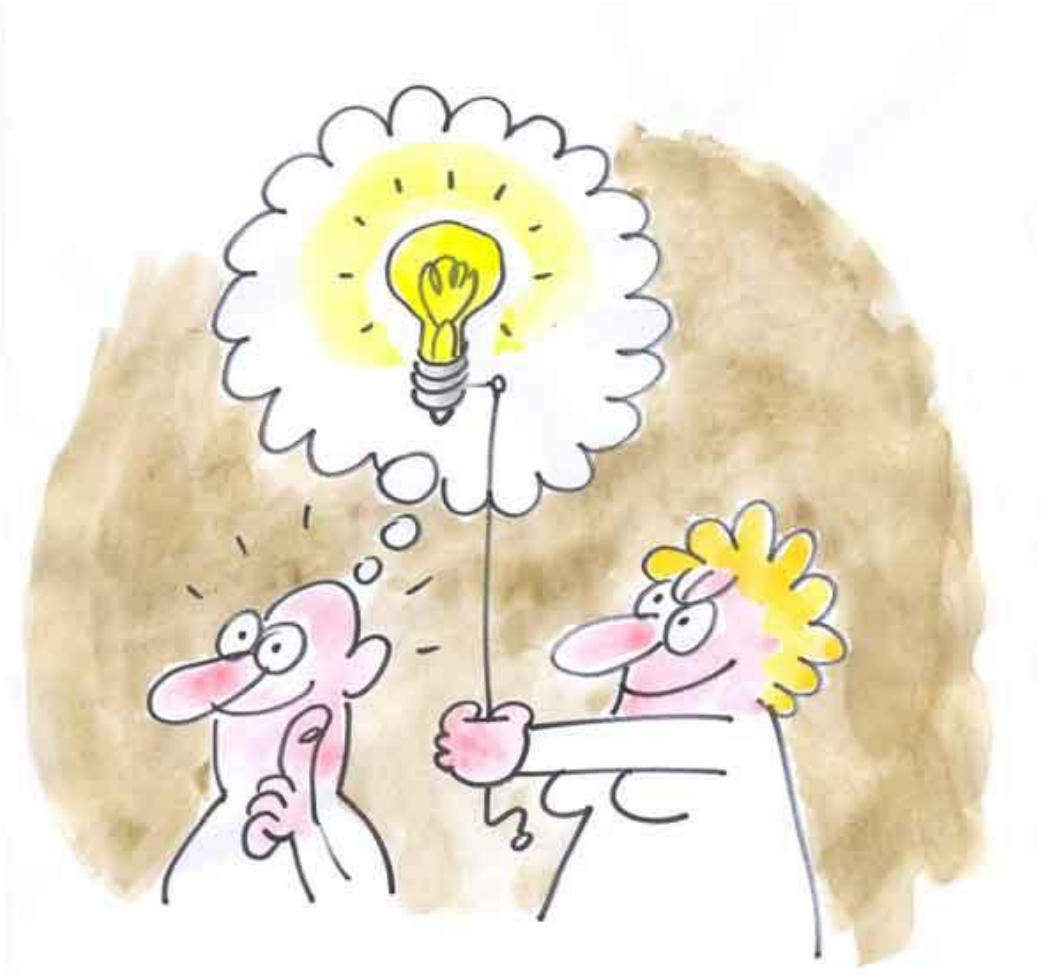
Bachelor assignment

To be or not to be:
Innovativeness by a coherent climate for creativity and change?



Fleur Lamers
Version 8
22 November 2007

Universiteit Twente
de ondernemende universiteit
UniSA

Bachelor thesis Business Administration

Enschede, 2007

Author: Fleur Lamers
Student number: 0069582

Contact Information
Student:
Fleur Lamers
Mina Krusemanstraat 47
7513 HB Enschede
The Netherlands
(T) +31 6 31420769
(E) f.c.r.lamers@student.utwente.nl

Tutors University of Twente:

Dr. M. J. van Riemsdijk
(T) +31 53 4894092/4893480
(E) m.j.vanriemsdijk@utwente.nl

Dr. Ir. P. C. de Weerd-Nederhof
(T) +31 53 489 3499
(E) p.c.deweerdnederhof@utwente.nl

Tutor University of South Australia:

Dr C. Soosay
Lecturer, School of Management
University of South Australia,
City West Campus, North Terrace
Elton Mayo Building EM3-22
GPO Box 2471, Adelaide 5001
(T) 61 8 8302 0634
(E)Claudine.Soosay@unisa.edu.au

Summary

The importance of innovation doesn't need any introduction anymore. In current markets innovation is a necessary condition to survive and stay competitive. An important factor associated with innovation is the organisational climate. The condition of the work environment plays an important role in creating the right circumstances that enable innovation. The more the climate is directed towards innovation, the more innovative the organisation will be.
Studies that examined this relationship base their conclusion on measurements originating from single respondents. Climate is a construct that is measured by perception of respondents and questioning only one person, in most cases a manager, may put the validity into question. A solution to this problem is including more respondents into the research. The accuracy of the measurements is increased by analysing the perceptions of more people in that particular work environment. The aggregation of all those perception creates the possibility of analysing the climate on another level. Except giving a score on climate itself, by categorizing it as highly innovation oriented or not, the coherency of that climate can be taken in consideration. The coherency of the climate can be inferred from the perceptual agreement. Perceptual agreement is used to resemble the degree of agreement on a construct among the respondents.
In this research is analysed if the coherency of the climate affects the relationship between climate and innovativeness. Does a coherent climate have more influence on innovativeness?

In this research the climate is measured by a questionnaire consisting of nine dimensions that are characteristics for a climate that supports creativity and change. This questionnaire is filled in by the manager of the new product development (NPD) department. These nine dimensions are also presented towards the employees of that department. By analysing their scores of climate the coherency of the climate can be assessed. The hypothesis is that a coherent climate has a larger impact on innovativeness than an incoherent climate.

The hypothesis is examined by 1 main question and two sub questions:

What is the influence of the coherency of the climate concerning the relationship between climate and on innovativeness?

1 What is the relationship between climate and innovativeness?
2. What is the degree of coherency of the climate?

In this research the climate of the NPD department is measured among employees and the managers of that department. NPD department is chosen because from this department can be expected that the climate is at least a little oriented towards innovation.
First is measured what the climate perception of the manager is. This measure is used to reflect the degree in which the department is oriented towards creativity and change. Within the 9 dimensions which represent the climate for creativity and change, 4 dimensions are assigned for being of major

importance for stimulating innovation. Therefore the score on these 4 dimensions is analysed as well.
The employees of the NPD department also filled in a questionnaire which consisted questions on the nine dimensions. Based on the answers, the coherency of the climate is appointed. This is done by analysing score among employees based on the standard deviation of the answers, the presence of outliners and the range. Also the score of the employees is compared with the score of the manager. Also the 4 specific dimensions for innovation are emphasized.
At last the innovativeness is measured by looking at the sale results. The sale results present the percentage of sales that are originating from non-modified products or innovative products. The more is gained by innovative products, the higher the innovativeness.
Also different control variables are used to control for possible influences of another 3rd variable. Measured effects may be due to other variables then the main variables and should therefore be taken in consideration. Many variables are mentioned in existing theory that could have an influence on the variables of this research. The most common variables are measured in this research. External forces in the environment may be factors influencing innovativeness. The industry and its environmental conditions may more or less force an origination to innovate or else lose competitiveness. While other industries with other environmental conditions may be more stable. Because the research is conducted with organisations originating from different countries, is controlled for this as well. The size of the organisation may influence the innovativeness because of some internal forces. The number of resources and flexibility to respond on opportunities is stipulated by the size and could therefore have an influence on innovativeness of an organisation. Another important internal factor is the business strategy. The strategy gives direction to the policy of the organisation. The degree in which the organisation strives to new product development may be due to the strategy.

The analysis of these variables is based on a sample of 6 organisations from varying industries in different countries and with different strategies and sizes. The results on the main variables were too limited and varying to base any conclusions on it. The dataset was not suitable for approving or rejecting the hypothesis.
The measurements were unsatisfying on different fronts. The sample s of employees was not reliable in most cases. And also no good measure for determining the degree of coherency was present. The standard deviation alone is not accurate enough and the observations of the 6 organisations are too limited to distinguish if coherency is strong or not.
The lacking ability to draw a conclusion resulted in some important recommendations. The problems of this research that are relative easy to overcome are increasing the number of organisations. With a bigger sample statistics can be used to draw conclusions. Also the sample of respondents of the NPD department needs to be more reliable with representative sample sizes. Also is recommended to measure the variables at more moments of time to enable analysing the causality of the relationships as well.
Another important recommendation is that the measurement of coherency needs to be improved. This measurement needs to be more accurate and present a norm on which results could be determined as coherent or not. Also the qualitative analysis of coherency could be subject of further research. Including the leadership style and relation of managers and employees could be

taken along in the analysis of coherency. Also the role of outliners can be assessed more instead of considering then as random errors only.
In short, this report mainly presents a reason and framework for a research. But the problems that arise with really carrying out the analysis leads to recommendations that should be input for further research on this topic.

