc (see, for instance, Martin & Horne, 1993; Kelly & Storey, 2000; Sundbo, 1996). This is partly due to the nature of innovation in these kinds of firms – incremental innovation is the dominant type. De Jong *et al.* (2002) listed some more reasons why innovation in services is mostly ad hoc. We assume these apply to knowledge-intensive services as well (table 3).

table 3   Innovation in service firms: why it is mostly ad hoc

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– Innovation may not be recognized, because the direct interaction between a customer and the service firm takes shape during a longer period of time (Johne & Storey, 1998). Entrepreneurs may not regard innovation as a phenomenon that is applicable and relevant to service firms.
– New services are more easy to imitate. Due to intangibility and absence of patent applications, the development process of a new service is considered more easy than manufactured products, so there is less need for formalisation (De Brentani, 1991; Shostack, 1984).
– Sunk costs are low. Since knowledge-intensive services are usually labour-intensive, the variable costs often outweigh the fixed costs of any capital investment by far (Nambisan 2001; Chase *et al.,* 1998).
– Knowledge-intensive services are hard to store. This makes NSD being regarded as a trial-and-error process which needs no formalisation (Kelly & Storey, 2000).
– Natural occasions for review are lacking. The nature of NSD is such that it is difficult to define moments that offer an occasion for review. Direct interaction between a service firm and its customers (simultaneity) means that a more systematic evaluation of the development process is difficult to maintain (*e.g.,* Easingwood, 1986).

Source: De Jong et al. (2002).

3.3   Innovative behaviour of co-workers

What is innovative behaviour?

The co-workers of a service firm are at the heart of the NSD process. Various theorists have stressed that they are the ones who have to come up with vague ideas, concepts, and specifications, and turn these into successful innovations (Van de Ven, 1986; De Brentani, 2001; De Jong & Kemp, 2001; West & Farr, 1989). Innovative behaviour of co-workers is a necessary condition for incremental, bottom-up innovations to occur (Amabile, 1988; Imai, 1990; Axtell *et al.,* 2000). Katz (1964) was among the first to notice that 'an organization which depends solely upon its blueprints of prescribed behaviour is a very fragile social system' (p. 132). Janssen (2000) even regards innovative behaviour as something crucial for the effective functioning and long-term survival of organizations.

Innovative behaviour can be defined as 'all individual actions directed at the generation, introduction and application of beneficial novelty at any organizational level' (West & Farr, 1989). As mentioned in section 2.5, such beneficial novelty might include changes in the service concept, client interface, delivery system and technological options.

Previous researchers have usually assessed innovative behaviour as being a one-dimensional construct. However, innovative behaviour of co-workers does not necessarily correlate between both stages. Some co-workers can make a significant contribution to the first stage, while being absent in the second stage, and vice versa. Given that different work factors are associated with the different stages of innovation (*e.g.,* Unsworth, 1999; Kleysen & Street, 2001; Axtell *et al.,* 2000), it is important to distinguish between the initiation and implementation stage when describing the innovative behaviour of co-workers. It enables us to capture the richness and potential multidimensionality of the construct of innovative behaviour.

Dimensions of innovative behaviour

Theorists seem to agree that various stages in the NSD process require different behaviours of co-workers (*e.g.,* Kanter, 1988; Delbecq & Mills, 1985; Van de Ven, 1986; Axtell *et al.,* 2000). It is evident that initiation and implementation put different pressures on the co-workers involved. Based on the work of authors like Kanter (1988), Janssen (2000, 2002) and Kleysen & Street (2001), we distinguish four dimensions of individual innovative behaviour. Two of them have a divergent character and are related to the initiation stage. The others have a convergent character and are desirable for implementation purposes (figure 6).

figure 6   Innovative behaviour in the NSD process

Initiation stage
•Opportunity exploration
•Idea generation

Implementation stage
•Championing
•Application

(time)
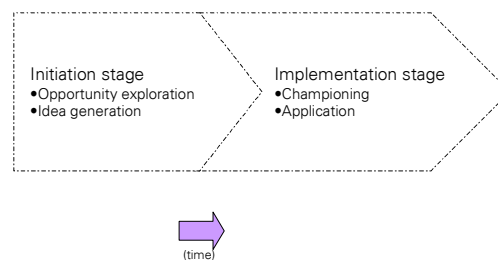
In the next sections we discuss the dimensions of innovative behaviour for both stages. We also elaborate on the differences between innovative behaviour and creativity.

3.4 Initiation stage

We have labelled the behaviour of co-workers in the initiation stage as divergent innovative behaviour. It is about exploring opportunities which can raise new ideas. Initially, each idea should be regarded as promising and an opportunity to improve results (Amabile, 1988; West & Altink, 1996). Goal-orientation is not the most relevant point here: the initiation stage ends as soon it is decided to implement an idea. Divergent innovative behaviour consists of opportunity exploration and idea generation.

Opportunity exploration. Innovation begins with co-workers identifying new opportunities (*e.g.,* Krueger, 2000). Opportunity exploration is a necessary condition to initiate a process of departing from the organization's established routines or systems. Opportunities lie in incongruities and discontinuities – things that do not fit expected patterns, problems in existing working methods, unfulfilled needs of customers, or indications that trends may be changing (Drucker, 1985; Mumford *et al.,* 1996). One can think of co-workers looking for ways to improve current services or delivery processes, or trying to solve problems by themselves (*e.g.,* Farr & Ford, 1990; Kanter, 1988; Howell & Higgins, 1990; Zaltman *et al.,* 1973; Roberts, 1997).
Particularly front-line co-workers should be involved. All too often, service firms view their front-line personnel simply in terms of an approach to providing their service - that is, a delivery system (De Brentani, 2001). In the initiation stage, they can be crucial for gaining insights about client needs and opportunities. Their close contact and potentially long-term relationships with customers make such employees an important source of ideas (Atuahene-Gima, 1996; Johne & Storey, 1998).

Idea generation. Having ideas is a necessary condition for innovation. Mumford (2000) states that, ultimately, the individual is the source of any new idea. Idea generation is about co-worker's behaviours directed at 'generating concepts for the purpose of improvement' (Kleysen & Street, 2001). It includes generating ideas for new or renewed services, client interfaces or supporting technologies (*e.g.,* Roberts, 1997; Zaltman *et al.,* 1973; Kanter ,1988; Van de Ven, 1988; Howell & Higgins, 1990; Maute & Locander, 1994; Amabile, 1988; Angle, 1989; Ford, 1996; Janssen & Buil, 1998), and generating solutions to problems to aim to improve the service delivery process, making it more efficient (*e.g.,* Mumford, 2000; Janssen & Buil, 1998). The key to idea generation appears to be the combination and reorganization of information and existing concepts to solve problems and/or to improve performance. Rothenberg (1996), in his study of Nobel laureates, found that these new combinations often provide a basis for advances in science. Along similar lines, Mumford *et al.* (1997) found that skill in combining and reorganizing concepts is one of the best predictors of creative achievement.

The innovation process usually starts with the detection of a so-called 'performance gap' - a mismatch between actual and potential performance (Zaltman *et al.,* 1973). We stress that both dimensions of divergent innovative behaviour are not necessarily sequential. The initiation of innovations is a more or less continuous process of exploring opportunities, gathering ideas and assessing their suitability and economic potential (De Jong *et al.,* 2002).

3.5   Implementation stage

Once it is decided to implement an idea, a service firm actually develops, tests and launches the new service, so in this stage the idea is transformed into a concrete result. We prefer to label innovative behaviour in this stage as convergent innovative behaviour. To develop and implement ideas, co-workers should have a more result-oriented attitude (Mumford, 2000). The innovation process ends when the new service becomes absorbed into the everyday life of the organization - it is accepted as part of a new status quo (Kanter, 1988). The bottom line is that co-workers should put a considerable effort into developing, testing and (internally or externally) commercializing new ideas. Convergent innovative behaviour consists of championing and application efforts.

Championing. Co-workers who take prime responsibility for the introduction of innovations often are not formally appointed by the entrepreneur, but rather people who feel a strong personal commitment to a particular idea and are able to 'sell' it to others. A champion is someone who emerges to put efforts into creative ideas (which he may not have generated by himself) and bring them to life (Kleysen & Street, 2001). It is someone in an informal role that pushes a new service beyond roadblocks within the organization (Shane, 1994). Research in manufacturing firms has shown that successful firms are more likely to use and keep champions. This is often not the case in service firms (Martin & Horne, 1993).
Championing includes persuading and influencing other co-workers (*e.g.,* Kanter, 1983; Zaltman *et al.,* 1973; Howell & Higgins, 1990; Kanter, 1988; Anderson & King, 1993; Janssen & Buil, 1998) as well as pushing and negotiating (*e.g.,* Kanter, 1983; Maute & Locander, 1994; Ford, 1996; Howell & Higgins, 1990; Van der Ven, 1988; Anderson & King, 1993). To implement an innovation there often is a need for coalition building, acquiring power by selling an idea to potential allies. For instance, a front-line co-worker who is responsible for customer service might identify a particular piece of technology which he believes would significantly improve firm performance if adopted. The success of his idea will depend on his ability to persuade powerful and influential people of the value of the innovation, and on his ability to access and utilize personal networks (Dougherty & Hardy, 1996).

Application. Application is related to the behaviours of co-workers aimed at developing, testing and commercializing a new service. It deals with making innovations a regular part of working processes (Kleysen & Street, 2001). It includes developing new services or working methods (*e.g.,* Glynn, 1996; Anderson & King, 1993; Rogers, 1983; Zaltman *et al.,* 1973; West & Farr, 1989; Angle, 1989; Van der Ven, 1988; Janssen & Buil, 1998) and modifying them (*e.g.,* Anderson & King, 1993; Kanter, 1983; Rogers, 1983; Roberts, 1997). Because of services' simultaneous nature, front-line employees play an essential role. During the implementation stage their knowledge of customers and of competitive offerings can help in defining the appropriate level of service customization and user friendliness (De Brentani, 2001). Besides, during market launch, it is the ability of front-line staff to 'educate' and persuade clients about the benefits of a (totally) new way of solving a problem that can bring about the adoption of the new service (Atuahene-Gima, 1996; Johne & Storey, 1998).

In knowledge-intensive services the implementation stage can be regarded as a continuous trial-and-error process. It is a process of designing a service offering, selling/offering it to customers, gathering feedback from customers and front-line co-workers, making adjustments in the service offering, etc. (*e.g.,* Johne & Storey, 1998; De Jong *et al.,* 2002). Thus, the two dimensions of convergent innovative behaviour are not necessarily sequential.

3.6 Innovative behaviour and creativity

At the level of individual innovation (see also section 2.4), much research has been done into the determinants of creativity. To avoid confusion, we explain the similarities and differences with innovative behaviour.

What is creativity?

We could identify various definitions of creativity. Most theorists and researchers adopt a creativity definition focused on the results of creative action. Creativity can be defined as the production of novel ideas by an individual or small groups of individuals working together (Amabile, 1988). To describe how creative results are born, Wallas (1926) was among the first to draw up a model to sketch the way in which an individual might assemble and use information in attempting to arrive at a creative solution. Wallas proposed a model consisting of four phases:

– Preparation. This involves the recognition and a preliminary analysis of a problem.
– Incubation. During this phase there is no conscious mental work on the problem. A person may be working consciously on other problems or simply relaxing, taking a break. Unconsciously, however, the mind continues to work on the problem, forming trains of associations.
– Illumination. This occurs when the promising idea breaks through to conscious awareness. It can be characterized by a 'flash,' a sudden enlightenment.
– Verification. This phase involves evaluating, refining, and developing one's idea.

Others have identified similar models (*e.g.,* Amabile, 1996; Goswami, 1996). For a detailed discussion of these models, we refer to Lubart (2000).

Connection with innovative behaviour

One could be tempted to think of creativity as being similar to innovative behaviour of co-workers. We argue this is not correct. Innovative behaviour is a broader and more complex construct than that of creativity, which generally only refers to the generation of new ideas. Both constructs differ in some important aspects (West & Farr, 1989). Unlike creativity, innovative behaviour is intended to provide some kind of benefit. Moreover, innovative behaviour has a clear applied component since it is expected to result in innovative output. This has a direct impact upon others in the firm or even the wider society.

Creativity can be regarded as a condition for innovative behaviour (Kleysen & Street, 2001; Scott & Bruce, 1994). Following West (2002), we hold that creativity is likely to be most evident in the initiation stage, when co-workers develop ideas in response to a perceived need for innovation. Just like the behaviours of opportunity exploration and idea generation, creativity is of a divergent nature. On the contrary, the behaviours in the second stage have a more convergent character. Creative thinking may also be needed when implementation is first considered, but generally, in the second stage of the NSD process there will be less need for creativity.

4 The nature of leadership

4.1 Introduction

In this chapter we aim to provide an overview of the field of leadership research (figure 7). For reasons of parsimony we choose not to be tempted by a detailed discussion, instead we present a brief overview of the most important research traditions[1].

figure 7   Content of this chapter
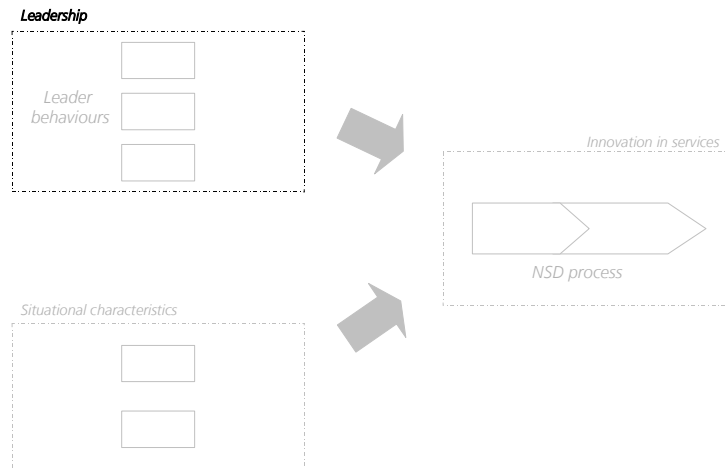
In section 4.2 we define the construct of leadership. Next, section 4.3 presents an overview of research traditions in the field. These can be labelled as the trait, behaviour, contingency and new leadership approach. In section 4.4 we briefly discuss current research on the relationship between leadership and innovation (an extensive discussion of this research will follow in section 5.3). Current research appears to have some important drawbacks that stress our study's significance. Leader behaviour is usually not studied in relation to innovation, but with performance as a dependent variable. A broad overview of innovation-enhancing leader behaviour is still lacking, and current research hardly accounts for differences that may exist between both stages of the NSD process.

4.2 Defining leadership

Some definitions

The term 'leadership' means different things to different people. Definitions of leadership vary in terms of emphasis on leader abilities, personality traits, influence relationships, individual versus group orientation, and appeal to self- versus collective interests. Most definitions of leadership reflect the assumption that it involves a process whereby intentional influence is exerted by one person over other people to guide, structure and facilitate activities and relationships in a group or organization. Definitions also vary in whether they are primarily descriptive or normative in nature as well as in their relative

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[1] For more details, we refer to Yukl (2002).

emphasis on behavioural styles (Den Hartog & Koopman, 2001). Some examples of definitions can be found in table 4.

table 4   Defining leadership: examples of definitions in the field

– Leadership is the influential increment over and above mechanical compliance with the routine directives of the organization (Katz & Kahn, 1978).
– Leadership is the process of influencing the activities of an organized group toward goal achievement (Rauch & Behling, 1984).
– Leadership can be defined as the process of influencing others to understand and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish the shared objectives (Yukl, 2002).
– Leadership is defined in terms of a process of social influence whereby a leader steers members of a group towards a goal (Bryman, 1992).
– Leadership is the ability of an individual to motivate others to forego self-interest in the interest of a collective vision, and to contribute to the attainment of that vision and to the collective by making significant personal self-sacrifices over and above the call of duty, willingly (House & Shamir, 1993).