Preface

Almost 7 months after the first steps in this project my report for my bachelor assignment is finally finished. The start took place in Enschede, The Netherlands. After the first foundations I continued in Adelaide, Australia to collect the data. And now the completed version after some more work in The Netherlands is presented

First, I would like to thank Dr. M.J. Van Riemsdijk for his fast and extensive feedback.
This assignment and my trip to Australia wouldn't have been possible without Dr. Ir P.C de Weerd-Nederhof who arranged the possibility to go to Australia and helped with setting up and evaluating my research. I would also like to thank the University of South Australia for hosting my visit, and of course Dr. Claudine Soosay for supervising me.
At last I would like to thank Ir. A.J.J Pullen for answering all my questions concerning the Patterns in New product development" project and the database and her company during activities on the University of Twente.

Besides the cliché that is used in the title of this report, another ancient wisdom is on its place as well; Luctor et Emergo. The process of the report was as to speak a real struggle. A struggle with theories, methods, data, the English language, Excel sheets, time and sometimes even with myself. But the report is finally there.

Content

9

1. Introduction

After following 3 years of bachelor education in business administration, I've been confronted with phrases like, *the rapid changing environment*, *the pace of the fast and ever changing world*, *shortened product life cycles by rapid innovation,* on and on. My personal interest with product development matches this tendency of continuous development and fast following market introductions. In one course, we worked with the questionnaire of the international research project "Patterns in New Product Development "led by Dr. Ir. P.C de Weerd-Nederhof. This research project tries to develop knowledge that can contribute to sustained innovation (www.patterns-in-npd.com). The project has a holistic view on the relation between strategy, processes, structure and culture of New Product Development (NPD) imbedded in their overall context. This will contribute to find consistent NPD configurations that should lead to sustained innovation (De Weerd Nederhof, Bos, Da Silva, and Visscher, forthcoming). Goal is to get an understanding of the relationship of the several NPD configurations; process, strategy, climate, structure and roles, and their influence on NPD performance. Investigated is which configurations will lead to a good performance in certain conditions or circumstances for certain functions (www.patterns-in-npd.com). This is done by the collecting of data in several countries in varying sectors. The data is gathered by an innovation scan; a questionnaire that is filled in by a manager of the organisation. All questionnaires are processed into a database, which is used for further analysis.
This bachelor assignment will be part of the "Patterns in NPD" project. I will collect data for the database, and make use of existing data for my research. Because the "Patterns in NPD project" is too extensive for this bachelor assignment, I will focus on the component of climate. I will highlight this specific topic and try to give an in-depth analysis of the relationship between climate and innovativeness.

1.1 Research Goal

To be or not to be; the fast changing environment more or less forces an organization to be innovative, and introduce new products continuously. The importance of the New Product Development (NPD) function for overall firm success forces an organization to be innovative and being able to anticipate on changes in the environment.
Several internal and external factors affect this innovativeness. One of these factors is the organisational climate (Burton, Lauridsen & Obel, 2004; Ekvall, 1996). According to Ekvall; climate is an intervening variable in the operational process and has influence on its outcomes, such as innovativeness (Ekvall, 1996, p. 106).
Ekvall describes 9 dimensions which are the characteristics of a climate for creativity and innovation. The presence or absence of these dimensions of climate will determine if an organization can be typified as "innovated" or "stagnated" (Ekvall, 1996).

Current research of the 'Patterns in NPD 'project is done by only questioning the NPD manager or general manager. The use of only one respondent has limitations because it ignores the possible

difference in perception among different respondents .The questioning of single respondents per company, so called key informants, in the vast majority op NPD studies calls the validity of the findings of NPD studies in principle into question (Ernst, 2002) . Especially in the field of kind of a "fuzzy" (Guion 1973) or "soft" (Ernst & Teichert, 1998) concept like climate which is liable to individual perception in a high degree the single respondent bias can cause problems (Ernst & Teichert, 1998). Approaches that acquire information from multiple respondents could be used to overcome the problem of possible informant bias (Campbell & Friske, 1959 in Ernst & Teichert 1998). However, Ernst & Teichert (1998) also state that it is hard to get reliable data because perceptions vary among respondents .Respondents could take unrelated observations in consideration and use this to make inferences to a broader level. Problem is that for measuring climate individual respondents for information are needed (Kumar et al., 1993; Hofstede et al, 1990).

Several theories (Patterson et al, 2004, Patterson et al 1996, Nystrom 2002) indicate that respondents as part of a collective will agree on their perception of climate. While Amabile, Conti, Coon, Lazenby &Herron (1996) state that organisational elements may be perceived differently by different persons or groups. In other theories is the possible difference in perception between managers and employees discussed.
Besides their ability to influence the climate is it assumed that managers have a broader perspective to base their assessment of climate. Their perception is based on more comprehensive knowledge of the whole company and associated with outcome variables, while non-managers tend to base climate by their own work area (Patterson et al, 2004).
This has as a result that scores on climate can vary by the hierarchical position of the respondents. This research aims to analyse the climate for creativity and change in one department, the NPD department. Therefore all respondents, managers and employees, assess the climate of the same work environment.
In trying to overcome the problems of the measurement of climate this research focuses the coherency of climate. This implies if the respondents have the same perception of climate.
I will take a look at the agreement of people to asses if people really share the same opinion of climate, called the degree of perceptual agreement. The perceptual agreement is used to represent the coherency of climate. A high degree of perceptual agreement indicates a coherent climate, and a low degree of perceptual agreement indicates an incoherent climate.

The goal of this research is to measure if the coherency of the climate has influence on the relation between the climate and innovativeness.

The hypothesis underlying this research is:

'In case of a coherent climate, the influence of the climate on innovativeness larger is than in case of an incoherent climate.'

In this research the focus is on the climate within the NPD department. This means that all respondents are part of the same work environment. The climate that is measured is the climate for

creativity and change, which enables innovation. Because the NPD department is unit of analysis is assumed that an innovation oriented climate is present in the participating companies.

The perception of the manager of climate is used to reflect the score of the climate of the department. A high score on climate indicates a climate that is suitable for creativity and change, what enables innovation. The responses of the employees use will be used to analyze the perceptual agreement on the climate among employees, and indicate the coherency of the climate. Also the scores on climate of the managers and employees will be compared. The innovativeness of the department is assessed by looking at the sales that are gained by innovation.

The score that the manager gives on the climate is an indication on how he experiences the climate and the innovativeness that is associated with it. The dimensions of climate are formulated to measure the climate for creativity and change. Therefore a high score represents that the manager assesses the organization that is suitable for creativity change and innovation.

First is analysed if the subjective perception of the climate for creativity and change really coincides with the objective reality of innovativeness. Thereby is the main assumption that in case of a coherent climate, the climate has a stronger influence on innovativeness then in case of an incoherent climate.

2. Literature

In this chapter I will discuss the literature that is used to explore the research goal, and its constructs. First the literature of the "Patterns in NPD" framework is discussed. This will give an overview of the project and will help by identifying the concept of climate. When is clear how climate is part of the "Patterns in NPD" project the concept will be further explained by use of other theory about it. After that a closer look is taken on innovativeness. At last perceptual agreement and coherency will be discussed.

2.1 "Patterns in NPD "

In the introduction, the "Patterns in NPD" project was already introduced. This research project uses data of organisations for identification consistent configurations in NPD that should lead to sustained innovation.
The "Patterns in NPD" project is operationalised and constructed by use of existing literature, which will be used for this research as well.
The framework underlying the "Patterns in NPD research" is operationalised and structured by J. Altena (2005) and gives the theoretical grounds and the operationalisation of the conceptual model. This model is used to structure this research, and make it fit with the "Patterns in NPD" project. It will be used as well for the exploration of the two main variables: climate and innovativeness.
The "Patterns in NPD" project tries to identify consistent configurations in New Product Development (NPD). These consistent configurations, or "patters", are based on an in-depth, holistic understanding of the relationships between NPD purposes and activities, organisation and situational factors, and its impact on performance (www.patterns-in-npd.com).
For the holistic assessment of NPD configurations and their influence on performance a conceptual model is developed, which is based on a process based contingency view on organisations. This conceptual model incorporates the context, the configurations and performance.

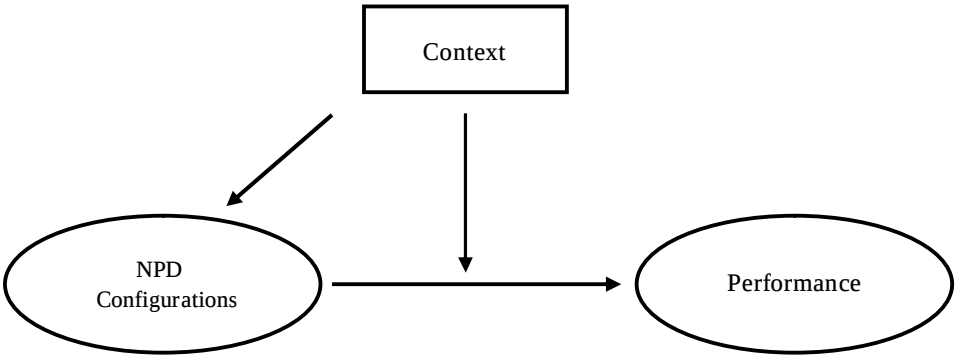


Figure 1. Conceptual model "Patterns in NPD"

The NPD configurations, also called the NPD system, exist of the NPD process, NPD strategy, NPD structure, NPD roles and NPD climate. This latter is the main variable of this research.