Source: Den Hartog & Koopman (2001).

Bryman (1992) states that most definitions of leadership emphasize three main elements: 'group', 'influence' and 'goal'. In our study, these three main elements are related to a service entrepreneur influencing his co-workers with the intermediate goal of enhancing their innovative behaviour, in order to improve the number and quality of innovations and eventually firm performance.

Leadership versus management

There is a continuing controversy about the differences between leadership and management (Yukl, 2002). Few writers contend that leadership and management are qualitatively different and mutually exclusive (*e.g.,* Bennis & Nanus, 1985; Zaleznik, 1977). The prevailing point of view is that leading and managing are distinct processes, but one cannot assume that leaders and managers are different types of people (*e.g.,* Bass, 1990; Kotter, 1988, Mintzberg, 1973). Kotter (1990) differentiated between both matters in terms of their intended outcomes. Management seeks to produce predictability and order by setting goals, organizing and monitoring, while leadership aims to produce change by developing a vision, communicating it to co-workers, etc.

In small knowledge-intensive firms, the service entrepreneur will provide both leadership and management. Both involve deciding what needs to be done, creating networks of relationships among co-workers to do it, and trying to assure it happens. In the end, leadership and management are related to behaviours that could enhance or diminish innovative behaviour of co-workers. To avoid confusion, we consistently speak of leadership, but it may include managerial practices as well.

4.3 Overview of research traditions[1]

Four main approaches

Leadership has been an important topic of investigation for many decades. Several main trends can be distinguished in the development of the study of (business) leadership. Prior to the 1980s, the main approaches to leadership were the so-called *trait*, *style* and *contingency* approach. Currently, the role of vision, charisma and inspiration in leading others attracts a lot of attention. In table 5 we present a historical overview of the main trends in the leadership field. The dates in this table represent rough indications of the periods in which the emphasis was on that approach. The main trends and several of these alternative approaches to leadership are briefly described (table 5).

table 5   Trends in leadership theory and research

Period	Approach	Core theme
Up to late 1940s	Trait approach	Leaders are born; leadership as an innate ability
Late 1940s to late 1960	Style approach	What do they do; effectiveness has to do with how the leader behaves
Late 1960s to early 1980s	Contingency approach	It all depends; effectiveness of leadership is affected by the situation/context
	New Leadership approach	Leaders convince through vision and inspire loyalty and emotional attachment

Source: Adapted from Bryman (1992).

A new stage did not necessarily mean the previous stage was completely abandoned, rather, a shift in emphasis occurred (Bryman, 1992). Beyond these main trends, several alternative ways of looking at leadership have also been developed. All will be touched upon below. Beforehand, we stress that a combination of approaches is chosen for our current study. In the next section we elaborate on this.

Trait approach. Early leadership research focused on traits and personal characteristics of leaders. Identifying and measuring traits that distinguished leaders from non-leaders or effective from ineffective leaders was central. Goal was to derive the profile of an 'ideal' leader, which could serve as the basis for selection of future leaders. The types of personal characteristics that were studied included physical features (*e.g.,* height, appearance, age), ability characteristics (*e.g.,* intelligence, knowledge, fluency of speech), and personality traits (*e.g.,* dominance, emotional control and expressiveness, introversion-extraversion). As studies up to 1950 failed to yield a consistent picture of leader traits, research into this area slowed.

After about 25 years, the interest in leaders' traits revived. Stogdill (1974) showed that - contrary to what had been concluded from earlier reviews - several universal personal traits and skills (such as vigour and persistence in the pursuit of goals, self-confidence and tolerance for uncertainty and frustration) were indeed associated with leadership. Other traits predicting effective leadership include a high energy level and stress tolerance, an internal locus-of-control orientation, emotional maturity, and a low need for affiliation (Yukl, 2002).

Style approach. In the sixties, the focus shifted from studying who leaders are (traits) to what they do (behaviour). Here, effectiveness of leaders is seen as dependent on the exerted leadership style. The assumption is that leadership is a behavioural pattern,

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[1] The overview in this section is based on Den Hartog & Koopman (2001).

which can be learned. Thus, once the 'right' style had been found, people could be trained to exhibit that behaviour and become better leaders (Bass, 1990). For example, a major research programme from that period focused on three types of leader behaviour differentiating between effective and ineffective managers, namely task-oriented behaviour, relationship-oriented behaviour, and participative leadership (*e.g.,* Likert, 1961; 1967).

Style researchers often proposed 'universal' theories of effective leader behaviour. In other words, theories predicted that a certain way of leading would (nearly) always be effective. For instance, the most effective leaders were sometimes proposed to be both highly people- and highly task-oriented, so-called 'high-high' leaders (*e.g.,* Blake & Mouton, 1982). Other prominent 'universal' theories were based on the idea that leaders who make extensive use of participative decision procedures are more effective than other leaders (*e.g.,* Likert, 1967; McGregor, 1960).

The style approach received extensive criticism. Issues that were raised include, amongst others, the above-mentioned lack of situational analysis (Bryman, 1992). This is probably its most serious problem. Possible moderators of the relationship between a leader and his co-workers include environmental factors and organizational culture. In the context of this review, the effects of some context issues that could determine innovative behaviour need to be taken into account when assessing possible effects of leader behaviour on co-workers. Chapter 6 further discusses this.

Contingency approach. The main proposition in contingency approaches is that the effectiveness of a given leadership style is contingent on the situation, implying that certain leader behaviours will be effective in some situations but not in others. One example of such a contingency theory focuses on criteria to determine whether or not a leader should involve subordinates in different kinds of decision-making (*e.g.,* Vroom & Yetton, 1973). The effectiveness of decision procedures depends on aspects of the situation, including the amount of relevant information held by leader and co-workers, the likelihood that co-workers will accept an autocratic decision and the extent to which the decision problem is unstructured. The model of Vroom & Yetton provides a set of rules that help identify whether a decision procedure in a given situation is appropriate.

The most influential and complete contingency theory to date is probably the Path-Goal theory of leadership, which describes how leaders affect the motivation and satisfaction of co-workers (House, 1971; 1996; House & Mitchell, 1974). Leaders will be effective to the extent that they complement the environment in which their co-workers work, by behaving in such a way that:
– co-workers expect they can attain work goals (*i.e.*, path-goal clarifying behaviour), and that
– co-workers experience intrinsic satisfaction and receive rewards as a direct result of attaining those work goals (*i.e.*, behaviour directed toward satisfying subordinate needs; see House, 1996).

In Path-Goal theory, four types of leader behaviour are taken into account: directive path-goal clarifying behaviour, supportive leader behaviour, participative leader behaviour and achievement-oriented behaviour. Proposed effects of leader behaviour include subordinate motivation, satisfaction and performance. Task and people characteristics are treated as moderator variables.

New leadership approach. As was stated above, studying leader behaviour used to focus on how leaders facilitate group maintenance and what they must do to ensure task accomplishment. Both task- and relationship-oriented behaviours are indeed impor-

tant for effective leadership. However, another important leadership function was not studied as often before the 1980s, namely providing a vision or overarching goal. This sense of direction, of knowing where one is going, helps leaders integrate and align co-workers' efforts (*e.g.,* Den Hartog & Verburg, 1997; Shamir *et al.,* 1993).

Developing and articulating an exciting vision of future opportunities is central to what Bryman (1992) labels the 'new' leadership approach. An important distinction is that between transactional and transformational leadership as defined in the model by Bass and his colleagues (*e.g.,* Bass 1985; 1997; Hater & Bass, 1988; Yammarino & Bass, 1990). Transactional leadership is based on (a series of) exchanges between leader and co-worker. Co-workers receive certain valued outcomes (*e.g.,* pay increases, prestige) when they act according to the leader's wishes (Burns, 1978).

Transformational leadership is seen when leaders have vision, stimulate co-workers intellectually to see problems in new ways and use individualized consideration and mentoring to help individual co-workers develop to their full potential. It goes beyond the cost-benefit exchange of transactional leadership by motivating and inspiring co-workers to perform beyond expectations (Bass, 1985).

Besides 'transformational', other terms are also used to describe these new leaders, including: charismatic, transforming, inspirational, visionary or value-based leadership. Together, these theories attempt to explain how certain leaders are able to achieve extraordinary levels of co-worker performance.

Alternative approaches. Except for the four main traditions, several other approaches have been developed to study leadership. For instance, Yukl and his colleagues have looked at influence tactics that leaders can use (*e.g.,* Erez *et al.,* 1986; Kipnis *et al.,* 1980; Yukl & Falbe, 1990; Yukl & Tracey, 1992). Leaders could attempt to get things done by various tactics, like pressure (threats, requests, persistent reminding or frequent checking are used to influence a co-worker in the desired direction) or consultation (a leader asks the participation of a co-worker in planning a strategy, activity or change that requires target support and assistance). For a detailed overview of alternative approaches, we refer to Den Hartog & Koopman (2001) and Yukl (2002).

Focus of our study

As mentioned in chapter 2, we focus on leadership behaviour. This implies that we do not incorporate literature from the trait approach. In this review on the effects of leader behaviour in the context of SMEs in the service sector, traits of leaders can be seen as given and stable. By focusing on leader behaviours we increase the likeliness that we can provide service entrepreneurs with feedback on how to enhance the innovative behaviour of their co-workers. In the main traditions of style, contingency and new leadership we find many leader behaviours. We are interested in an integral overview of innovation-enhancing leader behaviours; therefore, we do not limit ourselves to a single tradition of research. Thus, we use insights from these three research traditions.

4.4   Some research on leadership and innovation

In this section we briefly present the most important characteristics of current research on leadership and innovation, and discuss its drawbacks. A detailed overview of innovation-enhancing leadership behaviours will be presented in section 5.3.

Although the impact of leaders on innovation seems intuitively appealing, most leadership studies tend to assess leaders' impact on performance or affective outcomes rather than innovation-related outcomes (Janssen, 2002). For example, in the new leadership

approach many outcomes have been studied, including extra effort of co-workers, satis-
faction with the leader and perceived leader effectiveness (*e.g.,* Bass *et al.,* 1996; Bry-
man, 1992); trust in management and colleagues (Den Hartog, 1997); organizational
commitment (*e.g.,* Den Hartog, 1997; Koh *et al.,* 1995; Podsakoff *et al.,* 1996); leader
performance (*e.g.,* Yammarino *et al.,* 1993) and business unit performance (*e.g.,* Howell
& Avolio, 1993). Research on the relationship between leadership and innovation is
relatively scarce. It is usually limited to the effects of a limited number of leadership be-
haviours/styles. Examples include:

– Participative leadership. This leadership style is most often identified as an antece-
  dent of innovation success (*e.g.,* Kanter, 1983; King & Anderson, 2002). It provides
  co-workers with the opportunity to influence decision-making and autonomy in or-
  ganizing their work. This triggers idea generation and implementation trials.
– Transformational leadership. This leadership style could be expected to encourage
  co-workers' innovativeness, since transformational leaders stimulate followers to
  see problems in new ways and help individual co-workers to develop to their full
  potential. A transformational leader uses experiments to encourage innovation and
  to test new services and procedures, destroys old ways of life and makes way for
  new ones (Basu & Green, 1997; Jung, 2001; Sosik *et al.,* 1998; Janssen, 2002).
– High-quality relationships. The so-called leader-member exchange theory (LMX) de-
  scribes how leaders develop different exchange relationships with individual co-
  workers. An exchange relationship is defined as some mutually influencing transac-
  tions between a leader and a co-worker. Its result is that leaders may receive ap-
  proval in the form of status, esteem and loyalty, while co-workers may receive re-
  wards such as authority, freedom, promotion and bonuses (Yukl, 2002). LMX the-
  ory suggests that the quality of the relationship between a leader and co-worker is
  related to innovativeness (Graen & Scandura, 1987). Empirical results have sup-
  ported this (*e.g.,* Basu & Green, 1997; Scott & Bruce, 1994; Robben, 1999; Tierney
  et al., 1999).

Among innovation researchers, the same problem applies. Although leadership is widely
recognized as a critical success factor for the development of new services, research has
failed to study systematically the relationship between the two domains (Basu & Green,
1997). People agree that the entrepreneur should have a high degree of confidence in
his employees, not blaming them for every mistake or wrong decision (Martin & Horne,
1995; Atuahene-Gima, 1996; Johne & Storey, 1998), that he should show his commit-
ment to innovation (De Brentani, 2001) and that a participating leadership style is pref-
erable (*e.g.,* Axtell *et al.,* 2000; Kanter, 1983). Yet, not much is known about specific
leadership behaviours that stimulate innovation in service firms. Current research fo-
cuses on the effects of leadership on innovation in manufacturing firms (*e.g.,* Valle &
Avella, 2003) or on the effectiveness of R&D teams (*e.g.,* Stoker *et al.,* 2001). Knowl-
edge-intensive service firms certainly do not get much attention.

Drawbacks. We conclude that current research on leadership and innovation has three
serious drawbacks. First, it deals with a few select behaviours rather than a wide range.
It is remarkable that no research has attempted to provide an integral overview of effec-
tive leader behaviours in relation to the innovative behaviour of co-workers. It implies
that our knowledge remains limited.

Second, we must realize that practically all insights about leader behaviour are identi-
fied in a context of improving performance, satisfaction and effectiveness, instead of
innovative behaviour. Waldman & Bass (1991) warn that the leader behaviours most
suitable for innovative behaviour may not be captured. We argue that this holds espe-

cially for leadership in knowledge-intensive service workers. Leading such innovative people is likely to differ from performance-enhancing leadership. This is caused by the nature of knowledge-intensive service work, which entails novel, ill-defined tasks. As a result, a leader cannot rely on predefined structures but, instead, must be capable of inducing structure and providing direction to work where there is no inherent direction.

Third, a complicating factor is that the leader behaviours that enhance co-workers' innovativeness may need to be adjusted during the NSD process. Manz *et al.* (1989) argue that effective leader behaviours are likely to differ, and Van de Ven *et al.* (1999) stress that organizations need to be able to call on a range of different leader behaviours to meet different circumstances in what they call the 'innovation journey' from initial idea to implementation. Differences between both stages may occur, and we believe this can apply to small service firms as well. In this context, Waldman & Bass (1991) conclude that little theory exists regarding leadership in relation to all phases of the innovation process.

Due to these drawbacks, we opted for an integral approach. We attempt to provide a broad overview of leader behaviours that may be relevant to enhance innovative behaviour of co-workers in both stages of the NSD process. For this purpose, we conducted in-depth interviews with leaders in knowledge-intensive service firms, and studied a wide range of innovation and leadership literature. We discuss our results in the next chapter.

5 Innovation-enhancing leader behaviour

5.1 Introduction

This chapter presents an inventory of potentially innovation-enhancing leader behaviours (figure 8). The past four decades have witnessed the appearance of a bewildering variety of behaviour taxonomies (*e.g.,* Stogdill *et al.,* 1962; Mintzberg, 1973; Podsakoff *et al.,* 1990, Conger & Kanungo, 1994; Yukl, 2002), but none has been developed specifically in relation with innovative behaviour.

figure 8   Content of this chapter
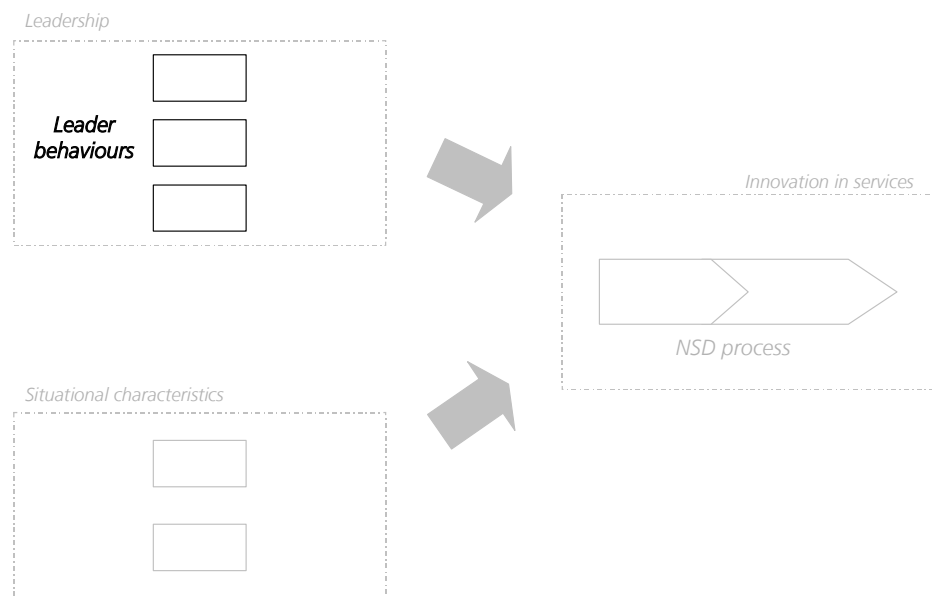
To make the inventory we have performed in-depth interviews with managers and entrepreneurs in small knowledge-intensive service firms (section 5.2), and studied a wide range of literature (section 5.3). We have used both sources to come up with propositions on the link between leadership and individual innovative behaviour. These propositions account for differences that may occur between both stages of the NSD process. They will be tested in future research.

5.2 In-depth interviews

Methodology

Performing in-depth interviews is a qualitative research technique that is particularly useful for exploration purposes. It is sometimes referred to as the analysis of 'insight-stimulating examples'. In-depth interviews are useful to develop propositions on a particular subject (Churchill, 1999). It is a suitable research technique for subjects that are relatively unexplored (Eisenhardt, 1989).

Respondents. We have selected twelve participants through purposive sampling. All participants worked in small knowledge-intensive service firms (5-100 employees). All of them were director/owners or general managers. We have attempted to select participants reflecting extreme cases of behaviour. Since we wanted to gain some idea of what leader behaviours account for the variation in individual innovative behaviour, we have interviewed both leaders who pay attention to innovative behaviour in their daily work and leaders who do not stress it explicitly. Theorists recommend such an approach to reveal contrasts and develop propositions (*e.g.,* Yin, 1994; Churchill, 1999).

To find leaders who explicitly stimulate innovative behaviour, we have contacted the Dutch consultancy organization Syntens. This organization provides small-firm entrepreneurs with advice and information to increase innovation success, and has daily contacts with many managers and entrepreneurs. Due to their suggestions, we found five participants. We have also drawn a random sample of medium-sized knowledge-intensive service firms from a database that is controlled by the Dutch Chambers of Commerce. This database contains all privately owned firms in the Netherlands (see also VVK, 1997). Via this source, we found another seven respondents. In table 6 we present some background information.

table 6   Background information of respondents

– Firm 1 is a medium-sized firm that consults on public relations and communication. With about 80 co-workers from various disciplines (communication, politics, engineering, business administration, psychology) they are constantly working for some major clients in business and government. Our respondent was the general manager responsible for new ventures. He regards innovative behaviour of co-workers to be fairly important for long-term success.

– Firm 2 is a software developer that is specialized in language technology. With about 15 employees the company develops software which gives computers linguistic intelligence. This firm explicitly stresses the importance of innovation to co-workers - they strive to be the world's leading firm in their field. Our respondent was the general manager.

– Firm 3 is a consultancy firm. Its mission is to advise and assist small entrepreneurs with issues like personnel, strategy, marketing, etc. They used to be part of the Dutch government, but have been privatized some years ago. Our respondent was a member of the board of directors, and responsible for a regional division with about 35 co-workers in the East of the Netherlands. He considers innovative behaviour to be important, although it should provide benefits for the whole firm (and not be limited to his own division).

– Firm 4 aims to make scientific (technical) knowledge available for Dutch firms and governments. It occupies itself with research in a wide range of fields (*e.g.,* environment), but has other fields of interest as well. Our respondent was leading a division that helps the Dutch government to attribute subsidies for innovation and development projects.

– Firm 5 occupies itself with business consultancy. Its main focus is to support the implementation of processes of change in large firms. Individual innovative behaviour is regarded to be very important for long-term survival. Our respondent directed various activities, like research and consultancy on strategic issues.

– Firm 6 is an IT firm that is specialized on building and maintaining applications for the Internet. Our respondent was the owner/manager. He considers innovative behaviour to be extremely important. In fact, he tries to stimulate his 25 co-workers to suggest ideas every day.

– Firm 7 is a research firm for marketing and strategy. It has 60 co-workers. Its core business is to provide management information for customers in business and government. Our respondent was one of the owner/managers. He thinks innovative behaviour is important because his firm 'always has to think of new approaches to solve problems'.

- Firm 8 is an accountancy firm with 75 co-workers. Its main activity is to draw up annual reports for small and medium-sized firms. Our respondent was one of the owner/managers. In his opinion, not being innovative equals standing still. However, he did not perform explicit activities to stimulate innovative behaviour.
- Firm 9 is an engineering firm with 25 employees. Its activities consist of developing and consulting on mechanical instruments, fire prevention and electro-technology. Our respondent was the owner/manager. He regards innovative behaviour to be an opportunity to distinguish himself from his competitors.
- Firm 10 is an engineering firm as well. It has 15 co-workers and specializes in developing constructions for buildings and bridges. Our respondent was the owner/manager. Although he was very much aware of the importance of innovation, individual innovative behaviour was less important in his firm.
- Firm 11 occupies itself with accountancy and bookkeeping. With 12 co-workers, the owner/manager also serves many farmers. He regards innovative behaviour to be less important. Most changes in this firm are caused by new laws, rules and procedures.
- Firm 12 provides advice to radio stations and recording studios on new machines. This firm helps with the installation and maintenance as well. It has 10 co-workers. Their owner/manager regards innovative behaviour as less important. Although it is not forbidden to come up with suggestions, he thinks his co-workers should first be concerned with doing their regular work.

All in all, our participants cover a wide range of sectors. They entail service firms that are occupied with engineering, economic research, consultancy, software, information technology and accountancy.

Data collection. When doing in-depth interviews, the attitude of the investigator is key. The proper attitude is one of alert receptivity, of seeking explanations rather than testing expectations (Churchill, 1999; Yin, 1994). Because we did not want to miss any relevant leader behaviour, we have chosen for an unstructured questionnaire. We asked each participant to describe his/her own leadership style, to tell us what role innovation plays in his/her firm, if and how individual innovative behaviour is stimulated, and how it could be devastated. After each of these general questions (see annex I), a participant was able to talk freely about his or her attitudes and behaviour. Thus, the interviews had an unstructured character. The participants' initial reply and our probes for elaboration determined the direction. The interviews lasted for an average time of 90 minutes. All answers were documented by note taking and transcribed into an interview report immediately after each session.

Coding. On the basis of our interviews and insights from literature (see section 5.3), we have made an inventory of leader behaviours that seem to enhance innovative behaviour of co-workers. We have studied the interview reports intensively to identify common categories of meaning. We developed categories of innovation-enhancing leader behaviours and checked for their suitability by looking for similar answers in the data. Two researchers have worked independently on this process. Differences in categories were discussed and dissolved.
A potential problem in coding verbatim answers to open questions is how one can determine what the correct interpretation is (Collins & Kalton, 1980). The coding process goes back and forth between observation, analysis and reflection (Wester, 1995). Literature can serve as important background material to compare the interview materials, but to prevent that new insights are missed one should be aware not to get stuck to the literature (Strauss & Corbin, 1990).

As a basis for our recoding, we used Yukl's taxonomy of 'managerial practices' (Yukl, 2002; Kim & Yukl, 1995; Yukl *et al.,* 1990). It consists of fourteen leader behaviours which are derived from empirical research and expert judgments. A full description of this taxonomy is presented in annex II. Other ways of classifying leader behaviours may also be appropriate, however, Yukl's taxonomy is relatively broad and seemed to encompass many relevant innovation-enhancing constructs. Of course, we did not hesitate to drop or redefine some of Yukl's constructs whenever we felt that a relevant behaviour was not covered. Also, we used insights from the current literature on leadership and innovation (see section 5.3) to think of new categories and make additions.

Overview of leader behaviours
The remainder of this section is organized in the way that we present all the different behaviours of innovation-enhancing leadership that we have found. Since the intention is to explore and make an inventory of leader behaviours which are possibly relevant to individual innovative behaviour, the rate of incidence of each behaviour is not that important. We do not attempt to provide a representative description, instead, we aim to develop propositions that can be tested in future research. Our study revealed the following leader behaviours[1]:

1   Role-modelling
2   Intellectual stimulation
3   Stimulating knowledge diffusion
4   Providing vision
5   Consulting
6   Delegating
7   Support for innovation
8   Organizing feedback
9   Recognizing
10   Rewarding
11   Providing resources
12   Monitoring
13   Task assignment.

We stress that most behaviours were cited by a majority (> 6) of the participants. Only the last two behaviours (task assignment and monitoring) were mentioned less frequently (by only three and two participants). Yet, we have added these constructs because they are often discussed as drivers of innovation in the literature (see section 5.3). Below, we elaborate on each behaviour construct and discuss its effects on divergent and convergent innovative behaviour. Some of the behaviours were considered to be important for both stages of the NSD process. Others were mentioned for only one stage.

1: Role-modelling. A leader can enhance innovation by being an example of innovative behaviour himself. Most participants were convinced that this has positive implications for the innovative behaviour of their co-workers. It implies that a leader acts like an innovative person to motivate others to do the same. Typical behaviours include exploring opportunities, coming up with ideas, championing and putting efforts in the

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[1] We conclude that some of Yukl's managerial practices are suitable to describe some innovation-enhancing leader behaviours (*e.g.,* consulting, rewarding, delegating). Some other categories are entirely 'new' (*e.g.,* providing vision, intellectual stimulation). This is not surprising, since Yukl's taxonomy was not developed for innovation purposes.

development of new services. For instance, the leader could be a role model for opportunity exploration by actively following trends and developments, proposing new services or work processes, etc.

Being a role model is expected to be beneficial for both stages of the NSD process. Some quotes from the participants about the connection with divergent innovative behaviour include:
– 'If you want your people to be innovative, you should be an example of innovation yourself. I am always looking for ways to do things better and increase results. I ask my customers for feedback on our current services and visit a lot of conferences. It stimulates some of my co-workers to do the same.'
– 'I used to have a boss who never did something new. All he did was maintaining the status quo. I always hesitated to bring along my ideas when I could not implement them myself. He just radiated that idea generation was nothing for us.'
– 'Watching commercials on television is one of my favourite sources to explore opportunities. You should try to connect your business problems with another context to find creative solutions.'

Some quotes about the relationship between role-modelling and divergent innovative behaviour are:
– 'You have to be an example yourself. In fact, I initiate many changes and for particular ideas I occupy myself with convincing my people of its value.'
– 'I try to be innovative myself. Some of my employees tend to behave like I do, particularly the younger ones. On the other hand, if an idea does not work out, you have to able to drop it. You must take a loss from time to time, especially in my position. Or else I would communicate that one should never quit striving for ideas which are impossible to realize.'

2: Intellectual stimulation. Some participants mentioned that stimulating your co-workers to be innovative can be quite simple: just ask them to do it. This is particularly believed to enhance divergent innovative behaviour. People are expected to make more suggestions if a leader challenges them to do so. Intellectual stimulation is leader behaviour that increases co-worker awareness of problems and stimulates rethinking of old ways of doing things. Typical practices include asking co-workers to evaluate current practices, asking questions about current practices, make suggestions, teasing co-workers' thoughts and imagination, etc.

From the data we derived that intellectual stimulation is particularly relevant to stimulate divergent innovative behaviour. Some quotes include:
– 'I just ask my co-workers to make suggestions in our monthly meetings. To solve problems we make a so-called 'criminal tour'. It implies that I ask my co-workers to think of something that is impossible, not ethical or strictly prohibited by law, but can actually serve as a solution. I ask them: what would Al Capone do in this situation? It is a nice way to find new methods we have never thought of.'
– 'Last week I challenged my co-workers to think of a way to integrate three-dimensional computation software in our (engineering) work.'
– 'In knowledge-intensive services your customers are a valuable source of ideas. I tease my personnel to recognize opportunities by listening carefully to what customers have to say about our products.'
– 'We all explore new things by reading business literature to catch up with new developments in the field of engineering. It may inspire us to do things better.'

3: Stimulating knowledge diffusion. Stimulating knowledge diffusion is about the leader practices of stimulating the dissemination of information among co-workers. A leader who stimulates open and transparent communication can be expected to have a positive influence on innovative behaviour. Teaching personnel to share knowledge and to inform their colleagues about their work, its progress and any possible problems, is regarded as a necessary condition before people can make suggestions for improvement. Thus, knowledge diffusion can be regarded as a source of opportunity exploration and idea generation.

Some of the participants had introduced structures like informal work meetings and news boards to stimulate knowledge diffusion. Examples of leaders who attempt to stimulate knowledge diffusion include:
– 'It's always good when people are aware of how things are going. When you hear about one's problems in engineering work, you may come up with suggestions or ideas for solutions when you have faced a similar problem in the past.'
– 'It is important that everybody is well informed. I cannot expect someone to contribute to make suggestions when he does not know what is going on.'
– 'Every month we have a so-called exchange-of-knowledge meeting. This is very popular, because it is a source of solutions for those who face particular work problems, and a place where the others can help their colleagues, which makes them feel good about themselves.'
– 'I try to stimulate communication, especially between those co-workers who are never involved in each other's work.'

4: Providing vision. Some participants stressed that in their firms, innovative activities were rimmed by some general guidelines. Innovative efforts should fit to a particular vision to prevent that a variety of new services emerges that would be too broad. By formulating a vision, leaders may communicate their ambition and provide a general direction for their subordinates, enabling them to focus their innovative efforts. Leader practices include envisioning a future for the service that rests on innovation, and explicitly communicating this to the co-workers. We remark that in our sample firms this vision was usually not written down in an explicit strategic plan, but instead the service entrepreneur formulated and communicated his innovative vision orally.

Our data indicated that providing vision can be beneficial for innovative behaviour in both stages of the NSD process. In the first stage, a leader's vision is regarded as an important factor to influence innovative individuals. Relevant quotes include:
– 'To stimulate idea generation you should provide a general direction, so that people know what kind of ideas you expect from them. For the rest it should be up to themselves.'
– 'I try to communicate my ambition to innovate to my co-workers. My guideline is that I particularly like ideas for innovations that can be implemented at a national level (firm level). If I wouldn't provide this vision, people will make a lot of suggestions that we will never execute. If I wouldn't manage to communicate my vision it would certainly annoy me. Then I would have to terminate too many well-meant ideas.'
– 'First you need a fundament of what kind of innovations you like. We want to be a leading firm in language technology. Of course, ideas that fit within our mission have a better chance to get implemented.'

To stimulate convergent behaviour, providing an innovative vision was regarded to be significant as well. If a promising idea fits in a well-known vision, some participants

mentioned it would be much easier to convince other co-workers of its value and to guide implementation. This is illustrated by:
– 'I want to innovate endlessly to create value to customers and to improve our methods of delivering services. My people are aware that innovation is important, and I am sure this influences their daily behaviour.'
– 'I seek to find evidence that a co-worker has thought well on his idea, and that it fits within our strategy. Strategic fit makes it much more easy to convince other co-workers. It increases the chances of successful implementation.'
– 'We implement a promising idea only if it fits my vision on the business' future. I don't want anyone to doubt the added value because it seems to make no sense.'