The organisational context can be subdivided into the intra-organizational and extra organizational context. The intra-organisational context includes business strategy, primary processes, organisational structure and organisational culture (Altena, 2005).
The process based contingency model underlying the conceptual model of the project assumes that this organisational context will lead to certain configurations, which would eventually result in best practices for NPD. Thus the context will lead to certain configurations that for their part will influence NPD performance. The context is an independent and intermediating variable which influences the relationship between the NPD configurations and NPD performance as well (Altena 2005).

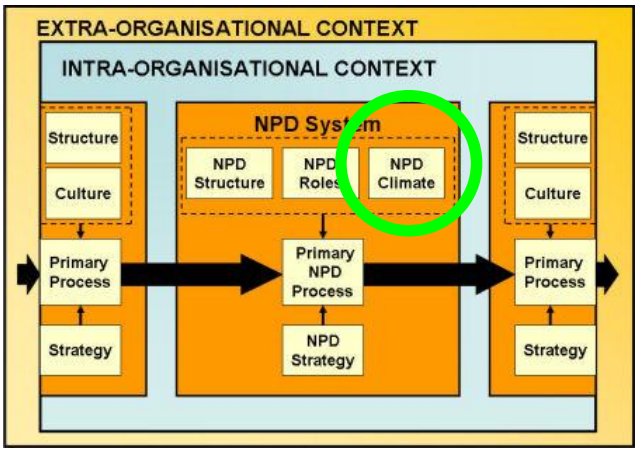


Figure 2. Conceptual model " Patterns in NDP"
(www.patters-in-npd.com)

Now the overall framework is given the main variables of this research are explained.

2.2 Climate

The first important variable for this research is climate. Although a lot is written about it, it's not always clear what is exactly meant by climate and the construct is often confused with 'the concept of culture. Important is to understand the context in which climate is used. Climate can be seen in different spheres, examples are the safety climate, the caring climate and the service climate (Ekvall, 1987, p. 188). In this research the focus is on the relation between climate and innovativeness, therefore the context is the climate for creativity and change.

2.2.1 Climate vs. Culture

In the conceptual model of the "Patterns in NPD" project it becomes clear that climate and culture are different concepts because of their specific place within this model. Culture can be seen as a

part of the NDP system, or context. Climate is part of the NPD configuration. In the "Patterns in NPD" research climate is operationalised by use of the existing theory of Ekvall. Ekvall (1996) defines climate as an attribute of the organisation, composed of behaviours, attitudes and feelings, which characterizes life in the organisation.
In an article by Isaksen, Lauer, Ekvall and Britz (2000-2001) it is added that it is this behaviour, attitudes and feelings that exist in a recurring pattern.

Climate is a situation or setting of a work environment which is direct observable.
Culture is harder to observe and change since it is part of the roots of the organisation. It reflects the deeper foundations of the organisation which includes values, beliefs, history and traditions. Culture provides the foundation for patterns of behaviour (Isaksen and Lauer, 2002 p 666). This means culture influences climate. Ekvall (1996) describes this by calling climate a manifestation of culture (Ekvall, 1996, p105).
The culture shapes the climate; it creates behaviour that can be readily observed, described and changed (Isaksen & Lauer, 2002). This correspondents with the conceptual framework on the "Patterns in NPD" project since culture is part of the context that influences the configurations, like climate.

2.2.2 Level of measurement

Up till now the concept of climate and organisational climate is used interchangeably. According to literature climate can exist on different levels. The definition of Ekvall concerns the organisational climate, but in literature also the psychological/individual climate is discussed.
The psychological/ individual climate focuses on individual perceptions and is based on the cognitive interpretation of an organizational situation (James, James & Ashe, 1990, in Isaksen & Lauer, 2002). Glick (1985) makes the distinction between individual and organisational climate by looking at the focus of the research. When researchers are concerned with individual perceptions the focus is on psychological climate. When the organisation is the unit of theory, it refers to the organisational climate.

Guion (1973) also discusses the different levels and mentions the possible tension between both. When looking at perceived organisational climate he argues, you can't be sure whether it implies an organisational attribute or the perception of an individual. He suggests that when you want to refer to the organisational level, the measures for perceived organisational climate should be evaluated in terms of accuracy of the perceptions (Guion, 1973, p 120).
He also connotes that referring to the individual perceived organisational climate may have to be more about job satisfaction or employee behaviour, which is something different than the perception of the organisational climate.
Isaksen, Lauer, Ekvall and Britz (2000-2001) also describe individual climate, which refers to the individual perceptions of the patterns of behaviour, attitudes and feelings. Organisational climate according to them can be seen as the aggregation of these perceptions and reflect the shared

perceptions that characterize life in the organisation and reflects the situation of the whole workplace (Isaksen et al2000-2001. p 172). Although climate is perceived by individuals within the workplace, it exists independently of these perceptions and is considered attribute of the organisation (Ekvall, 1987). Instead of aggregating all scores of respondents in the whole organisation this can also be done for only one department. Then the scores of respondents in one department are aggregated and result in the climate of that department. (Glick, 1985, p 602)

In this research I will look at the climate on organisational sub-unit level. Since the focus is on NPD, the climate, and the coherency of that climate is measured for the NPD department. This means I will look at a subunit of the organisation. The focus is on the climate of the work environment of that department and not the individual perception of the respondents themselves. The climate is measured by aggregation of climate scores. For the ease of writing I will refer to at simply as "climate".

2.2.3 Effects of climate

Ekvall states that climate is an intervening variable and has influence on the results of the operations of an organization (Ekvall, 1996, p 106). He distinct the influence on organizational processes, as problem solving, decision making communications, coordination and controlling, and psychological processes as learning, creating, motivation and commitment. Another point he makes is that the influence on operations results at different levels of abstraction; high/low quality of products and services; radically new products or only small improvements in the old ones; high/low well being among employees; commercial profit or loss. Eventually he distinguishes six areas which are influenced by climate, as is presented in the following figure. One of these aspects is innovation.

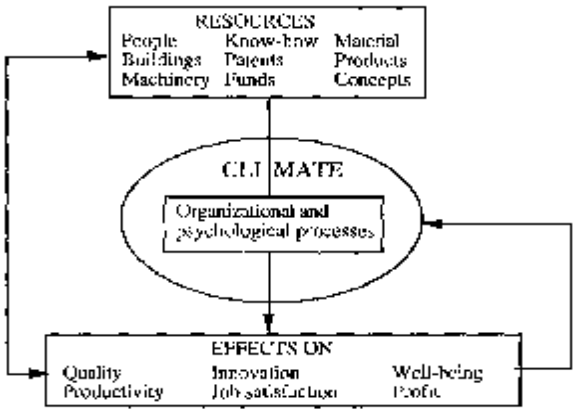


Figure 3. Climate as an intervening variable (Ekvall 1996, p 106)

The specific relation between climate and innovation is also researched by Ekvall. For doing research on this relation, he developed the Creative Climate Questionnaire (CCQ).
The CCQ is designed to measure the climate for creativity and change in organisations (Isaksen, Lauer And Ekvall, 1991). The degree in which appointed dimensions are present or absent leads to "innovated" and 'stagnated" organisations. These dimensions are conditions for a climate that supports or creativity and change, what stimulates innovation (Ekvall 1996).
The method of the CCQ links climate with innovation by looking how a climate stimulates innovation. Because the main relationship which is explored in this research is the one between climate and innovativeness this method will fit the goal of this research.

2.2.4 Dimensions of Climate

Ekvall (1996) appoints 10 dimensions of climate which are characteristics of climate in a way they reflect the possibility for certain, creative behaviour that enables change/innovation. The link between creativity, climate and innovation which is made by Ekvall is supported by the theory of Amabile et al (1996). Climate, or the work environment as called by Amabile et al (1996), influences the level and frequency of creative behaviour. Creative behaviour is the beginning and necessary condition for innovation (Amabile et al 1996). The CCQ by Ekvall tries to measure the degree in which the dimensions are present and creativity is able to flourish. On its part this will result in a climate that stimulates innovation.
This is done by the following dimensions:

Challenge/Involvement	Dynamism/ liveliness
Freedom	Debates
Idea support	Conflicts
Trust/ Openness	Risk taking
Playfulness/pleasantry	Idea time

Involvement
The degree of emotional involvement, commitment and motivation in the operation and goals. (Isaksen et al, 1999, p. 668) A high degree of involvement means the climate is dynamic, eclectic, and inspiring. People find joy and meaningfulness in their work (Isaksen et al, 2000-2001, p 175).