5: Consulting. Consulting involves efforts by a leader to encourage and facilitate participation by his co-workers in making decisions. Typical practices include checking with people before initiating changes that may affect them, encouraging suggestions before a decision is made and incorporating other's ideas and suggestions in decisions. Almost all participants regarded such behaviour as significant for individual innovative behaviour. It encourages co-workers to generate ideas, gets them better involved in decision-making and is expected to increase their motivation to support implementation of new services.

Examples that illustrate the expected positive relationship with divergent innovative behaviour include:
– 'Consulting makes co-workers more committed to their work. It stimulates them to make suggestions to do things better. That's why we have a special meeting every three months in which important decisions about innovation are made. In this meeting, everybody has a voice and can provide his opinion on matters that personally affect their work. To me, these sessions are a valuable source of ideas.'
– 'People should generate an idea themselves. This is necessary for implementation, because they are usually less motivated for one's other idea.'

Some others mentioned a positive effect on innovative behaviour in the implementation stage:
– 'When you want to implement an innovation, participation is essential. When I would just command a co-worker to do something, I cannot expect high-quality outcomes. Participation leads to better involvement.'
– 'To make improvements in our services, the ones who have to adopt the innovation in their daily work are the ones would should organize the implementation project. If not, I could throw my money in a wastepaper basket right away.'
– 'It is dangerous to strive for innovation on your own. An innovation must be supported by various people, in particular the ones who are going to work with it. Thus I always ask for their suggestions on how we should implement something new.'
– 'You should not just prescribe your co-workers that something new must be used. When they have decided it themselves, I get better results.'

6: Delegating. Delegating is a type of power-sharing process that occurs when a leader gives a subordinate autonomy to determine independently how to do a job or certain task. There is little or no delegation for someone who must ask his boss what to do whenever there is a problem or something unusual occurs. Most participants mentioned that freedom/autonomy is an enabler of innovative behaviour. Some recommended leader practices included: allowing co-workers to have substantial responsibility and discretion in carrying out work activities and making important decisions themselves.

First, the participants indicated that delegating increases divergent innovative behaviour. People will be more innovative when they have sufficient autonomy and control over their work, so that they can try out new and improved ways of doing things. On the contrary, centralized leadership will maintain the status quo and provides less space for idea generation. For instance:

– 'Within certain guidelines, my people are free to achieve their goals as they see fit. They have freedom to do their work in their own manner. This triggers idea generation and doing things in new ways.'
– 'When you delegate certain responsibilities to others, they will probably start to think of it as their problem. Recently I made one of my co-workers responsible for obtaining an ISO certificate. Suddenly she came up with a lot of ideas. I really enjoyed that.'
– 'I give my personnel as much freedom as possible. It is a way to learn something new. And it improves their ability to solve problems for customers in a creative way.'

Second, delegating is regarded to be beneficial for the implementation of promising ideas. Autonomy can enhance a perceived 'problem-ownership' by the co-workers who are involved in this stage. In the end, this will increase successful implementation. Examples include:

– 'In the implementation phase I let my co-workers go ahead. It is all about giving trust and responsibility.'
– 'In our business, the development of innovations is often accompanied by specific problems, such as longer development times, bugs in software, and so on. I try to minimize my interference to solve these problems. Initially, I allow a co-worker to solve them himself.'
– 'As a manager, you should not try to improve an idea or provide directions for how to carry it out. It just devastates a co-worker's motivation to do his best. I always kindly ask them for permission before I start making suggestions.'
– 'I am never involved in the development of new services. As soon as we have decided to go ahead, I delegate the implementation activities to my co-workers. I am too dominant and my co-workers would not dare to object my opinion.'

7: Support for innovation. Support for innovation includes a variety of behaviours that show consideration, acceptance, and concern for people who are involved in the NSD process. Typical leader practices include acting friendly and being patient and helpful whenever a co-worker comes up with an idea, faces problems in the implementation stage, and so on. The participants perceive such behaviour to be relevant for innovative behaviour, especially the way in which mistakes are handled. This will determine if personnel feels free to act creatively and innovatively. Mistakes should not be used to punish someone, but instead should be presented as a learning opportunity.

According to the participants, to stimulate divergent innovative behaviour a leader must show a sincere interest in his people's ideas. There is always a danger that ideas are ignored, especially in a situation with a high workload. Some typical examples:

– 'People know that I just love new ideas. That's why my people come up with suggestions regularly. I am always excited by them.'
– 'A manager must be nice and friendly, and have a lot of patience to listen to ideas. For employees, it lowers a barrier to make suggestions.'
– 'You kill idea generation by simply ignoring all ideas. Not having an open attitude for your people is the best way to kill creativity.'

For convergent innovative behaviour, the way in which mistakes are handled was frequently mentioned as critical. Every entrepreneur should be aware that in new service development, things will always go wrong. Tolerance of mistakes is regarded as an essential element in the development of a climate that promotes creativity and innovation. This is evidenced by:

– 'You can really discourage innovative behaviour by being unreliable. When you do not support your co-worker when problems arise, you can forget successful innovation.'
– 'Incremental or quality improvements in the accounting business are often initiated by co-workers. They must have a feeling that that they are not abandoned. Even when things go seriously wrong while customers are involved.'
– 'To implement a new service, it is important that co-workers are decisive. They need my support to overcome barriers like unwilling colleagues. I strongly oppose to people who are struggling against innovations.'

8: Organizing feedback. Some participants mentioned that feedback can improve the possibility of successful implementation. Feedback can be organized in different ways. First, a leader can provide feedback himself. He may also appoint another person (subordinate) for this role, or ask to present an initial concept for a new service to a group of customers to see if they like it.

Organizing feedback is seen to be of outmost importance, particularly for the implementation of a new service. Concepts for new services or processes can be improved considerably by making sure that people provide feedback on an initial version:

– 'Feedback makes an idea better. I usually ask our customers to give comments on an idea. I want to know if they would buy it, or if they want to invest in it. If yes, you can be sure it is okay. Sometimes a concept for a new service is completely changed due to their feedback.'
– 'Of course, I provide feedback on what can be improved. A new consultancy service will always slightly change and be adapted to client wishes. But I never give a suggestion for improvement without giving a compliment as well.'
– 'A sparring partner is an important element in the way we innovate. The one who came up with the idea is often very excited about it and does not want to see its pitfalls. A sparring partner holds more distance and is open-minded. With his comments and additional ideas he can increase successful implementation.'
– 'When someone comes up with an idea, I invite him to talk about it to other people to see what they think about it. When he or she is still enthusiastic after two weeks, it may be something worthwhile.'

9: Recognizing. Recognizing involves giving praise and showing appreciation to others for innovative performance, significant achievements, special efforts and important contributions to the NSD process. Most participants thought it is important that a leader recognizes an individual's contribution to the NSD process and provides non-financial rewards. Their general view was that money cannot persuade people to be innovative, but immaterial rewards such as better opportunities for personal and professional growth are expected to support this behaviour.

On the basis of the interviews, we propose that divergent behaviour can benefit when ideas are appreciated in the initial phase of the innovation process, even when no 'effect' has been generated yet. Even those novel ideas which are never implemented should be valued. Some quotes illustrate this:

– 'Creativity is stimulated through recognition, by encouraging people to formulate their own ideas, and by praising them for doing so. Actually, a slap on the back can do miracles.'
– 'New ideas can open up fresh paths of thinking and, therefore, new ideas should be appreciated even when they are never implemented.'
– 'When someone makes a suggestion I try to pay a lot of attention to such an initiative. Occasionally, I provide him a day or two to work out his idea.'
– 'You should prevent that people steal each other's ideas. It's really important to give the original inventors due credit.'

For the implementation stage, the respondents also expressed an urge to give co-workers who behave innovatively attention and some sort of (non-financial) compensation. For instance, it was expressed that:
– 'With regard to giving compliments and rebukes, I do not limit myself to provide substantial feedback when there has been a screw-up. I show them that I also appreciate implementation efforts, and not implementation successes only.'
– 'Monetary rewards are good if they are minor, but I think acknowledgement is most important.'
– 'Making results at work count, that's for sure. But it means more than money. Freedom to act, to play a role in developing an idea, that's a real motivator.'

10: Rewarding. Here, rewarding includes leader behaviours like providing or recommending pay increases and bonuses for effective innovation performance. In addition to recognizing, some respondents mentioned that financial rewards can support the process of developing and implementing new services.

Rewarding was not believed to have any effect on divergent innovative behaviour. Money is simply not regarded as something that motivates people to generate ideas. But it may be an opportunity to direct people's efforts once a new service is developed. Some respondents warned that one should prevent to provide financial rewards only on the basis of effectiveness and efficiency. Some examples of traditional reward criteria are the realisation of some pre-defined targets (as a standard for effectiveness) or the elimination of mistakes (as a standard for efficiency). Such reward criteria may be in contradiction with innovative purposes:
– 'I do not believe that financial rewards are a trigger for idea generation. It does not improve involvement in one's work. But after a new service has been introduced, my employees will see their efforts back in their salary. Making contributions to change is one of my reward criteria. When I would not do this, I would communicate that you cannot score by making innovative contributions.'
– 'Some people get involved in the innovation process very late. Actually, some are first involved in the phase when we start programming new software applications. They have not initiated the idea and are sometimes less motivated. Salary can be a effective tool to communicate what is expected of them.'
– 'Pay is one of my mechanisms to change behaviour, although I never use it by itself. I suspect it can contribute to innovation as well.'

11: Providing resources. Most participants stressed that providing time and money is essential as soon as it is decided to implement a promising idea. Both time and money must be invested to develop, test and commercialize a new service. The second stage of the NSD process is the one that involves increased risks. Eventually, some ideas for new services will appear to be not successful, and resources could be wasted. In some of the

respondent's organizations, the innovation process was impeded due to a lack of re-sources.

Thus, providing resources is perceived to be relevant for the enhancement of convergent innovative behaviour:
– 'Being enthusiastic about an idea is one thing, but your employees will not believe you when you do not come up with the resources to develop it.'
– 'I give my co-workers a budget to carry out a promising idea.'
– 'Small-mindedness can impede well-meant innovative efforts. It's not difficult to get minor ideas through, but it is very hard to get a manager excited about an idea when large investments are involved. I have to admit I'm not enthusiastic for such ideas as well.'
– 'We have plenty of ideas, but at the moment we do not innovate at all. We have a vacancy for over half a year now, and we need all our time to keep up our current business.'
– 'We do not have financial back-up to start large-scale innovations. Of course, for small improvements it is different.'

12: Monitoring. Monitoring includes leader practices like gathering information about work activities and checking on the progress of the work and the quality of output. It can take many forms, ranging from direct observation of work operations to holding progress reviews with co-workers involved in a specific task, but also asking specific questions about the progress of work. According to our respondents, excessive monitoring is likely to impede innovative efforts in both stages of the NSD process. It might discourage people to be occupied with new service development.

On the relationship between monitoring and divergent innovative behaviour, the participants mentioned that opportunities for idea generation were sometimes lacking due to strict rules and procedures:
– 'I do not have many co-workers who come up with ideas. In accountancy, the work is embedded in many rules and procedures. We have to follow the law.'
– 'To be competitive we follow a low-cost strategy. This implies that I frequently check if my co-workers do not spend to many hours on a single customer. This leaves them with less time to think of doing their work differently.'
– 'I once knew a fellow-entrepreneur who was very authoritarian. Actually, he was proud that his people were less productive when he was out of office. His people would not dare to deviate from his instructions. Innovation just wasn't his thing. He is not in our business anymore.'

Monitoring may also have a negative relationship with convergent innovative behaviour. Limited evidence is provided by our data:
– 'I believe it is good when someone initially fails when developing a new service. In the end you will get better results when you don't give detailed instructions for development.'
– 'Of course, you have to keep yourself informed about how things are going. You should not just spoil your money. But your supervision must not become too strict, or else your employees will feel being watched by 'big brother' and may avoid risks.'
– 'It is a good thing to stimulate your people to generate ideas. But a manager must be aware that it is very tough to plan for innovation. People cannot respond to a command like 'select your six best ideas and develop them to world-leading solutions', instead you should provide some general guidelines.'

13: Task assignment. Task assignment is about leader behaviour aimed at clarifying work roles, responsibilities and requirements. The purpose of task assignment is to guide work activity and make sure that people know what is expected of them. The content of someone's tasks and the extent to which they fit with a person's skills, abilities and preferences can strongly determine if he/she is motivated for his job.

According to a few respondents, perceived job challenge is a determinant of making suggestions, thus, it can be a driver of divergent innovative behaviour:
– 'It is essential that a person likes to do his job. If they enjoy doing their work, they are more interested in delivering high quality. Then they are more eager to make suggestions for improvements as well.'
– 'Challenging work triggers creativity. My co-workers are involved in the whole process of service delivery, from acquisition to the final approval of the annual reports. It's good for their motivation, as they will get to see the whole picture.'

Some other findings

Before we proceed with the literature on leadership and innovation, we mention two additional insights that emerged from the interviews. First, many of the respondents asserted that they did not maintain a uniform style to stimulate innovative behaviour. Some co-workers are innovative in their daily work. They make suggestions for improvements all the time, and stimulating their innovative behaviour is considered easy. Other co-workers are hard to tempt to come up with ideas, and the respondents claimed that they adjust their behaviour depending on particular co-workers. This implies that the focus of our study is at the *individual level,* not the firm level. Some quotations show our point here:
– 'Innovation is not everyone's gift. Some people are very innovative and try out ideas all the time, but others are very dutiful. In my firm I have both types of co-workers. I focus my efforts on those that seem to like innovation.'
– 'I gave up my attempts to involve particular colleagues in idea generation and innovation.'
– 'I do not stimulate all of my employees to come up with ideas. It depends on their type of work. My experience is that sales people come up with ideas for new services on a regular basis. But my bookkeeper just keeps up our accounts and bills, and I think that is enough.'

Second, the in-depth interviews revealed some other determinants of innovative behaviour. Except for leadership, the participants stressed that work climate can influence one's innovative thoughts and efforts. Besides, they stressed that for some co-workers it is easier to generate ideas, because they perform a task in which they have frequent external contacts. In chapter 6, we elaborate on these determinants.

5.3 Literature

In this section we present an exhaustive overview of current research on leadership behaviour and innovation. The use of literature is important to complete the results of an exploratory research (Strauss & Corbin, 1990). It served as background material against which collected empirical materials were compared. It appeared that the overlap between our interview data and current literature is large. However, the literature also served as a source of innovation-enhancing leader behaviours that were not captured by the interviews. For this reason, we have included the behaviour constructs of moni-

toring (no. 12) and task assignment (no. 13). Below, we discuss current theory for each of our behaviour constructs. We also make propositions that can be tested in future research.

1: Role-modelling

The in-depth interviews indicated that role-modelling correlates positively with individual innovative behaviour. This finding is confirmed by current theory. It seems important to provide leadership that stimulates moving into 'uncharted areas'. A manager who is a role model of innovation encourages creative behaviour and the development of ideas, not only by emphasising the importance of innovation in words, but also by setting examples with his own actions (Debackere *et al.,* 1998; De Brentani, 2001). We expect this also applies to knowledge-intensive service firms.

For divergent innovative behaviour, previous findings point to the importance of a leader's creative problem-solving skills. Tierney *et al.* (1999) obtained direct assessments of leaders' creative skills, and found these skills were related to the creative performance of co-workers. Mouly & Sankaran (1999) performed a qualitative study of the factors shaping innovation in a research and development laboratory. They concluded that a leader's creative capacity was a key determinant of co-workers' creative performance. In this context, Krueger (2000) concludes on the basis of literature research that one can benefit from having a manager who behaves innovatively himself. An organization may wish to tangibly and visibly encourage innovators to mentor others.