Freedom
The level of autonomy, discretion and initiative behaviour exerted by individuals to acquire information and make decisions (Isaksen et al, 1999, p. 668). In a climate with much freedom people make contacts and information is shared, also problems and alternatives are discussed (Ekvall 1996, p.107). The opposite is that people have to work according to strict guidelines and roles. This forces them to carry their jobs out in prescribed ways, and have littlie room for their own input (Isaksen et al, 2000-2001, p 175).

Trust/Openness

The degree of emotional safety and openness found in relationships (Isaksen et al, 1999, p. 668). High trust and openness means that people dare to share their ideas and opinions without fear for of reprisal and ridicule in the case of failure (Ekvall, 1996, p.107).

Idea time

The amount of time people can use (and do) for elaborating new ideas (Isaksen et al, 1999, p. 668). In a climate with a high degree of idea time, people have the opportunity to discuss and test suggestions which are not inclined in their task assignment by flexible timelines, new ideas can be explored and developed, and this is actually done (Isaksen et al, 2000-2001, p.175).

Playfulness/pleasantry

The display of spontaneity, ease and good natured joking (Isaksen et al, 1999, p. 668). A relaxed atmosphere with jokes and laughter characterizes an organization with a high degree of Playfulness/pleasantry (Ekvall, 1996, p.108)

Conflicts

The presence of personal and emotional tensions and hostilities (Isaksen et al, 1999, p. 668). With a high degree of conflicts people dislike each other and the climate can be seen as warfare. Personal differences lead to gossip and slander in stead of acceptance and dealing effectively with it (Isaksen et al, 2000-2001, p. 175).

Idea support

The degree to which new ideas and suggestions are attended to and treaded in a kindly manner (Isaksen et al, 1999, p. 668). In a supportive climate ideas and suggestions are received in an attentive and professional way by bosses, peers and subordinates people listen to each and encourage initiatives (Isaksen et al, 2000-2001, p. 175).

Debates

The expressing and considering of many different view-points, ideas and experiences (Isaksen et al, 1999, p. 668). Debates ensure that that voices are heard and people are keen on putting forward ideas. Without debates, people follow authoritarian patterns without questioning (Ekvall, 1996, p.108).

Risk taking

The tolerance of ambiguity and uncertainty (Isaksen et al, 1999, p. 668). People can take a gamble and initiatives can be taken even when outcomes are uncertain (Isaksen et al, 2000-2001, p. 175). Decisions and actions are rapid, and opportunities are taken. Concrete experimentation is preferred above detailed investigation (Ekvall 1996, p. 108)

Dynamism/ liveliness

The eventfulness of life in the organisation. This reflects the dynamism of the situation, and if new events, projects and activities are happening all the time. (Ekvall 1996, p. 107)

These ten dimensions of the CCQ of Ekvall were further tested on reliability and validity by Ekvall, Isaksen and Laurer. This resulted in a list of 9 dimensions called the Situational Outlook questionnaire (SOQ), excluding *dynamism/ liveliness*. This is further explained in section 3.1.1.

The dimensions *Idea support, Debates, Risk Taking* and *Idea Time* are dimensions that are specially connected to creativity and innovation. In particular the dimension *Risk Taking* causes the major differences between stagnated and innovated companies (Ekvall, 1996, pp. 1221-122). Ekvall states that the dimensions *Risk Taking*, *Freedom* and *Debates* and *Dynamism* are the most important dimensions that cause the difference between climates for radical or incremental innovations. These three dimensions have to be present in a high degree to facilitate a climate for radical innovation (Ekvall, 1996, p.122)

In this research the focus is on the work environment at the level of an organisational department. Because the relation between climate and innovativeness is investigated I will make use of the 9 dimensions of the SOQ to measure climate. This method of measuring climate focuses on the climate for creativity and change.

First the dimensions will be used to measure the score on climate, which will be determined by a questionnaire filled in by a NPD manager. The score he gives on this questionnaire will represent the climate for creativity and change of the NPD department. High scores on the nine dimensions of climate will be called a" good" climate, which stimulates innovativeness. When scores on climate are low, it will be referred to as "bad" climate what will hamper innovation. The only exception is the dimension " *Conflicts*". A low score on conflicts is positive for innovativeness suggests theory, so the inverse of the score will be used.
The specific 4 dimensions directed towards innovations are also analysed. Because the dimensions *Dynamism* is excluded in this research because of its not discriminating character according to Isaksen et al (2000-2001) the specifics dimensions for radical innovation are not used.

Besides the score on climate this research takes the coherency of the climate in consideration. This is done by looking at the agreement of the scores on the 9 dimension given by the group of employees of the NPD department. Also the score of the employees' and managers are compared. This will be discussed further in section 2.4 .1.

2.3 Innovativeness

When looking at the literal meaning of innovativeness it could be translated to the degree of innovation. Innovation can be measured on different levels; product innovation, process innovation or organisational innovation. Although these three types are distinguished, they aren't completely independent and may influence each other (Ekvall 1996).

2.3.1 Level of measurement

As was discussed in the previous paragraph about climate, Ekvall (1996) measures the climate for creativity and change. In this article he discusses the concept of innovation / innovativeness as well. In those articles he refers to product innovation as well as organisational innovation.

Ekvall (1996) supposes that his focus is on product innovation (Ekvall, 1996 p.11), however, when reading his further explanation on the concept he gives the impression that he is analysing the innovativeness of the organisation. Ekvall (1996) expresses the innovativeness by labelling them as 'innovated' or 'stagnated 'organisations. This is based on the ability of an organisation to adapt itself, and operations, to new demands in the environment. According to him this can be done by adopting new products or services, altering existing products/services, discovering new markets and target groups, changing methods of working or by introducing new technologies and/or organisational structures (Ekvall 1996, p 113). Although he refers itself to "innovative" on the level on product innovations, the focus of his research according to this construction is examining the innovativeness of the organisation, since he refers more to the ability of the organisation to innovate and number of product innovations the company produces instead of the newness of the products. This makes the organisation the attribute of the research and not the product.

In the same article he discusses the role of climate as an intervening variable. In the paragraph on climate was already described that climate is an intervening variable which affects the results of operations (Ekvall, 1996, p 106). These results may have different levels of abstraction. One of the examples Ekvall gives is the difference of radically new products or only small improvements in the old ones (Ekvall 1996, p. 106). In that case the product is the attribute.

2.3.2 Product innovativeness

Salavou (2004) refers to product innovativeness when you are analysing the level of newness of product innovations. The focus is on the innovation capacity on product level which covers attributes as newness to the firm, product uniqueness and newness to the customer. The novelty of a product itself is thus a relative concept. A product can be new to the organisation, the customer or even for the world. In this research we analyse the innovation on the level of an organisational department. Therefore, a new product in this research means a product that is new for the department.

Product innovations can exist in different degrees. It can be minor changes to an existing product, called incremental innovation, but products can also be completely new, called radical innovation (Salavou 2004). A radical innovation is totally new to the organisation and will incorporate changes in the organisation on different levels, like changes in behaviour but also in technology (Nystrom et al, 2002).

Several methods for categorising the degree of newness of products exist. In the "Patterns in NPD" project the typology of Clark and Wheelwright (1993) is used. They categorise 3 types of new product activities: Radical Breakthrough (A), Next generations or Platform (B) and Enhancements Hybrids and Derivates (C). These categories are a result of combining two dimensions: product changes and process changes. Clark and Wheelwright (1993) subdivide product change into new core products, next-generation products, additions to product families, and adds-on and enhancements. Producing radically new products may incorporate process changes as well, to enable the production of this new product. Within process changes a distinction is made between new core processes, next-generation processes, single department upgrades, and tuning and incremental process improvements. In this research this typology will be used, only the category Enhancements, Hybrids and Derivates will be called incremental innovation. This term is widely used in most literature on innovativeness and covers the concept.

Product innovativeness is an indicator for the nature of the innovations of the department. It doesn't really reflect the innovativeness of the company properly, because the results that are gained by the innovations are unknown. Also is unknown what the contribution of innovative products is compared to non-innovative products. Only the degree of newness of innovative products is known. Therefore, I will take a look at the innovativeness of the department by measuring how much of product sales are originating from the innovative products.

2.3.3 Organisational innovativeness

Organisational innovativeness according to Salavou reflects a firm's proclivity to innovate. This includes a firm's tendency to engage and support new ideas, novelty experimentation and creative processes that may result in new products, services or technological processes (Lumpkin and Dress 1996, in Salavou, 2004).
Important point is that organisational innovativeness is a broad concept, and varying operationalisations and measurements of this construct exist. The most general explanation is that organisational innovation is about he adoption of innovations in an organisations (Damanpour, 1991, P556) Adoption includes the generation of ideas, the development and the final implementation of the innovation. This could be a product, service process, structure system or plan.

These explanations coincide with the explanation given by Ekvall. The typification of innovated" and stagnated companies is based on the ability to introduce new products or altering existing products, discovering new markets or target groups, changing methods or introducing new methods of working and new technologies or organization structure (Ekvall 1996, p113).

Besides the varying literature on organisational innovation, the measurement of innovation/ innovativeness is done based on several theories. A widely accepted method is the rate of adoption of innovations. Other measures are the number of patents, level of R&D expenditures, activity level in innovations, and economic value of innovations (Salavou 2004; Damanpour 1991; Ekvall 1996). In this research, I will look at total annual sales that are originating from the different types of new products and non-modified products. By use of this method an objective measure for the output of new product development is given

In this research the innovativeness is analyzed by how much of the total annual sales are originating from the different types of new products or non-modified products. This indicates the degree in which innovative products contribute towards the total sales.

2.3.4 Factors influencing product innovativeness

Besides climate, other aspects have to be taken in consideration when analysing the causes of the degree of innovativeness. The conceptual model of Ekvall (Fig 4) also shows that besides climate also resources as buildings, people, products, know-how and machinery influence the innovativeness of an organisation. A lot of literature focuses on what causes innovation and innovativeness. Looking at the literature, the most common factors are discussed

Industry/ environment and country

The contingency model underlying the "Patterns in NPD" project assumes that the environment will influence the NPD system, and stresses the importance of a fit between the NPD system with its environment. Industries may vary in average degree of innovativeness of organisations. Some specific industries have a high pace of product introductions and the environment forces an organisation to go with the flow to survive, while other industries are more stable and certain. Therefore, an organisation has to be evaluated in its context by analysing the industry and look at the environmental conditions of the organisation.
Because the organisations in this research are originating from different countries this will be taken in consideration as well. Although markets become more global nowadays as result of new technologies, the supply and demand in different countries varies. Since the "Patterns in NPD" model reflects that the environment influences the organisation it is probable that due to different markets in different countries innovativeness of organisations in different countries also varies (Mishra Kim, and Lee, 1996). Therefore, the variable "country" will be a control variable.

Size

In the available literature about the influence of company size on innovativeness, different statements are made. Both small and large companies have their own advantages or disadvantages. The size of an organisation indicates the resources which are available, like money, people and technology and know-how. Larger firms have the advantage of possessing more resources; Radical innovation incorporates higher risks and costs compared to more incremental innovation (Salomo, XXXX). Therefore large firms will have more advantage regarding product innovativeness. Small firms might not have the financial resources to invest in a high invest and high risk project. A drawback of large firms is that they are more rigid, which hampers innovation (Rogers 2004). In this case small firms are favoured regarding flexibility and ability to anticipate on opportunities (Rogers, 2004; Nystrom et al 2002).
Small firms are considered to have more flexibility what will contribute to the organizational innovativeness. Important difference for this research is that the advantage of the resources of large firms particularly contrite to the product innovativeness, while the advantage of flexibility of small firms more or less takes place on organisational level, instead of product level. Besides the total number of FTE's will also be analysed how many FTE's are spend on NPD, to get an impression of the relative size of the NPD department.

Business strategy

In the 'Patterns is NPD" project the underlying assumption is that for sustaining competitive advantage the NPD goals have to be derived from - and contribute to - the business strategy (Altena 2005).
The business strategy is important for setting direction and is determinative for certain choices made in the organisation. According to the conceptual model of the "Patterns in NPD "project NPD goals are derived from the business strategy. If the strategy of the organisation is focused on maintaining a stable and limited line of products this may hamper radical innovation.
Numerous typologies for business strategies are available. In the "Patterns in NPD" project is chosen for the typology of Miles & Snow (1978) because this one of the richest strategic concepts developed in literature (Altena, 2005). The typologies are developed regarding the adaptive business cycle' which incorporates a variety of business aspects (Altena 2005). The typology is based on 4 types. These 4 types are described in the PNPD questionnaire:

Prospector: Continuously searches for market opportunities and regularly experiment with potential responses to emerging environmental trends. Therefore, they often are the creators of change and uncertainty to which our competitors must respond.

Analyzer: Attempt to maintain a stable, limited line of products or services, operating routinely and efficiently through the use of formalized structures and processes. At the same time, they monitor a carefully selected set of promising new product and market developments in different industries.

Defender: Has narrow product-market domains. Top-managers are experts in their business-limited area of operation but do not tend to search outside of their domains for new opportunities. They have

seldom a need to make major adjustments in technology, structure, or methods of operation. Primary attention is devoted to improving the efficiency of our operations.

Reactor: Change and uncertainty are perceived frequently occurring in the organizational environments but are unable or unwilling to respond effectively. They lack a consistent strategy-structure relationship, and seldom make adjustments of any sort until they are forced to do so by environmental pressures. (PNPD Questionnaire)

When analysing the companies the variables environment, industry & country, size and business strategy will be taken in consideration. Because these are factors that can influence innovativeness it is important deal with those variables and see if they maybe be an important factor influencing innovativeness instead of climate.

2.4 Perceptual agreement and Coherency

Perceptual agreement is a term which is often used in psychometric research to indicate the score of an item by aggregation of individual measures. The averaging of the total of the individual scores will be used as the score on an organisational attribute (James, 1982). Perceptual agreement refers to the extent which respondents have the same perception. The more the perceptions corresponded, the higher the perceptual agreement (Eijk, van der, 2001).

2.4.1 Perceptual agreement and climate

Perceptual agreement in combination with climate is researched a lot already (Paterson, Warr & West, 2004; Glick, 1985: Joyce & Slocum; 1984). According to Patterson et al (2004) high perceptual agreement indicates a climate that can be called strong. The article of Glick discusses the possibility of using perceptual agreement to the accuracy of aggregation of climate scores. According to him, perceptual agreement can be used to assess if people report on organisational level or individual level. Assuming that climate is an organisational attribute that exist independently of perceptions of respondents and reflects the work environment, people in that work environment should experience climate all the same. According to Glick (1985), in case of low perceptual agreement the climate measurement reflects individual random error. However under the condition that the agreement is not exceptional low, all those random errors and sources of bias will cancel each other out when the scores are aggregated. Therefore an aggregated score on climate can be marked as valid and reliable (Glick, 1985, p. 605).

In this research perceptual agreement on climate will be measured by means of the nine climate dimensions of the SOQ among employees.
Corresponding scores on climate by employees, thus high perceptual agreement will be indicated as a coherent climate. In this case the scores of the respondents corresponded; the employees share

their perception of climate; employees experience the climate for creativity and change the same. Varying scores, thus low perceptual agreement indicate an incoherent climate.
The scores on climate among the respondents vary strongly. This would mean that the climate is perceived in different ways, and no shared opinion about it exists. The climate isn't obviously present, and no univocal statement of the climate can be given.

By comparing scores the accuracy of the perceptions is taken in consideration.
In former research the perception of one manager is taken as *the* score of climate. Now is assessed how other people experience climate. By comparing the different scores can be criticized if the score of the manager is indeed the correct score that reflects the climate of the organisation, or in this case the NPD department. In case of deviating scores of one respondent this can be attributed to a random error, as result of misinterpretation of questions or other personal circumstances. But when the overall pattern of responses indicates that no agreement among all respondents is present the climate can be indicated as incoherent.

2.5 Research model

After the problem statement and exploration of the literature the following model will be used for this research:

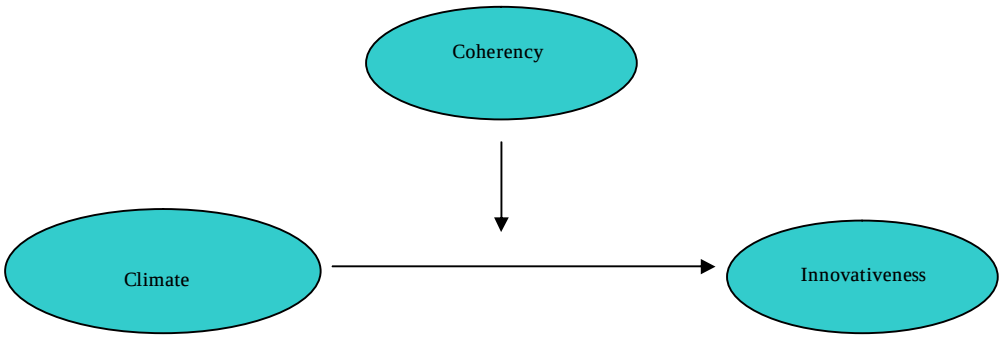


Figure 5. Conceptual modal

Goal is to measure if the degree perceptual agreement or coherency of the climate influences the relation between the climate and innovativeness. The perceptual agreement is the indicator for the coherency of the climate and is the moderator variable which affects the relationship between the independent variable 'climate' and the depended variable 'innovativeness'. This model is tested based on the hypothesis:

'In case of a coherent climate, the influence of climate on innovativeness larger is than in case of an incoherent climate.'

2.6 Proposition of Research questions

Now the research model and the key variables are clear a final research question and sub questions will be drawn.

What is the influence of the coherency of the climate concerning the relationship between climate and on innovativeness?