For the connection with convergent innovative behaviour, empirical evidence is scarce. On the basis of case studies in Danish service firms, Sundbo (1996) concluded that working with a manager of the 'entrepreneurial type' strengthens entrepreneurial activities of co-workers. An extraordinary large innovation activity was found when such a leader was present. The benefits of having a leader who behaves innovative was maximized when a co-worker was given the opportunity to work with such a leader.
On the basis of the in-depth interviews and current literature, we propose that innovative behaviour of a leader has a positive effect on the behaviour of co-workers in both stages of the NSD process. Thus:
- Proposition 1a: Innovative behaviour of the leader is positively related to divergent innovative behaviour of co-workers.
- Proposition 1b: Innovative behaviour of the leader is positively related to convergent innovative behaviour of co-workers.

2: Intellectual stimulation

An intellectually stimulating leader expects his subordinates to evaluate current practices, come up with ideas, and stimulate rethinking of old ways of doing things. Leaders who encourage intellectual engagement may do much to encourage innovative behaviour. Leader expectations and their influence on innovative behaviour was first mentioned by Livingston (1969). Due to the so-called 'Pygmalion effect', which is the change in an individual's behaviour due to the expectations for that behaviour he/she received from another, innovative behaviour can be stimulated. Scott & Bruce (1994) were the first to provide empirical evidence for this relationship in a study in research and development firms. They hypothesized that when managers expect co-workers to be innovative, co-workers will perceive their leader as encouraging and facilitating their innovative efforts.

In the literature we have found some support for a positive effect of intellectual stimulation on divergent innovative behaviour. It seems to stimulate reflection among co-

workers (Schippers, 2003), which can be defined as evaluating and discussing current practices and learning from them. Research by De Dreu (2002) shows that reflection moderates the relationship between minority dissent and innovativeness. High levels of minority dissent led to more innovations, but only when there was a high level of reflection among co-workers. Besides, intellectual stimulation can be seen as a way to communicate that creative behaviour is desired and will not be punished (Mumford, 2000). This advice may seem straightforward, but in a world of ever-increasing production pressure, it may prove difficult to follow. In his study of R&D project teams, Keller (1992) has obtained strong support for the contribution of intellectual stimulation on divergent behaviour. Andriopoulos & Lowe (2000), in a study of innovation in three knowledge-intensive firms, obtained a similar finding. Stimulating that co-workers acquire external information also appears critical. Evidence compiled by Ancona & Caldwell (1992), Dougherty & Hardy (1996) and McGourty et al. (1996) all point to the need for ongoing communication with external sources.

On the basis of our in-depth interviews and literature research, we propose that intellectual stimulation fortifies co-workers' divergent innovative behaviour. For convergent innovative behaviour we found no evidence. Thus:

- Proposition 2:   Intellectual stimulation is positively related to divergent innovative behaviour.

3: Stimulating knowledge diffusion

A leader can stimulate the dissemination of information among his subordinates. It is believed that innovation success partly depends on the availability of relevant information (Qin & Simon, 1990; Zuckerman & Cole, 1994). Scott & Bruce (1998) discuss the effects of 'highly developed relations' between leaders and co-workers on innovative behaviour. This includes expanded information exchange. In their empirical research among R&D professionals, it proved to be a predictor of enhanced individual innovation. When one is aware of others' work and projects, there are simply more opportunities to come up with ideas for improvement.

We suspect that in particular divergent innovative behaviour of co-workers will benefit from knowledge diffusion. Mumford et al. (2002) propose that part of the idea-generating ability of co-workers depends on being aware of the needs, trends and problems that their colleagues face. By knowing such things, co-workers are provided with a resource for new ideas. In this context, Damanpour (1991) points to the positive effect of internal communication. Good internal communication facilitates the dissemination of ideas, contributing to a culture in which ideas are more likely to be translated into action. Krueger (2000) discusses that information flows, both by informal and formal structures, are a plus point to enhance opportunity exploration. Norrgren & Schaller (1999) propose that it is leader behaviour in terms of improving interaction that facilitates incremental innovation. Efforts should be made to keep co-workers up to date on advances in their field.

On the basis of the above, we propose a positive relationship with divergent innovative behaviour. Again, we had no occasion to suggest a positive relationship with convergent innovative behaviour.

- Proposition 3:   Stimulating knowledge diffusion is positively related to divergent innovative behaviour.

4: Providing vision

A vision provides direction for the activities that an organization will develop in the future. In leadership research, the effects of providing a vision have recently been discussed by many theorists (e.g., Conger, 1989; Den Hartog & Verburg, 1997; Shamir et

al., 1993; Den Hartog, 2003). By formulating a vision, a leader interprets reality for co-workers and gives meaning to events. Ideally, the entrepreneur envisions a future for the service firm that rests on innovation. This strongly communicates the overall goal of innovation to co-workers (Amabile, 1988; King & Anderson, 2002). In this context, Hoving (2000) empirically investigated the role of inspiring behaviour by a manager. It can be described as the presentation of a vision, which can lead to an enhancement of the self-esteem of co-workers. Eventually, this led to fortified innovative behaviour.

We expect that providing a vision that rests on innovation will stimulate innovative behaviour of co-workers in both stages of the NSD process. In the first stage, a leader's vision can be a key factor to influence innovative individuals (Locke & Kirkpatrick, 1995). According to Krueger (2000), a long-term vision can reward opportunity seeking while a focus on short-term results inadvertently causes setbacks. Empirical evidence demonstrating the effects of vision on divergent behaviour includes a recent study by Sosik *et al.* (1998). They have shown that providing a vision results in enhanced creativity on a computer-based brainstorming task.

For implementation purposes, an innovative vision can serve as a beacon for action (Mumford *et al.,* 2002). For co-workers, the ideas expressed in the vision can act as a compass, guiding them in the daily decisions they make. Empirical work by Hounsell (1992) has shown that the use of a vision results in successful research and development (R&D). Shin (1997) found that leaders in service firms who express a clear vision realized better innovation results.

Finally, we remark that a vision may have a 'dark side' as well. According to Manz *et al.* (1989) and Mumford *et al.* (2002), visioning may serve primarily as a mode of influence flowing from leaders to co-workers (a top-down process). When it serves as a mechanism for facilitating subordinate involvement based on identification with the leader, innovation may be inhibited. In the context of our study, we are interested in 'bottom-up' innovation, so this could imply that in an empirical test visioning appears not to be a relevant leader behaviour. Nonetheless, we propose a positive relationship on both types of innovative behaviour.

- Proposition 4a: Providing an innovative vision is positively related to divergent innovative behaviour.
- Proposition 4b: Providing an innovative vision is positively related to convergent innovative behaviour.

5: Consulting

Consulting has been widely studied and debated as a determinant of innovation success (King & Anderson, 2002). A considerable degree of consensus has emerged about its effects. Drawing heavily on the work of Peters & Waterman (1982) and Kanter (1983), writers stress the need for a participative, democratic style of leadership, which encourages co-workers to be involved in decisions and to feel able to suggest novel ideas without fear of censure. A more recent example is the study of Ruigrok *et al.* (2000). They present a case study which showed that a 'shared leadership' style enhances innovativeness. This enhances people's involvement and motivation to make suggestions and to strive for successful implementation.

When looking at the NSD process, we expect that consulting contributes positively to both stages. The literature survey of Manz *et al.* (1989) suggests that at the start of the innovation process, consulting seems to be worthwhile. The rationale is straightforward; whenever leaders encourage and facilitate participation, idea generation of co-workers

is triggered. In this context, on the basis of empirical research, Janssen *et al.* (1997) conclude that the role of the leader is to allow co-workers as much say in decisions as is practicable.

In the implementation stage, consulting is likely to enhance innovative behaviour as well. Co-workers who have considerable influence on decision-making tend to identify with an idea and perceive it to be 'their' innovation. Various authors have empirically proved this relationship (*e.g.,* West & Wallace, 1991; Burpitt & Bigoness, 1997; Axtell *et al.,* 2000; Pelz, 1967; Stoker *et al.,* 2001). For instance, Stoker *et al.* (2001) showed that a consultative leadership style improves the ultimate effectiveness of R&D teams.

The implementation stage might ask for slightly less consultation than the initiation stage. Implementation sometimes requires that co-workers obey to strict orders (Kanter, 1988). In fact, this could be opposite to the amount of consultation required to stimu-late a flow of ideas. We doubt if this applies to the context of our study, because in knowledge-intensive service firms innovations often have an incremental character, and people's motivation is essential for success. Therefore, we propose:
- Proposition 5a: Consulting is positively related to divergent innovative behaviour.
- Proposition 5b: Consulting is positively related to convergent innovative behaviour.

6: Delegating

Our findings from the interviews indicated a positive effect of delegation on innovative behaviour. This relationship is confirmed by previous research. Service entrepreneurs can stimulate shop-floor innovation by delegating tasks and responsibilities to their subordinates. A positive association between innovativeness and delegating has been found in several empirical studies, such as those by Farris (1973) with research labora-tory teams, West & Wallace (1991) with primary care teams, and Nijhof *et al.* (2002) in a transport firm. Recently, Axtell *et al.* (2000) and Janssen *et al.,* (1997) have provided us with additional evidence in a manufacturing context.

When looking at the NSD process, we expect that delegation will contribute to both divergent and convergent innovative behaviour. Autonomy can be defined as the extent to which followers are given latitude to carry out their tasks without excessive supervi-sion (Basu & Green, 1997). Such freedom is likely to give a boost innovation. Empirical evidence is presented by Spreitzer (1995). He shows that when co-workers experience autonomy, they feel less constrained to explore opportunities and to generate ideas. According to authors like Pelz & Andrews (1966), Souder (1981) and Tierney *et al.* (1999) co-workers will experience the opportunity to engage in unconventional thought and behaviours. By means of delegating, a leader expresses trust and a belief that he regards his co-workers as reliable and competent. It creates an environment that en-courages free-thinking, exchange of information, and the latitude to explore and screen new ways of handling problems.

For convergent innovative behaviour, we expect a positive effect of delegating as well. According to Yukl (2002), an advantage of delegation is greater commitment of co-workers to implement a decision effectively. The primary reason for this commitment is identification with one's own decision and the desire to make it successful. In an em-pirical study among 70 service firms, De Jong & Kemp (2001) have shown that the amount of autonomy that is perceived by co-workers is directly related to their innova-tive efforts. Thus, we propose:
- Proposition 6a: Delegating is positively related to divergent innovative behaviour.
- Proposition 6b: Delegating is positively related to convergent innovative behaviour.

7: Support for innovation

Support can be defined as the psychological and physical assistance provided by the leader (Basu & Green, 1997). In the literature it is confirmed that support is helpful to enhance innovation. An entrepreneur should have a high degree of confidence in his employees, not blaming them for every mistake or wrong decision (West & Savage, 1987; Amabile, 1997; Waldman & Bass, 1991). A leader should understand his co-workers empathetically, showing an intuitive capacity to assume a co-worker's perspective, values, and attitudes (Fodor & Roffe-Steinrotter, 1998; Stahl & Koser, 1978). Tan & Tan (2000) investigated the effects of co-workers having trust in a leader. When a leader wants to do good for his co-workers, aside from egocentric motives, this will increase innovative behaviour. Sonnenburg (1994) and Fairholm (1994) also conclude that when a leader acts friendly and truly attempts to help co-workers in their work, this creates an atmosphere in which innovation can flourish.

Support for innovation has been shown to have a positive effect on both divergent and convergent innovative behaviour. Studies by Pelz & Andrews (1966), Farris (1969), Cummings & Oldham (1997), Carson & Carson (1993) and Oldham & Cummings (1996) found that leader support had positive implications on dependent variables like creativity and idea generation. It promotes co-workers' feelings of self-determination and personal initiative at work. Innovative people generally explore first and ask permission later. The consequence is that they will withdraw an innovative idea when confronted with premature criticism – when ideas are still in an early stage (Mumford, 2000).

In the implementation stage, support for innovation will provide co-workers with a feeling of safety. Does the leader punish co-workers for mistakes being made, or does he provide support to overcome such problems? An empirical study by Basu & Green (1997) showed that co-workers are more likely to deviate from the ordinary, to engage in unconventional behaviour, and to implement innovative ideas only if they are sure that they will not be penalized for it. All in all, we make the following propositions:

- Proposition 7a: Support for innovation is positively related to divergent innovative behaviour.
- Proposition 7b: Support for innovation is positively related to convergent innovative behaviour.

8: Organizing feedback

In the in-depth interviews, organizing feedback was mentioned as another relevant leader behaviour. As soon as a service firm decides to implement a promising idea, a concept for a new service or prototype can be improved by organizing feedback. In general, feedback provide mechanisms for improving co-worker performance, and specific feedback for innovation might be expected to have a similar effect upon innovative behaviour.

Empirical evidence from previous research is still scarce. On the basis of a qualitative research in a Swedish telecom firm, Hellström & Hellström (2002) conclude that the willingness of co-workers to do their best for innovation depends on personal feedback that is given as soon as an idea proposed. Positive, non-slashing feedback is perceived as a source of improvement. It increases the likeliness that an idea will get better, and eventually increases innovation success.

Some others recommend service firms not to refrain from testing new services. They should evaluate new services with clients and use their feedback to further refine a new service concept (Easingwood & Percival, 1990; Burpitt & Bigoness, 1997).

We will test for a positive relationship between organising feedback and convergent innovative behaviour of co-workers. Thus:

- Proposition 8:   Organizing feedback is positively related to convergent innovative behaviour.

9: Recognizing

Yukl (2002) distinguishes three major forms of recognition: praise (oral compliments), awards (for instance, certificates of achievement, private budgets, increased autonomy) and recognition ceremonies (*e.g.,* public speeches). These forms of recognition can all ensure that a co-worker's achievement is acknowledged not only by the leader but also by his colleagues.

To stimulate divergent innovative behaviour, a leader should constantly attempt to recognize innovative individual contributions (Amabile, 1997). Redmond *et al.* (1993) and Vosberg (1998) showed that supervisory behaviour intended to build feelings of self-esteem contributes to creative work. In a case study within a Canadian transport firm, Nijhof *et al.* (2002) conclude that when someone has an innovative idea, it is devastating when he/she has to convince the management of its potential. Janssen (2002) present some more evidence. In a study among 170 co-workers from an energy supplier he concludes that a leader should be responsive by paying attention to innovative ideas and make a fair and open judgement.

To stimulate convergent innovative behaviour, we expect that co-workers will be motivated when their efforts are recognized. For instance, a leader could show his appreciation on a successful new service by a short speech made to all co-workers, a picture of the involved co-workers hung in a prominent place, even by treating cake, etc. Some evidence is provided by Redmond *et al.* (1993). They asked undergraduates to work on a marketing task, developing advertising campaigns for a new product (3-D TV), under conditions where confederate leaders either did, or did not, recognize innovative practices by stressing an undergraduate's competence. It was found that recognition leads to higher-quality campaigns and a more effective application of creative problem-solving skills. We propose:

- Proposition 9a: Recognizing is positively related to divergent innovative behaviour.
- Proposition 9b: Recognizing is positively related to convergent innovative behaviour.

10: Rewarding

Previous research has revealed that financial rewards are not the best incentive to stimulate innovative behaviour. This certainly seems to apply to the initiation stage of the NSD process. In her important contributions to the field of creativity research, Amabile (1983; 1988; 1997) has shown that so-called intrinsic motivation is far more important than extrinsic rewards. People are intrinsically motivated by opportunities to do particular tasks (which are interesting or personally challenging), increased autonomy in selection of work assignments, and enhanced opportunities for professional growth. Amabile concludes that organizations should intrinsically reward divergent innovative behaviour. They should avoid using money to 'bribe' people to come up with innovative ideas.