This question will be answered by the following sub questions:

1. What is the relation between climate an innovativeness
2. What is the degree of coherency of the climate?

3. Methodology

In this research the focus is on the influence of the coherency of climate on the relationship between climate and innovativeness. The theoretical framework already introduced the main variables. In this section, the methodological issues concerning these variables and the operationalisation of the variables will be presented. In this chapter the collection of the data and the methods for analyzing this data is discussed as well.

3.1 Theoretical framework in methodological perspective

3.1.1 Climate

The CCQ, the predecessor of the SOQ, was a result of a large factor analytic study. In combination with existing theory, field research and experiences of consultancy in organisational psychology Ekvall draws ten dimensions. The internal consistency of the dimension scales are measured by coefficient alpha on several different samples and show acceptable scores between α 0,62 and α 0,90 (Isaksen et al, 2000-2001). The difference between "innovated" and "stagnated" organisations was also researched by Ekvall and results showed that innovative organisations had significantly different scores than the 'stagnated' organisations.

The ten dimensions by Ekvall formed the Creative Climate Questionnaire. After translating the original Swedish version into an English version the dimension dynamism/liveliness didn't emerge as separate dimension. A factor analysis showed that the dimension "dynamism/liveliness "was not discriminating enough in the English version, and the items of this dimension loaded on other dimensions. Therefore this dimension was eliminated and only 9 dimensions were used for development of the *Situational Outlook Questionnaire* (SOQ) (Isaksen& Lauer, 2002). After the revising, the reliability and validity of the SOQ was conducted (Isaksen & Lauer 2001).A study by Lauer (1994) showed the evidence of the conceptual validity of the dimensions for representing climate.
After the translation and analysis process the SOQ is revised 4 times to improve the factor structure and coefficient alphas which ended up in the SOQ of 9 dimensions.
The questions of the questionnaire for measuring climate of the "Patterns in NPD" project are conducted of these nine dimensions.

The theory of Ekvall (1996) which is used to operationalise climate is build on some construction principles. The major point which is emphasized is that for measuring organizational climate, the focus is on the organization, and that respondent should observe life in the organisation, and not on individual level. The respondent needs to report behaviour of the whole workplace, and not own opinions. Ekvall tries to attain this by a certain way of questioning.

The questions are formulated in a way that the respondent observes life in the organisation, and not it's individual situation. Glick (1985) mentions the importance of the unit of analysis and how this is should be transferred to questionnaires. The questions should be directed towards the organisation, thus: ' this organisation encourages employees to try new methods" instead of" I am encouraged to try new methods" which supports a statement on individual level (Glick, 1985, p. 608). Ekvall has used the first method for the construction of the questions for the SOQ, as a result of which the organisation is the attribute. In this research we are looking at an organisational unit/department, the NPD department.

3.1.2 Innovativeness

Several methods for measuring innovativeness on different levels exist and are used. Examples are time of adoption, newness of products, number of patents of an organisation, level of R&D expenditures, number of innovations per employee, economic value of innovations, number of innovations adopted of the total list of innovations and subjective measures (Salavou 2004; Ekvall 1996, Rogers, 2003). Because of the many different points of view on innovativeness not one single measurement method is most appropriate. The different operationalisations and conceptualisations of the concept cause major deficiencies in the research to determinants of innovativeness (Salavou, 2004). Thompson (1960 in; Salavou, 2004) states that therefore every research on innovativeness should make use of measures available in the specific context of the research.
This research focuses on the innovativeness of the department. This is done by looking at the % of sales of innovative products. The percentage of sales resulting from innovative and non-innovative products are analysed to asses the contribution of innovative products from the NPD department for the organisation.

3.1.3 Perceptual agreement

The method used fore measuring climate in the"Patterns in NPD (PNPD) questionnaire and the climate survey questionnaire is based on an ordered rating scale. These scales are often used in large scale surveys, as the "Patterns in NPD" project. The scales are used to measure the degree of agreement of the responses. Mostly the standard deviation is used to express this degree of agreement (Eijk, van der, 2001). However using only the standard deviation can lead to misinterpretation of results. Van der Eijk (2001) states it is important to take a look at the "peakedness" of the distribution as well. In a distribution with a high degree of skewness the mean of a distribution is close to the maximum or minimum score. A few scores on the other end-pole could strongly influence the standard deviation, and give wrong information. A less skewed distribution shows a smaller distance from highest or lowest extreme score with the mean. While scores most correspond in the case of the skewed distribution, one contradictionary extreme score results in a larger standard deviation then in the case of the less skewed distribution which has more variance in scores.

Because of one respondent the score of the standard deviation may suggest an incoherent climate. Therefore is important to find out how the standard deviation is compounded. Deviating scores of one responded may result because of misinterpretation of the questions or maybe because is new in the department, or hardly present. Instead of only measuring the standard deviation, the results will also be evaluated based on the range and extreme deviations

3.2 Data collection

Because the bachelor assignment is part of an existing research project some data is already available. In a database all answers of the PNPD questionnaire are structured and give the results of the scores on climate and innovativeness. Also, some mini surveys are yet conducted with a focus on climate. This data will be used as well.

3.2.1 Selection of organisations

Besides existing data, new data is gathered as well. The organisations that will be used for the research have to meet two requirements to fulfil the conditions of the "Patterns in NPD" project. The organisation has to have a special department or subunit which is specialized on product development, like an NPD department of R&D department. The other requirement is that at least 5 Full Time Equivalents (FTE's) have to work in this department. Because of these requirements the sample is a selective sample. Organisations with no specific NPD department or less then 5 employees are excluded of the research, and some level of innovation in the selected organisations is expected. The least innovative organisation in the sample still can be rather innovative compared to organisations outside the sample.

The research is conducted in Adelaide, Australia (South Australia). This country is characterized by major distances and to keep travel time acceptable, organisations in the state South Australia are chosen

The other selection was based on industry. Because the focus is on product development, it had to be a manufacturing organisation, which has as output products. This further selection is based on the existing organisations already participating in the Patterns in NPD project and the presence in the region. This resulted in the automotive, medical devices and electronics industry of subcategory. The official SIC codes corresponding are:
2396 - Automotive Trimmings, Apparel Findings and Related Products, 3465- Automotive Stampings Motor Vehicles and Passenger Car Bodies, 3714- Motor Vehicle Parts and Accessories,
3841 - Surgical and Medical Instruments and Apparatus, 3845 - Electromedical and Electrotherapeutic Apparatus and 36 - Electronic and other electrical equipment and components except computer equipment (http://bww.dnb.com.au/SicBrowse.asp?SicGroup=D)

The selection of the organisations is based on two sources. The first one is the website www.southaustarlia.biz. This website is hosted by the government of South Australia; The Department of trade and economic development. This website provides a list of organisations selected per specific industry.
The other source is the database on the website and is hosted by D&B: 'decide with confidence ". The website contains a database, called the "Business who's who Australia" and is based on DUNS numbers. Access to this database is granted by use of the password and account number of the University of South Australia. The database makes it possible to search for organisations in a specific area and sector by SIC codes.

It total 47 organisations are contacted in Australia. Most organisations didn't want to participate because of a lack of time, organisation policy or the missing of a R&D/ NPD department. After the first call round, 13 organisations were interested and received more information about the research and its purposes. This resulted in 2 organisations that were able and willing to participate. These two organisations are the Australian organisations of the sample. The other 11 organisations didn't want to/ weren't able to participate as a result of a lack of time, or because their organisation didn't suit the purpose of the research.

The other 4 organisations were contacted in former research, thus results were already available. The results of organisations from the Netherlands and Spain were present because of former data collection in those countries. That research also consisted of data from the PNPD and climate survey questionnaire. The selection of these 4 organisations is based on the same requirements of the Australian organisations.

Organisations	1	2	3	4	5	6
Industry	Medical Devices	Automotive	Medical devices	Medical devices	Automotive	Radio+ TV communications
Core products	Crystal diffractometers	Automotive Sensors	Dental & optical products	Implants & prostheses	Injection moulding Painting Assembly	HF Communications Products
Turnover (mjln)	10	200	10	5	96	76
Business level	International	International	International	International	International	International
Size (No of FTE's)	40	200	49	36	620	350
FTE's in NPD	12	75	7	5	68	40
Country	The Netherlands	The Netherlands	Spain	Spain	Australia	Australia

Table 1 Overview companies

3.2.2 Selection of department

In this research the NPD department is chosen as unit of analysis. This department is directly involved with development of new products and has therefore a major influence on innovativeness. By choosing the NPD department is assumed that the climate is at least a little oriented towards innovation.

3.2.3 Selection of respondents

After selecting the organisations and the department, the respondents for this research had to be selected. Since the focus of this research, and the "Patterns in NPD" project, is on new product developed, respondents had to be involved with NPD or something corresponding, like Research and Development (R&D).
For this research a manager involved with NPD/R&D was selected first. When contacting the organisations and introducing the research, I asked for contact with someone involved with product development within the organisation. When this person was found, the project was introduced to him again, and we discussed if he was the right person to answer the questionnaire.

For measuring perceptual agreement on climate, employees of one department, in this case NPD/R&D, were needed. They answered the survey questionnaire which was supplied by the NPD manager. The NPD manager was told to spread the questionnaires to as many people as possible, but with the requirement that respondents had to be active in NPD. The questionnaires were checked on this by looking at the function which was filled in by respondents.

Companies	1	2	3	4	5	6
Size (No of FTE's)	40	200	49	36	620	350
FTE's in NPD	12	75	7	5	68	40
Respondents survey questionnaire	8	5	5	5	8	10

Table 2. Number of respondents

Important is to note that number of FTE's in NPD in the table above is the total number of FTE's in NPD in the whole organisation. It is unknown how many FTE's were present in the department/unit in which the questionnaire is distributed. This is only certain for organisations 1, 3 and 4. The low number of FTE's in NPD of organisation 1,3 and 5 compared to organisation 2,5 and 6 suggests that this is the total NPD department in which the questionnaires are distributed. Based on this the responses of 66,6%, 71,4% and 100% organisation 1,3 and 4 are representative samples. For the other 3 organisations the reliability of the samples can't be guaranteed.

3.3 Methods of analysis

To conduct the research existing methods and protocols will be used which are developed for the "Patterns in NPD" project. For measuring climate and innovativeness, the overall "Patterns in NPD" (PNPD) questionnaire will be used (Appendix 8.1). This questionnaire contains questions on varying aspects of an organisation, which gives a total overview of the organisation. Some questions and constructs are specially developed for the "Patterns in NPD project" by use of existing theory. For the measurement of some constructs existing methods are used.

I will use the PNPD questionnaire for the measurement of the main variables 'climate', and 'innovativeness'. The PNPD questionnaire measures these constructs by respectively the 9 dimensions of Ekvall (1996) and the percentages of sales.

Also a specific survey questionnaire which measures climate is already available (Appendix 8.2). This survey questionnaire is developed for questioning employees for case studies on climate and culture. This questionnaire also uses the 9 dimensions of Ekvall for measuring climate.
In this research the survey questionnaire will be used to measure the perceptual agreement among employees to assess the coherency.
The main difference between the PNPD questionnaire en de the survey questionnaire is the number of indicators. The 9 dimensions of climate are measured in the PNPD questionnaire by 1 indicator per dimension, while the survey questionnaire consists of 6 indicators per dimension.
The PNPD questionnaire will be filled in by the NPD manager, so his perception of climate is measured less extensive in comparison employees, which have 6 indicators per dimension.
Some analysis on the different questionnaires is already done within the "Patterns in NPD" project, and this showed that no significant difference between the scores of the different questionnaires concerning climate exists.

Important to note is that the sample for research is very small, only 6 organisations participate. Because time for this research is limited, the number of participating organisations is little and measurements are made at one moment in time. Therefore it is impossible to draw causal relations. Therefore this research consists of a qualitative analysis. The analysis will be descriptive. Because of the limited number of cases, it is impossible to do quantitative analysis, based on statistical analysis. Therefore this research incorporates more descriptive, qualitative analysis.

Some of the variables used are non-continuous measures and different scales are used. In combination with the small number of cases and since it is impossible to draw causal relations is it impossible to draw sound moderator regression analysis, which would have suited best in this research best (Green, 1991) A regression analysis is used to test the linear relation between an independed and depended variable. With a moderator regression analysis, the influence of a third, moderating variable could be tested. This fits the research goals of testing the influence of the degree of coherency of climate on the relationship between climate and innovativeness. But for doing regression analysis, the assumption is

that the causal relation is present and that the variables have a ratio or interval scale. In this research this is not the case, with as a result that this method is not applicable.

3.4 Variables

In this paragraph, an overview of the measurement methods of all variables is given.

3.4.1 Key variables

Climate

For measuring climate the 9 dimensions of Ekvall (1996) are used. These dimensions are developed for measuring the climate for creativity and change. The focus on the relation between climate and stimulating innovation of this method suits this research.
The 9 dimensions are converted into 9 questions in the PNPD questionnaire. The dimensions are the components of question 37 of the "Patterns in NPD "(PNPD) questionnaire. This question contains 1 indicator for each climate dimension and has a 7 points Likert scale varying from Strongly Disagree (1) to Strongly Agree (7) (Appendix 8.1). This question will be filled in by the NPD manager or another manager involved with product development. A high score on a dimension is a positive result, except for the dimension "conflicts". In this case a low score is positive as a result of the negative construct. The inverse of the score on conflict is used so that it will contribute to the overall score of climate in the right way. The overall score is calculated by the average scores of the 9 dimensions.

	Strongly disagree						Strongly agree	Don't know
People are emotionally involved in goals set.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
People have freedom to define their own work.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
There is a high level of trust between people.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

Figure 6 . Example question 37 PNPD questionnaire " Climate'

Before a make a classification of "good', 'bad" and 'average" climate, I will take a look at the exiting data on climate from the PNPD questionnaire.
The scores on climate among 210 organisations show a mean score is 4,92 on a scale of 1 to 7. The scores vary between 1.67 and 6.78 . The score of 1,67 is excluded in the statistical analysis because it was an outlining score, strongly deviant of the other scores.

The skewness of -0,34 indicates that the score is a little asymmetric distributed with the biggest mass on the right.

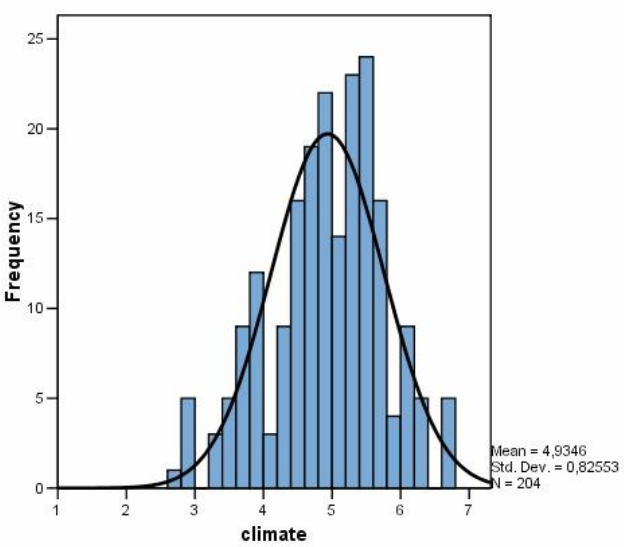


Figure 7. Distribution 'Organisational Climate" N=210

Statistics		
Climate		
N	Valid	204
	Missing	5
Mean		4,93
Median		5
Std. Deviation		0,83
Skewness		-0,34
Kurtosis		-0,09
Minimum		2,78
Maximum		6,78
Reliability Statistics		
Cronbach's Alpha		0,78
N of Items		9

Table 2. Statistics Climate N=209

Based on these characteristics of climate the classification for this research will be:
Score 1-3,9 bad climate
Score 4 – 5,4 average climate
Score: 5,5 – 7 good climate

In the chapter on climate was mentioned that Ekvall appoints specific dimensions that are important for a good climate for innovation. The most important variables for an innovative climate are *Idea time, Idea support, Debates* and *Risk taking*. Since these dimension are the most important for creating a climate that supports innovation the statistics of the 209 organisations of the PNPD sample are presented as well.

Statistics	Climate Dimensions Innovation	
N	Valid	204
	Missing	5
Mean		4,66
Median		4,71
Std. Deviation		1,01
Minimum		1,75
Maximum		7

Table 3. Statistics dimensions climate for innovation "

The mean of 4, 66 is a little lower then the average of the 9 dimensions (4,93) This means that the organisations score in general a little lower on the dimensions that are the most important for stimulating innovation compared to the general climate for creativity and change. In appendix 8.4 a table is present with the averages of all separate dimensions.

Innovativeness

A percentage of sales is an objective measure, based on actual, measurable results of the organisation. Question 17 of the PNPD questionnaire is used to assess the percentages of sales. At this question the manager who filled in the questionnaire had to divide 100% over 4 categories: non modified products, incremental innovation, next generation and radical innovation.
The results of the 210 organisations in the PNPD database are shown in table 5

	N	Minimum	Maximum	Mean	median	Std. Deviation
Radical inn.	210	0	100	14,9	10	22,4
Nextgen	210	0	100	23,2	20	20,0
Incr. Inn	210	0	100	28,2	25	21,4
Non modified	210	0	100	33,6	25	30,7
Valid N (listwise)	210					

Table 5. Results Sales per product category

To analyse the innovativeness two main categories are made: sales from non-modified products and sales originating form innovative products. The innovative products are subdivided in to three subcategories: incremental innovation, next generation products and radical innovation.

Averagely one third (33,6 %) of the sales are originating from non-modified products while 66,4% is gained by innovative products. Within the category innovative products the 3 categories of product innovation are present: radical, next generation an incremental innovation.

Perceptual agreement & Coherency

The coherency of the climate is determined by the perceptual agreement on climate scores. This is measured by analysing the scores given by the employees on the survey questionnaire. The questionnaire consists of 9 questions. Each question represents one of the dimensions of climate from Ekvall. These are the same dimensions as used for PNPD questionnaire. Each question (dimension) consists of 6 or 7 indicators, also with a 7 points Likert scale varying from Disagree (1) to Agree (7) (Appendix 8.2) .