In the implementation stage, financial rewards are slightly more likely to have an effect on innovative behaviour. Some researchers have examined the influence of concrete tangible rewards (such as bonuses and pay increases) on co-workers' motivation to in-

novate. They provide evidence that material rewards can be supportive, but they should be in line with other leader behaviours like providing support and recognition (Baer, 1997; Eisenberger & Cameron, 1996). Suitable reward criteria include providing extras for co-workers who have successfully implemented ideas. On the basis of the in-depth interviews and current literature, we propose that:

- Proposition 10: Rewarding is positively related to convergent innovative behaviour.

11: Providing resources

It is obvious that providing resources is a necessary condition for innovation. Co-workers need access to appropriate resources, including funds, materials and facilities (Amabile, 1997). Leaders could assign budgets to co-workers who are involved in the development process, and provide them with lower targets so that time remains for implementation activities. Some other leader practices that could be applied include implementing flexible work schedules and providing standards for time management that account for new service development activities (Redmond *et al.,* 1993). However, as Nohari & Gulati (1996) point out, unlimited resources may not always prove beneficial since resources contribute to innovative behaviour only up to a point.

On the basis of our interviews, we propose a positive connection between resources and convergent innovative behaviour. Recent empirical support is provided in a study by Ekvall & Ryhammer (1999). They examined a variety of organizational variables that might influence innovation among scholars working at a Swedish university, and found that the availability of resources was most strongly related to innovative results. On the basis of a case study in a Canadian transport firm, Nijhof *et al.* (2002) even recommend to exempt co-workers from their ordinary tasks in order to concentrate all their efforts on the development and implementation of their ideas. When employees are assigned to work on NSD only part-time, they experience working on a project as something additional to their daily activities, which often results in longer development times because priorities are with their daily work. All in all, we propose:

- Proposition 11: Providing resources is positively related to convergent innovative behaviour.

12: Monitoring

Previous researchers generally agree that excessive monitoring impedes innovation. People will be discouraged to take risks when they are extensively monitored on efficiency and effectiveness (see, for instance, Waldman & Bass, 1991). We expect negative consequences for both divergent and convergent innovative behaviour.

In the first stage of the NSD process, monitoring may cause that co-workers feel insecure and unsafe at work - that their jobs are threatened if they make mistakes. In this context, they may avoid risk taking and experimentation, which is fundamental to divergent innovative behaviour. Rather, they will stick to tried and tested routines, ensuring that the targets which they are monitored on will be realized (Oldham & Cummings, 1996; Hitt *et al.,* 1994; Hitt *et al.,* 1996; Andriopoulos, 2001). When supervisors are intensely monitoring, and generally pressure co-workers to think, feel, or behave in certain pre-defined ways, this can undermine motivation and shift people's focus away from work activities and toward external concerns (Deci & Ryan, 1987). In this context, Stahl & Koser (1978) empirically showed a negative relation between employee reports of supervisory control and objective indicators of creative output.

In the implementation stage, excessive monitoring is expected to have fatal consequences as well. A reasonable level of discretion is needed for people working on innovative tasks (Amabile, 1983). Developing new services is inherently a risky enterprise, where the rewards of investments will not appear for some time, if they ever appear at all. Errors are unavoidable. Focusing only on error prevention (through monitoring) is likely to lead to low levels of risk taking, exploration and innovation (see also Edmondson, 1999; Kirkman & Den Hartog, 2003). On the other hand, Kanter (1988) suggests that monitoring is not always a bad thing. Some degree of monitoring can be beneficial to guide the development process and prevent a waste of resources. However, in the context of small knowledge-intensive services we expect that the risk of too little monitoring is not present. Due to its smallness, keeping track of progress will be relatively easy for an owner/manager, but the risk of too excessive monitoring will be much higher. Therefore, we propose:

- Proposition 12a: Excessive monitoring is negatively related to divergent innovative behaviour.
- Proposition 12b: Excessive monitoring is negatively related to convergent innovative behaviour.

13: Task assignment

According to the literature, there is no doubt that task assignment can influence divergent innovative behaviour. We already briefly discussed the work of Theresa Amabile (1983; 1988; 1997), who has shown that tasks which are intrinsically motivating serve as a trigger for creativity. Lubart (2000) also discusses that task characteristics are related to idea generation. Traditionally, management theorists have argue that work should be directed with specific, concrete tasks in mind. An undue reliance on predefined tasks, however, may limit innovative behaviour.

Task assignment that encourages exposure to a wide range of projects and people will stimulate idea generation (Basadur & Head, 2001; Farris, 1969; Pelz & Andrews, 1966). Thus, tasks should be defined in a broad and overlapping way in order to improve such behaviour (Amabile, 1998). A relevant practice is task rotation, which means that tasks and jobs are frequently exchanged among co-workers. Such practices broaden the co-workers' point of view, because they pursue a number of different work approaches (Tesluk et al., 1997). It makes co-workers familiar with each other's work and problems (Prakken, 1994). Work experience in different job areas enhances creative potential, since the broad experience gained by co-workers will enable them more often to come up with ideas for improvement in services, delivery processes, etc. (Atuahene-Gima, 1995; Hatcher et al., 1989; Axtell et al., 2000). We propose that:

- Proposition 13:   A challenging task assignment is positively related to divergent innovative behaviour.

Dimensions of innovation-enhancing leadership

It must be noted that the leader behaviours discussed above are likely to be correlated. For instance, co-workers' perceptions of low monitoring and high delegating can be expected to go together. Likewise, praise (recognizing) is often given along with tangible rewards, and it will be difficult to separate their effects on innovative behaviour of co-workers. Current research on leadership and innovation often stresses the importance of particular leadership styles, such as participative leadership (e.g., Kanter, 1983), transformational leadership (e.g., Janssen, 2002) or high-quality relationships (e.g., Scott & Bruce, 1994). These leadership styles are actually mixtures of some of the behaviours we have discussed above.

We hypothesize that innovation-enhancing leader behaviour will be related to a limited number of dimensions. In future research, an empirical test will provide us with insights on meaningful dimensions of leader behaviour (see also chapter 6). Our first thoughts on what these dimensions look like are based on the leadership styles that are distinguished in current leadership research. Leader behaviour is sometimes divided into three broad categories, namely relations-, task- and change-oriented behaviour (*e.g.,* Ekvall & Arvonen, 1991; 1994; Yukl, 2002):

– Relationship-oriented leader behaviour is mostly concerned with ensuring good working relationships, increasing cooperation, supporting, developing, and mentoring co-workers.
– Task-oriented behaviour focuses on planning, task accomplishment, performance monitoring, the effective utilization of resources and maintaining reliable operations.
– Change-oriented behaviour is concerned with strategy development and implementation, adapting to the environment, presenting an exciting picture of the future and increasing flexibility and innovation.

This three-dimensional taxonomy is an extension of the traditional distinction between task- and relations-oriented leadership. This distinction has often been discussed in the style approach of leadership (Yukl, 2002; see also section 4.3). Although it is not specifically developed to classify innovation-enhancing leader behaviour, it could prove to be a useful and parsimonious way to group our behaviour constructs into general dimensions. The extra dimension of change-oriented behaviour focuses on promoting change, but the task- and relationship-oriented dimensions could also entail some of our behaviour constructs.

For example, the change-oriented dimension could enclose role-modelling, intellectual stimulation, providing vision, support for innovation, organizing feedback, recognizing, rewarding and providing resources. The relations-oriented dimension might entail stimulating knowledge diffusion, consulting and delegating. Finally, a task-oriented dimension might consist of monitoring and task assignment. Our future research will provide a decisive answer on the dimensions of innovation-enhancing leader behaviour. For now, we propose:

- Proposition 14:   The innovation-enhancing leader behaviours can be classified in a relationship-, a task- and a change-oriented dimension.
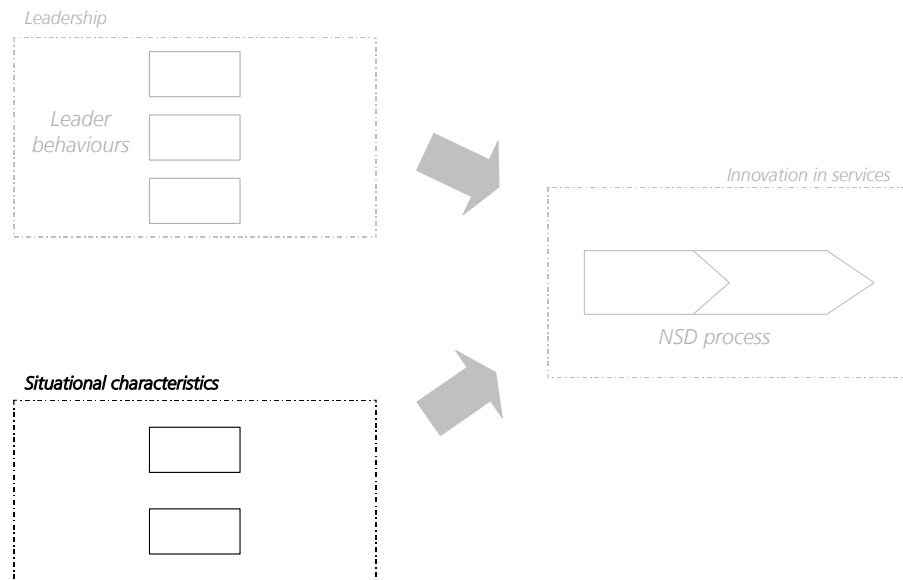
6 Situational characteristics

6.1 Introduction

Innovative behaviour of co-workers depends on other characteristics than leadership only. Some theorists have questioned whether other factors than leadership might not 'substitute' for the effects of leadership (*e.g.,* Kerr, 1977). Kerr and Jermier (1978) developed a model to identify aspects of the situation that reduce the importance of leadership. The presence of certain situational characteristics can affect innovative behaviour (figure 9) or might even enhance or diminish the effects of an innovation-enhancing leadership style.

figure 9   Content of this chapter

In section 6.2, we present an overview of situational characteristics that may influence individual innovative behaviour of co-workers in knowledge-intensive service firms. We use it to explain which constructs will be digested as control variables in our study. Section 6.3 elaborates on the role of firm climate. This may be an important situational characteristic for innovative behaviour. We discuss what firm climate is about and elaborate on its connection to both stages of the NSD process.

Having frequent external contacts (*e.g.,* with clients and competitors) seems relevant for an individual's innovative behaviour as well. Although external contacts may be enhanced by specific leadership behaviours, the nature of the work in knowledge-intensive service firms implies that some co-workers have more frequent external contacts than others. This will be discussed in section 6.4. Again, we give some propositions that we intend to test in the near future.

6.2   Overview of situational characteristics

Many researchers have investigated the determinants of service firms' innovation success on an individual, group, organizational or socio-cultural level[1] (*e.g.,* De Brentani, 2001; Atuahene-Gima, 1996; Johne & Storey, 1998; Andriopoulos, 2001; De Jong *et al.,* 2002; De Jong & Kemp, 2001; Ong *et al.,* in press). In table 7 we present a broad overview of characteristics that may affect innovation in knowledge-intensive services. It consists of nine categories: (1) Co-workers' personality, (2) strategy, (3) climate, (4) structure, (5) resources, (6) external contacts, (7) firm characteristics, (8) market characteristics and (9) government and policy. For each category, some examples of success factors are revealed.

table 7   Characteristics that may affect innovation in knowledge-intensive services

Category	Examples of success factors
Co-workers' personality	Tolerance of uncertainty and ambiguity, self-confidence, independence, flexibility, expertise, intrinsic task motivation, above average intelligence (*e.g.,* Nicholson & West, 1988; Amabile, 1997; Amabile, 1988; Rushton & West, 1988; Gough, 1979; Barron & Harrington, 1981; Janssen & Buil, 1998; Scott & Bruce, 1994; Mumford *et al.,* 2002)
Strategy	Business vision (*e.g.,* Drew, 1995; Thwaites, 1992); Presence of innovation objectives (*e.g.,* Johne & Storey, 1998; Easingwood, 1990; Martins & Terblanche, 2003)
Climate	Supportive, open firm climate (*e.g.,* De Brentani, 2001; Johne & Storey, 1998); Internal communication (*e.g.,* Oden, 1997; Vermeulen, 2001; Vermeulen & Dankbaar, 2002)
Structure	Few rules and procedures (*e.g.,* Fröhle *et al.,* 2000; Edvardsson *et al.,* 1995); Decentralisation (*e.g.,* Martins & Terblanche, 2003); Few management layers (*e.g.,* Oden, 1997); Challenging task descriptions (*e.g.,* Amabile, 1998; Atuahene-Gima, 1995); Reward system that accounts for innovation (*e.g.,* Johne & Storey, 1998; Scheuing & Johnson, 1989); Multifunctional teams (Fröhle *et al.,* 2000; Ancona & Caldwell, 1992; Gallouj & Weinstein, 1997; Pisano, 1997)
Resources	Financial resources (*e.g.,* Dougerty & Hardy, 1996); Time for experiments (*e.g.,* Brand, 1998), Training and education (Tidd *et al.,* 2001); Use of information technology (*e.g.,* Grint *et al.,* 1996; Wang, 1997; Dover, 1987)
External contacts	Interaction with clients (*e.g.,* Martin & Horne, 1995; Kline & Rosenberg, 1986; Berry & Hensal, 1973); Interaction with other parties like competitors and suppliers (*e.g.,* Scheuing & Johnson, 1989; Easingwood, 1986; Hooley & Mann, 1988; Teixeira & Ziskin, 1993); Co-operation with other parties (*e.g.,* Hulshof & Snel, 1998; Klein Woolthuis, 1999)
Firm characteristics	Complexity of service design/business processes (*e.g.,* MacMillan *et al.,* 1985); Firm size (*e.g.,* Hipp *et al.,* 2000)

[1] See also section 2.4.

Market characteristics	Non-price competition (*e.g.,* Arvantitis & Hollenstein, 1994; Drew, 1995); Competitiveness (*e.g.,* Martins & Terblanche, 2003); Demand-pull (*e.g.,* Storey & Easingwood, 1995; Brouwer, 1997)
Government and policy	Knowledge infrastructure (*e.g.,* Beije, 1989; Baldwin *et al.,* 1998); Appropriability/patents (*e.g.,* Sundbo 1997; Andersen & Howells, 2000; Berentsen, 1999); Taxes and subsidies (*e.g.,* OECD, 2000)

On the basis of current insights from the literature (see below) and the results of our in-depth interviews, climate and external contacts seemed to be most relevant for the context of our study. We shall include them in our model on leadership and innovative behaviour:
– Climate could be a characteristic that substitutes or diminishes the effect of innovation-enhancing leadership behaviours. Firms that provide a supportive climate for innovation tend to reap greater benefits from co-workers (Bharadwaj & Menon, 2000). In section 6.3, we elaborate on the proposed role of climate.
– Having external contacts seems to moderate or substitute for innovation-enhancing leader behaviours as well. The nature of the work in knowledge-intensive services implies that some co-workers have more frequent external contacts than others, particularly those who are involved in sales and service delivery. In fact, in knowledge-intensive services innovations are often developed to meet client wishes (Den Hertog, 2000). In section 6.4, we further discuss the role of external contacts.

Some people seem simply 'born to be innovative' while others are not. Literally hundreds of papers have been published about personality characteristics associated with constructs like innovative behaviour and creativity (*e.g.,*). These studies have shown there is a reasonable consensus that some personality characteristics tend to be associated with relatively high levels of innovative behaviour. In our study, we regard the innate part of innovative behaviour as given.

The other categories are not investigated. In the context of medium-sized knowledge-intensive services, we regard personality characteristics and external conditions as stable and given (see also section 2.4). The categories of strategy, structure and resources seem to be covered pretty well by some of our leader behaviours, for instance providing vision, task assignment, rewarding and providing resources.

6.3   Climate

What is climate?
Climate is at the heart of an organization's informal structure. It implies a system of informal rules that spells out how people are to behave (Anderson & West, 1993). Knowing what is expected of them, employees will waste little time deciding how to act in a given situation. People generally tend to conform to norms and values, and comply with the socially desired group behaviour (*e.g.,* Asch, 1956). This is evidenced by the following examples of definitions:
– 'Climate is the shared perception of the way things are around here. More precisely, climate is shared perceptions of organizational policies, practices, and procedures' (Reichers & Schneider, 1990).
– 'Climate is the feelings, attitudes and behavioural tendencies which characterize organizational life' (Nystrom, 1990).

The more strongly a co-worker is attracted to a group and wishes to remain part of it, the more likely he is to conform to the majority view within the group. A deviant person will be subject to strong persuasive pressures, and eventually if he does not conform, it leads to exclusion from the group. Thus, groups can exert powerful pressures on co-workers to adjust their behaviour.

Anderson & West (1998) stress that a co-worker's perception of climate is related to their 'proximal work group'. This is the permanent or semi-permanent team of co-workers to which one is assigned, whom a co-worker identifies with, and whom he/she interacts with regularly in order to perform work-related tasks. A co-worker is most likely to identify closely with his proximal work group. In the smallest knowledge-intensive service firms proximal work groups will coincide with the whole staff, but in larger one (with about 80 up to 100 employees) this will not apply.

Dimensions of an innovative climate
Climate is a situational characteristic that can easily affect innovative behaviour of co-workers. Innovation researchers like Burningham & West (1995), West & Anderson (1996), Burpitt & Bigoness (1997), Nijhof *et al.* (2002) and Ahmed (1998) have recently paid attention to co-workers' climate perceptions. Organizations with an innovative work climate maintain better innovation results. A co-worker's perception of climate affects the extent to which creative solutions are encouraged, supported and implemented. It encourages innovative ways of representing problems and finding solutions (Martins & Terblanche, 2003).

Anderson & West (1998) developed an integral model of climate for innovation. They distinguish a number of relevant factors to unravel climate perceptions, such as
– Participative safety. This means that co-workers should perceive an interpersonally non-threatening atmosphere, where one is not punished for innovative behaviour. Others authors have presented similar constructs. For instance, Moscovici & Doise (1995) and Nemeth & Staw (1989) stress that tolerance of minority and deviant views within organizations is important if innovation is to be facilitated and encouraged, because different views stimulate creative thinking. Baer & Frese (2003) have performed a study in 47 mid-sized German firms in a wide range of sectors. They conclude that whenever a firm's climate stresses psychological safety, the extent to which incremental process innovations are successful is affected positively.
– Support for innovation. Ideally, the proximal work group should accept a co-worker as having 'unconditional worth'. Support should be provided for co-workers to function independently in the pursuit of new ideas. This implies articulated and enacted support of colleagues for attempts to introduce new and improved ways of doing things. Articulated support may be found in personnel documents, policy statements, or conveyed by word of mouth. A necessary condition for innovation may be enacted support, whereby the proximal work group provides tangibles (like time and money). Again, other researchers have come up with similar constructs (*e.g.,* Siegel & Kaemmerer, 1978; Foder & Roffe-Steinrotter, 1998).
– Reflexivity. Apart from safety and support, reflexivity may be another dimension of an innovative climate. Reflexivity may be defined as 'the extent to which group members reflect upon, and communicate about the group's objectives, strategies and processes, and adapt them to current or anticipated circumstances (West, 1996). Reflection consists of evaluating, learning and discussing current practices. Anderson & West (1998) mention it as 'task orientation', implying that co-workers evaluate current practices and search for improvements. There is considerable evidence that reflection during the execution of a task results in better outcomes of

work processes (*e.g.,* Schippers, 2003). This may apply to innovative tasks as well. In this context, De Dreu (2002) shows that reflection moderates the relationship between minority dissent and innovativeness.

We stress that not all researchers support the notion that climate correlates with innovative behaviour. Some of them conclude the relationship is rather weak (*e.g.,* Klein & Sorra, 1996; Scott & Bruce, 1994). This makes it even more interesting to include climate in our model of innovative behaviour. Below we discuss our expectations on the effect of climate on divergent and convergent innovative behaviour.

Connection with innovative behaviour

The in-depth interviews with leaders in knowledge-intensive service firms (section 5.2) revealed climate as a potential driver of divergent innovative behaviour. It seems that climate can discourage or reinforce innovative actions. This is evidenced by the following quotes:
– 'It is not only the manager who is important. I am not the first one who gets to hear about new ideas. Normally you talk about it to your colleagues first. When they reject it, I will probably never hear it all.'
– 'I used to work in a research firm where people did not like new ideas. Everything new that did not fit with their current insights was not welcome. They made you feel ridiculous when you were creative. It discouraged me to do any proposals.'
– 'If none of your colleagues seems to like change, you will not even dare to come up with an idea.'

This finding is in line with the innovation literature. Rogers (1954) was among the first to suggest that the cohesiveness of a work group determines the degree to which individuals believe that they can introduce ideas without personal censure. In this context, Albrecht & Hall (1991; 1992) observed that suggesting new ideas is perceived to be risky because it represents change to an established order. New ideas invite evaluation of other organizational members, and it is difficult to separate new ideas from the person offering them. To propose innovative ideas is to put oneself at risk. Research has generally demonstrated that innovative behaviour increases when co-workers feel that new ideas are encouraged and expected, and when their ideas can expressed openly without being directly punished for mistakes or criticized (*e.g.,* Axtell *et al.,* 2000).

In the interviews, climate was also mentioned in relation with convergent innovative behaviour. Some examples include:
– 'It is extremely valuable to people when their colleagues appreciate what they are doing. I bet this applies to implementing change as well.'
– ''Some co-workers don't like any change, especially the elder ones. As a leader, you should try to create a climate in which innovation can flourish. People who put effort in realizing improvement must be rewarded. I take forceful action against those who always react negatively to ideas and don't contribute to making change. I hate people who can only slash ideas away.'
– When the entrepreneur does not seem to like innovative behaviour, a climate emerges where nothing will be changed.'

Literature suggests that implementing innovative services requires a corporate environment that encourages and supports 'stepping out' beyond the norm (De Brentani, 2001). On the basis of research by Axtell *et al.* (2000) we expect that climate is also important for innovative behaviour in the implementation stage. Since innovation is a social process, the implementation of ideas relies more heavily on the involvement of oth-

ers. For example, while a co-worker can be creative and generate ideas on his own, implementation typically depends upon the approval, support and resources of others. We expect this also applies to many bottom-up, incremental innovations. Unless an innovative person is essentially independent, incremental changes will usually affect others, and will therefore be subject to others' approval.

In future research we shall empirically test the effect of a supportive climate for innovation. On the basis of our interviews and literature research, we propose that:
- Proposition 15a: A climate for innovation is positively related to divergent innovative behaviour.
- Proposition 15b: A climate for innovation is positively related to convergent innovative behaviour.

Connection with leadership behaviour

There is no doubt that managers' values and beliefs can have a significant influence on a firm's climate. A number of authors have stressed that leader behaviour is a prime determinant of climate perceptions (*e.g.,* Kozlowski & Doherty, 1989; Scott & Bruce, 1994; Martins & Terblanche, 2003). A leader can help to create a context in which co-workers are more comfortable suggesting and promoting innovative ideas. Referring to our overview in chapter 5, several leader behaviours are likely to affect the climate perceptions of co-workers. For instance, leaders who themselves feel excited, energetic, and enthusiastic for innovation (role-modelling) have been shown to be more likely to positively energize their co-workers (George, 1996). A study by Den Hartog *et al.* (1996) linked transformational leadership to an innovative climate in the organization. This study illustrated that leader behaviours such as providing feedback and support, and developing an engaging vision of the future, do not only directly stimulate employee innovativeness and creative performance, but may also affect such performance indirectly, as they help create a climate that is open to change, fosters risk taking, and encourages experimentation. As mentioned above, Schippers (2003) showed that inspirational leadership seems to be positively related to reflexivity. In a study by Frischer (1993) it was found that delegating and consulting helped to create an innovative climate in which co-workers became loyal to the organization. Finally, Mumford *et al.* (2002) discuss a number of potentially useful tactics for leaders to change climate perceptions, such as the recognition by telling stories about past innovative accomplishments.

On the other hand, we can imagine that climate may affect leader behaviours as well. A climate strongly encouraging innovation may trigger a leader to behave like that as well. Thus, in our future empirical test, we expect a correlation between innovation-enhancing leadership behaviour and climate perceptions.
- Proposition 16: A climate for innovation correlates with innovation-enhancing leadership behaviour.

6.4   External contacts

Something typical for knowledge-intensive service firms

Maintaining external contacts is inevitable to adequately produce a service and be informed about new trends and developments (Kline & Rosenberg, 1986). Examples of external contacts include:
– Contacts with customers
– Contacts with parties like suppliers and competitors
– Attending conferences and fairs
– Training and education
– Being involved in external co-operation projects.

Most knowledge-intensive service firms maintain frequent contacts with the 'outside world'. Contact with customers provide them with the opportunity to collect feedback on their current service offerings (Davison *et al.,* 1989). Due to simultaneity knowledge-intensive services are often produced in interaction with customers (Johne & Storey, 1998). For instance, in consultancy firms the service (an advice or recommendation) is often produced in co-operation with a client. Direct interaction with customers is also found in sectors like accountancy, R&D-services, engineering and advertising agencies. Moreover, continuity depends directly on the knowledge and skills of co-workers (Den Hertog, 2000; Bilderbeek *et al.,* 1998). Co-workers are expected to be up-to-date with trends and developments in their field of work. They do this by attending conferences fairs, training and education.

The nature of working in knowledge-intensive services implies that some co-workers have more frequent contacts with the 'outside world' than others. This applies particularly to sales people and those who actually deliver a service. In other functions (such a administrative jobs) external contacts are less common.

Connection with innovative behaviour

We expect that co-workers with frequent external contacts will have better opportunities to behave innovatively than co-workers with no or only few external contacts. A lack of external contacts may have the opposite effect. It implies less natural occasions for opportunity exploration. A famous example from a manufacturing context is the case of typewriter manufacturers. Due to a lack of external focus, they failed to take account of changes in computer technology which led to the development of word processors (Morgan, 1986).

Although some leader behaviours can stimulate that co-workers have external contacts (*e.g.,* intellectual stimulation, organizing feedback), the in-depth interviews revealed that some co-workers have more frequent external contacts by default. Our interview participants indicated that this strongly affects innovative behaviour. Some relevant quotes include:
– 'My salespeople are the ones who come up with innovative ideas most often. They have daily contacts with our customers and are the first to hear about their new needs.'
– 'Actually, I am the one who is most innovative. But you cannot compare me with my employees. I have by far the largest network, so I am the first to hear about new trends and developments.'
– 'Having frequent contact with co-workers from other accountancy firms is handy. Most of my younger people are still doing a part-time education for accountants. They have frequent contacts with the Accountancy Society. It is a good thing to meet other accountants and see how they do their work. I notice that it sparks them with new ideas.'

Current literature indicates that having frequent external contacts paves the way for opportunity exploration and the generation of ideas (*e.g.,* Pelz & Andrews, 1966; Tushman & Nadler, 1986; Kline & Rosenberg, 1986; De Brentani, 2001; Martin & Horne, 1995). Co-workers who maintain intensive contacts with customers will pick up information about customers' experiences with their services, using this to improve themselves. Such contacts can directly cause a person to make adjustments in a current service offering. For instance, a client may tempt a representative from a training firm to offer a particular workshop. Another example includes contacts with competitors.

They have been identified as an important source of ideas for innovations as well (*e.g.,* Easingwood, 1986; Hooley & Mann, 1988; Scheuing & Johnson, 1989).

The in-depth interviews also provided us with some evidence on a connection with convergent innovative behaviour. It is believed that co-workers with 'natural' external contacts have better chances on successful implementation of new services, because these they can better ascertain customers' needs. Some quotes:
– 'Those who maintain our contacts with customers are the ones who are most successful in developing new services. That is because they can judge best if a customer is going to like something new.'
– 'Being able to discuss and testing with customers is very worthwhile. We can test a new software program over and over again, but a customer will always find new points for improvement.'

Previous research on a connection with convergent innovative behaviour is still scarce. It is widely recognized that customer feedback must be used to improve an innovative idea (*e.g.,* Easingwood & Percival, 1990; Burpitt & Bigoness, 1997), but the effect of having more frequent external contacts as such has not been investigated as far as we know.
On the basis of the above, we propose that:
- Proposition 17a: Having external contacts is positively related to divergent innovative behaviour.
- Proposition 17b: Having external contacts is positively related to convergent innovative behaviour.

Connection with leadership behaviour
Having external contacts could very well be stimulated by particular leader behaviours. Referring to our overview in chapter 5, we remind that behaviour constructs like intellectual stimulation and organizing feedback probably enhance having external contacts. Leaders can tease their subordinates to explore opportunities or discuss innovative ideas with parties from the 'outside world'.
External contacts may also trigger innovation-enhancing leadership. As discussed above, the nature of working in knowledge-intensive services implies that some co-workers (from sales and service delivery) have a considerable amount of external contacts by default. To those co-workers, leaders might stress the importance of innovative behaviour in their daily work behaviour, because they are aware it will improve business performance. In our future empirical test, we expect a correlation between both types of behaviour.
- Proposition 18:   Frequent external contacts of co-workers correlates with innovation-enhancing leadership behaviour.

7 Conclusions

7.1 Introduction

This study aimed to find out what leader behaviours may enhance the innovative behaviour of co-workers in knowledge-intensive service firms. Although theorists frequently mention leadership as an important driver of innovation, this relationship has not been explored systematically yet. We have investigated what innovation in knowledge-intensive services is about, what role co-workers play, what leader behaviours seem to enhance their innovative behaviour, and what situational characteristics may be most relevant. In section 7.2 we provide an overview of our findings and highlight the implications for leaders. Of course, our findings are based on literature and interviews only. The forthcoming year we will execute a quantitative survey to find empirical evidence for our preliminary expectations. In section 7.3 we will have a first glance on this research.

7.2 Overview and implications

Referring to our research questions (see section 1.2), we shall present an overview of our findings and its implications for leaders/managers. We shall subsequently discuss:
A.   innovation in knowledge-intensive services
B.   the role of co-workers in the new service development (NSD) process
C.   the nature of leadership
D.   innovation-enhancing leader behaviours
E.   situational characteristics.

Innovation in knowledge-intensive service firms

An innovation as 'something new' to the social setting within which it is introduced. An idea is a necessary condition for an innovation. Innovations are always aimed at producing some kind of benefit and they are restricted to *intentional* attempts to derive benefits from change. Thus, routine changes do not qualify as innovations. Finally, innovations have an application component, so just developing something new cannot be regarded to be an innovation unless it is used (King & Anderson, 2002).

Knowledge-intensive services include sectors like accounting and bookkeeping, R&D services, engineering, computing and management consultancy. Knowledge-intensive services are usually:
–   intangible. Although tangible elements may accompany service delivery (*e.g.,* installation disks for new software packages), they usually cannot be seen or touched.
–   interactively produced and consumed. Knowledge-intensive services are often produced and delivered in interaction with customers.
–   heterogeneous. Various deliveries of a particular service differ substantially to meet the personal wishes of clients.

Due to their intangible, interactive and heterogeneous nature, the traditional distinction between product and process innovations (which stems from a manufacturing context) does not apply. Innovation in knowledge-intensive service is often related to changes in both dimensions at once. It can include new service concepts, client interfaces, delivery systems and technological options.

An innovation can be viewed in terms of the degree of novelty, ranging from a radical, totally new innovation to an incremental innovation involving minor adaptations/adjustments that are of an evolutionary nature. In most research it is radical innovation that captures the imagination, but this kind of innovation is relatively scarce in knowledge-intensive services. Due to frequent contacts with customers the quality and nature of knowledge-intensive services alters continuously. Innovation is generally not organized in separate R&D-departments, instead, shop floor employees are (implicitly) responsible for initiating and implementing minor improvements in their daily work. Incremental innovation will be the prevailing type. Although this type of innovation often seems invisible, it often has a most dramatic cumulative effect on competitiveness, customer satisfaction and business performance.

Role of co-workers in the new service development (NSD) process
Writers have proposed numerous models to describe the innovation process. We have used Zaltman *et al.*'s (1973) model to describe the NSD process for knowledge-intensive services. It distinguishes between two stages: initiation and implementation. This model enables us to account for the fact that effective leader behaviours may differ between both stages.

In knowledge-intensive services, competitive advantage is rooted in the knowledge and skills of co-workers. Realizing incremental innovation is preceded by their innovative behaviour. Innovative behaviour can be defined as all individual actions directed at the generation, introduction and application of beneficial novelty at any organizational level (West & Farr, 1989). Both stages of the NSD process require different behaviours. The initiation stage calls for what we have labelled as *divergent* innovative behaviour. To initiate bottom-up, incremental innovations, service workers should first explore opportunities and generate ideas.

The implementation stage asks for so-called *convergent* innovative behaviour. To development and implement innovations, co-workers should have a result-oriented attitude. Practices of co-workers include championing and application. A champion is someone in an (mostly) informal role that pushes a new service beyond road blocks within the organization. He occupies himself with persuading opponents and mobilizing resources. Application is related to the behaviours of co-workers aimed at developing, testing and commercializing a new service.

Nature of leadership
Leadership can be an important determinant of individual innovative behaviour, especially in small firms. Current definitions of leadership reflect the assumption that it involves a process whereby intentional influence is exerted by a person over other people to guide, structure and facilitate activities and relationships in a group or organization. In our context, leadership is related to the behaviours of leaders that influence co-workers to behave innovatively.

When studying leadership, one could focus on various aspects, including leader traits (*e.g.,* physics, abilities, personality), behaviours (*e.g.,* task-oriented, relationship-oriented, participative behaviour) and the influence of situational characteristics (*e.g.,* market conditions). We have limited ourselves to factors that can be influenced by leaders themselves. In the context of small knowledge-intensive service firms, factors like personality traits and external (market) conditions can be regarded as given.

Current research on leadership and innovation has three serious drawbacks. First, it deals with a few select leader behaviours rather than a wide range. An integral over-view is lacking, and this implies that our knowledge remains limited. Second, practically all leader behaviours that theorists connect to innovation were originally derived in a context of improving performance, instead of innovative behaviour. Examples include participative leadership, transformational leadership and so-called 'high-quality relation-ships' between a leader and his co-workers. Third, innovation-enhancing leader behaviour may differ between both stages of the NSD process, and current research hardly accounts for this.

Innovation-enhancing leader behaviours
On the basis of in-depth interviews and literature research, we have made a broad inventory of leader behaviours that can enhance innovative behaviour of co-workers. An interesting result from the interviews was that leaders do not maintain a uniform style to stimulate innovative behaviour. Many respondents claimed that they adjust their behaviour depending on a particular co-worker. It implies that our future empirical test (see below) should focus on the individual level.

Our research has revealed no less than thirteen behaviour constructs. They are presented in table 8 along with their proposed effects on divergent and convergent innovative behaviour. We stress that the overview is based on qualitative research only.

table 8   Overview of innovation-enhancing leader behaviours

		Relation with … innovative behaviour	
Leader behaviour		*divergent*	*convergent*
1	Role-modelling	+	+
2	Intellectual stimulation	+	
3	Stimulating knowledge diffusion	+	
4	Providing vision	+	+
5	Consulting	+	+
6	Delegating	+	+
7	Support for innovation	+	+
8	Organizing feedback		+
9	Recognizing	+	+
10	Rewarding		+
11	Providing resources		+
12	Monitoring	-	-
13	Task assignment	+	

+ = positive, - = negative.

Although an empirical test has not been performed as yet, our results have some implications for leaders in knowledge-intensive services. They may trigger innovative behaviour of co-workers by:
1   Role-modelling. A leader could enhance innovation by being an example of innovative behaviour himself. Typical behaviours include exploring opportunities, coming up with ideas, championing and putting efforts in the development of new services. Our research suggests that role-modelling is positively related to innovative behaviour in both stages of the NSD process.
2   Intellectual stimulation. A leader can directly tease his subordinates to come up with ideas. This may be a simple and effective way to stimulate divergent innovative behaviour. Typical practices include stimulating co-workers to evaluate current practices, to tease their own thoughts and imagination, etc.

3   Stimulating knowledge diffusion. A leader who stimulates open and transparent communication will enhance divergent innovative behaviour of co-workers. Awareness of other's work and problems is essential before one can make suggestions for improvement. A leader could introduce structures like informal work meetings.

4   Providing vision. When a leader has an explicit vision on the role and preferred types of innovation, co-workers can better judge when and what kind of innovative behaviour is desired. A vision provides direction for the activities that an organization will develop in the future. Both divergent and convergent innovative behaviour can benefit from this. An vision can direct opportunity exploration and idea generation, and serve as a beacon for action in the implementation stage.

5   Consulting. A leader should encourage and facilitate participation by his co-workers in decision-making. Typical practices include checking with people before initiating changes that may affect them, incorporating their ideas and suggestions in decisions, etc. Consulting encourages co-workers to generate ideas and it is expected to increase their motivation to help with the implementation of ideas.

6   Delegating. A leader should give his subordinates autonomy to determine independently how to do a job. It is expected to increase divergent innovative behaviour, because there is more space to try out new and improved ways of doing things. It may also be beneficial for convergent behaviour. Autonomy enhances a co-worker's commitment to strive for high-quality implementation.

7   Support for innovation. Support implies acting friendly, being patient and helpful, listening, looking out for someone's interests whenever he faces problems, etc. To initiate bottom-up innovations a leader must show a sincere interest in his people's ideas. In the implementation stage, the way in which mistakes are handled is critical. Support for innovation provides co-workers with a feeling of safety.

8   Organizing feedback. Feedback can improve the value and applicability of an idea. It is expected to be relevant in the implementation stage. A leader can provide feedback himself, but he may also appoint another person (*e.g.,* a co-worker or customer) for this role.

9   Recognizing. A leader should praise and show appreciation to co-workers for innovative performances, significant achievements, special efforts and important contributions to the NSD process. Both divergent and convergent innovative behaviour will be stimulated when a co-worker feels that his efforts are recognized.

10   Rewarding. Many theorists have questioned the influence of financial rewards. It is certainly no trigger for people to generate ideas, but it may be helpful to direct people's efforts when a new service is developed.

11   Providing resources. This is expected to be related to convergent innovative behaviour. Once it is decided to implement an idea, a leader should provide his co-workers with sufficient time and money to develop, test and commercialize a new service.

12   Monitoring. Excessive monitoring may impede innovative behaviour in both stages of the NSD process. People will be discouraged to take risks when they are extensively monitored on efficiency and effectiveness. Rather, they will stick to tried and tested routines, ensuring that the targets which they are monitored on, will be realized.

13   Task assignment. This is about leader behaviours aimed at clarifying work roles, responsibilities and requirements. It can influence divergent innovative behaviour. When a co-worker regard his work as intrinsically motivating, his creativity will be triggered.

Situational characteristics

Leadership is not the only thing that counts. Leaders should be aware that innovative behaviour of co-workers can be affected by other factors, such as strategy, climate, structure, resources, external contacts, firm characteristics, market characteristics and government policies to stimulate innovation. Our in-depth interviews and literature research has revealed *climate* and *external contacts* as important situational characteristics. Climate could be a characteristic that substitutes or diminishes the effect of innovation-enhancing leadership behaviours. Having external contacts seems relevant as well, for instance because it can serve as a source for idea generation. In table 9 we present their proposed effects on divergent and convergent innovative behaviour.

table 9   Overview of situational characteristics

	Relation with ... innovative behaviour	
Situational characteristic	*divergent*	*convergent*
- Climate	+	+
- External contacts	+	+

+ = positive, - = negative.

Climate is at the heart of an organization's informal structure. It implies a system of informal rules that spells out how people are to behave. It is not hard to imagine that climate perceptions can affect a co-worker's willingness to behave innovatively. When one perceives that ideas can be suggested without personal censure, divergent innovative behaviour is not impeded. Another relevant aspect is that of reflexivity, implying that co-workers evaluate current practices and strive for improvements. We also expect that climate is relevant for convergent innovative behaviour. Innovation is a social process, and the implementation of ideas relies heavily on the involvement and approval of colleagues. An implication for leaders is that innovative behaviour might also be stimulated indirectly by striving for a climate in which co-workers are more comfortable to suggest and promote ideas.

Maintaining external contacts is necessary to adequately produce a knowledge-intensive service. Examples of external contacts include contacts with customers, suppliers and competitors, attending conferences and fairs, training and education, etc. Although some of the above-mentioned leader behaviours aim to enhance external contacts (*e.g.,* intellectual stimulation, organizing feedback), some service workers have more frequent external contacts by default. This applies particularly to sales people and those who actually deliver a service. They have advanced possibilities for opportunity exploration and the generation of ideas, and whenever innovations are implemented, they will find it easier to gather feedback and account for clients' needs. Such natural occasions for innovative behaviour imply that it may not be realistic for leaders to have similar expectations of every co-worker.

7.3   Future research

Knowledge-intensive services firms have boosted in the past 10-15 years. Their leaders face the challenge to realize a continuous flow of incremental, bottom-up innovations to ensure continuity and to keep up with economic development. In chapters 5 and 6 we have revealed various propositions on the connection between leader behaviours, situational characteristics and the innovative behaviour of co-workers in both stages of the NSD process. These should be thoroughly tested in order to provide empirical support for their significance.

We also stressed that the innovation-enhancing leader behaviours are likely to correlate. One of the first steps in an empirical test would be a classification of innovation-enhancing leader behaviour in a limited number of factors. Referring to proposition 14, one could find himself left with three dimensions of innovation-enhancing leadership: relations-, task- and change-oriented behaviour.

In future research, one should perform an empirical test among co-workers in knowledge-intensive service firms. Except for the above-mentioned activities, this study should entail a test of a causal model that combines relevant dimensions of leader behaviour with situational characteristics and the innovative behaviour of co-workers. A suggested version of this model is presented in figure 10 (assuming that the above-mentioned factors would emerge).

figure 10   Preliminary causal model
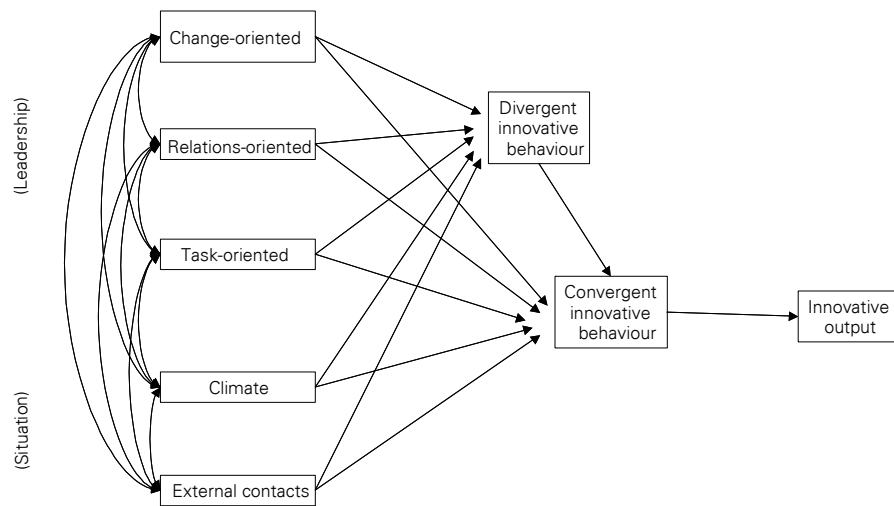
Divergent and convergent innovative behaviours of co-workers are considered to be intervening constructs that are critical for the innovation success of small knowledge-intensive service firms. Another proposition of this model is that leader actions to correct any deficiencies in the innovative behaviour of co-workers can be twofold. First, a manager can influence innovative behaviour of co-workers directly by means of his own behaviour. Second, the manager can make improvements in the innovative behaviour by modifying situational characteristics. Situational characteristics may serve as a substitute for leader behaviours that stimulate innovative behaviour of co-workers. Future research should indicate which dimensions should be stressed when leaders want to increase the number and quality of bottom-up innovations in their firms.

Annex I   Questionnaire in-depth interviews

- How do you manage your co-workers in their daily work? How would you describe your own leadership style?
- What role does innovation play in your firm? What is the role of co-workers in this process? To what extent are your co-workers behaving innovatively?
- How do you stimulate innovative behaviour of co-workers? How do you stimulate creativity? How do you stimulate implementation efforts?
- What can a leader do to devastate innovative behaviour of co-workers?

Annex II   Taxonomy of managerial practices

table 10   Taxonomy of managerial practices

- **Planning and Organizing:** Determining long-term objectives and strategies, allocating re-sources according to priorities, determining how to use personnel and resources to accomplish a task efficiently, and determining how to improve coordination, productivity, and the effectiveness of the organizational unit.
- **Problem Solving:** Identifying work-related problems, analyzing problems in a timely but systematic manner to identify causes and find solutions, and acting decisively to implement solutions to resolve important problems or crises.
- **Clarifying Roles and Objectives:** Assigning tasks, providing direction in how to do the work, and communicating a clear understanding of job responsibilities, task objectives, deadlines, and performance expectations.
- **Informing:** Disseminating relevant information to people who need it to do their work, providing written materials and documents, and answering requests for technical information.
- **Monitoring:** Gathering information about work activities and external conditions affecting the work, checking on the progress and quality of the work, evaluating the performance of individuals and the organizational unit, analyzing trends, and forecasting external events.
- **Motivating and Inspiring:** Using influence techniques that appeal to emotion or logic to generate enthusiasm for the work, commitment to task objectives, and compliance with requests for cooperation, assistance, support, or resources; and setting an example of appropriate behaviour.
- **Consulting:** Checking with people before making changes that affect them, encouraging suggestions for improvement, inviting participation in decision making, and incorporating the ideas and suggestions of others in decisions.
- **Delegating:** Allowing subordinates to have substantial responsibility and discretion in carrying out work activities, handling problems, and making important decisions.
- **Supporting:** Acting friendly and considerate, being patient and helpful, showing sympathy and support when someone is upset or anxious, listening to complaints and problems, and looking out for someone's interests.
- **Developing and Mentoring:** Providing coaching and helpful career advice, and doing things to facilitate a person's skill acquisition, professional development, and career advancement.
- **Managing Conflict and Team Building:** Facilitating the constructive resolution of conflict, and encouraging cooperation, teamwork, and identification with the work unit.
- **Networking:** Socializing informally, developing contacts with people who are a source of information and support, and maintaining contacts through periodic interaction, including visits, telephone calls, correspondence, and attendance at meetings and social events.
- **Recognizing:** Providing praise and recognition for effective performance, significant achievements, and special contributions; and expressing appreciation for someone's contributions and special efforts.
- **Rewarding:** Providing or recommending tangible rewards, such as a pay increase or promotion for effective performance, significant achievements, and demonstrated competence.

Source: Yukl (2002).

Annex III   References

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