The scores will be used to assess the degree of perceptual agreement by analysing the consistency or differences of the scores. The higher the consistency of answers, the higher the perceptual agreement, which indicates a coherent climate.

One indicator for perceptual agreement is the standard deviation. This reflects the dispersion around the mean. The higher the standard deviation, the lower the perceptual agreement and the less coherent the climate. The standard deviation is measured on the level of every dimension and the on the final climate scores given by the employees.

Moreover, I take a look at presence of outliners, to see how much the highest and lowest score are apart, and if the range is due to (infrequent) extreme deviations. This is done to analyse the accuracy of the perceptions and use of standard deviation.

The comparison of the scores between the managers and employees is based on the climate score given by the manager and the score given by the employees. The score of the managers is already calculated for measuring the variable climate. The climate score of the employees is calculated by the average score on climate given by all employees of the department.

	Disagree						Agree	
People are committed in contributing to the goals of the organization.	1	2	3	4	5	6	7	n/a
People lack interest in their work.	1	2	3	4	5	6	7	n/a
People are intrinsically motivated to contribute to the suc of the organization.	1	2	3	4	5	6	7	n/a
People view work as an opportunity not as obligation.	1	2	3	4	5	6	7	n/a
Interpersonal interactions are dull.	1	2	3	4	5	6	7	n/a
People feel associated with the long-term goals of the organization.	1	2	3	4	5	6	7	n/a

Figure 8. Question 1 Climate specific questionnaire

3.4.2 Control variables

Besides climate other variables can influence the innovativeness of the organisation or the relation between climate and innovativeness
Therefore, it needs to be checked whether the possible relations are result of the main variables of this research or other variables. The different control variables are already explained in the literature chapter. In this chapter, the measurement of the control variables is discussed.

Organisation size

The organisation size is measured by the number of Full time equivalents (FTE). Question 6 of the PNPD questionnaire is addressed to this variable. The number of FTE's is expressed in numbers. Based on the FTE's the organisation can be categorised as small, medium or large.
The categorisation of small and large firms varies internationally. In his research, the investigated companies are from Australia and Spain and the Netherlands. In Australia, a company is considered small when it has 20 or less employees *(http://www.business.gov.au/Business+Entry+Point/Information/Glossary.htm#s_bookmark)*. For the European countries the standard for a small firm is a maximum of 50 employees Between 50 and 250 employees is a medium sized company and over 250 a company is classified as large. *(http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm)*. Since the classification of European Union is more widely accepted and most companies within the "Patterns in NPD Project' are from European origin, I will use that classification.

Industry / environment and country

Question 9 of the PNPD Questionnaire refers to the industry sector for the Core Product. This can be expressed by the name of the industry sector, and/or the official SIC code. This question only indicates the name of the industry and doesn't tell anything about its characteristics. Question 13 of the PNPD questionnaire consists of 11 indicators for the environment. These indicators refer to the risks, opportunities, and change in the environment and the behaviour of customers and competitions. The eleven indicators are measured by a 7 points item Likert scale. Each indicator is described by two extremes and the respondents need to indicate the number that best approximates the actual condition.

Safe, little threat to the sur and well being of the organization.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Risky, one false step can mean my organization's und
Rich opportunities in investment and marketing.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Few opportunities, stressful, hostile, hard to keep afloat.

Figure 9. Example questions for measuring the environment (PNPD questionnaire)

The score on environment will be the average of the 11 scores of the indicators which is a number from 1-7. A high score represents an environment which is a risky and dominant and with few opportunities. The rate at which products are getting obsolete is high and organisations must frequently change its practices and its production technologies. The environment is uncertain; it is hard to predict action form competitors or demand from customers. The variation between products is high; the nature of the competition and customer buying habits differs and also the production methods vary (PNPD questionnaire).
The country of origin is described by the name of the country. This can be the Netherlands, Spain or Australia.

Business strategy

For measuring the business strategy the typology of Miles and Snow (1980) is used within the "Patterns in NPD" project. A description of the 4 types is given in question 14 of the PNPD questionnaire. The manger has to choose between those 4 descriptions. These will be typified as prospector, defender, analyser or reactor (Miles &Snow 1978).

Variable	Measured by	Question	Possible values
Organisational climate	PNPD questionnaire manager	37	1-7
Perceptual agreement	Climate questionnaire employees	1t/m9	0- infinity
Innovativeness	PNPD questionnaire manager	16	1-150
Company size	PNPD questionnaire manager	6	1-infinity
Industry	PNPD questionnaire manager	9	Industry name
Environment	PNPD questionnaire manager	13	1-7
Country	Location		Country Name
Business strategy	PNPD questionnaire manager	14	prospector, analyzer defender, reactor

Table 6. Overview variables

4. Results

In this chapter the results will be described and analysed. After giving an overview of the results on the variables the relationship between them will be analysed.

4.1 Description main variables

First an overview on the results of each variable is given.

4.1.1 Climate

Climate is measured by the 9 dimensions of Ekvall which are converted into 9 questions of the PNPD questionnaire. The average score of these 9 dimensions reflects the overall score of climate. Scores can vary between 1 and 7 in which 1 is a bad climate and 7 a good climate. For the score on "conflicts", an inverse is used.

Climate score Manager	Challenge/ Involv.	Freedom	Openess/ Trust	Idea time	Pleasantery/ Humour	Conflict	Idea support	Debates	Risk Taking	Overall
Organisation 1	7	6	6	5	5	5	5	6	5	5,6
Organisation 2	7	6	6	1	4	6	3	4	2	4,3
Organisation 3	7	4	4	6	4	2	5	4	3	4,3
Organisation 4	6	5	6	3	4	7	2	2	5	4,4
Organisation 5	4	4	5	3	4	6	2	4	4	4,0
Organisation 6	5	4	5	3	3	5	4	5	3	4,1
Average	6,00	4,83	5,33	3,50	4,00	5,17	3,50	4,17	3,67	4,46

Table 7. Results Climate

Looking at Table 7 we see the scores are very close, only organisation 1 has an outstanding higher score. Based on the classification organisation 1 has a "good climate" and organisation 2,3,4,5 and 6 all an average climate for innovation and change. Referring to the average of the 209 organisations of 4,93 we see that all organisations except organisation 1 have a score under average. The average of this sample has is a result a lower average, of 4,46.

Climate score Manager	Dimensions Innovation
Company 1	5,5
Company 2	3,7
Company 3	4,3
Company 4	3,7
Conpamy 5	3,5
Company 6	3,8
Average	4,1

In the following table, the scores for the specific dimensions for stimulating innovation as stated by Ekvall (1996) are presented. This is the average of the 4 dimensions *Idea support, Debates, Risk Taking* and *Idea Time,* which are the most important dimensions for a climate that stimulates innovation.

Table 8. Scores climate for innovation – mean 4 dimensions

In addition, these results also show a striking higher score of company 1 compared to the other companies. Except organisation3, all other organisations have a lower average on the four dimensions then the original nine dimensions for creativity and change. For company 1 the difference is minimal, but for organisation, 2, 4 and 5 differences are notable.

Certainly referring to the results of the sample of N=209 scores are relatively low. A low score on these for dimensions means that the climate is not very suitable for innovation. Only the climate of organization 1 is oriented towards innovation

Based on these scores of climate the highest innovativeness is expected from organisation 1. Considering the major difference with the scores of the other organisations difference in innovativeness is expected as well. The differences among organisation 2,3,4,5, and 6 on the 9 items are not very big, but looking at the 4 dimensions for innovation organisation 2 is expected to have the second highest score on innovativeness. Organisation 5 has the lowest score on both measurements and therefore is expected that organisation 5 will have the lowest innovativeness.

4.1.2. Innovativeness

Looking at the sales results per product category we can see if most of the sales results are gained by non modified or innovative products, and what kind of innovative products.

Organisation	% Contribution of non modified	% Contribution of incremental	% Contribution of next generation	% Contribution of radical
1	0	60	30	10
2	50	40	5	5
3	10	65	20	5
4	50	10	20	20
5	20	30	30	20
6	30	50	0	20
Mean	26,7	42,5	17,5	13,3

Table 9. Results sales

Looking at the results of the percentages of sales organisation 1 is an outstanding organisation again. It is the only organisation in this sample of which all sales are result of innovative products.

The sales of organisation 2 and 4 are achieved for 50% from innovative product and 50% is originating of non-modified products. This is the highest score on non- modified products of the sample. These are the only organisations that score above the mean of 33,6% measured at n=210.

In this case it means that they are less innovated then most companies because a relative high percentage of sales is originating from non-modified products.

The other organisations; 1,5 and 6 all have a lower score on sales originating from non-modified products compared to the mean of 33,6% from n=210. If we simply look at the proportion of sales of innovative compared to non-modified products as well organisation 1, 3 and 5 have an innovativeness above average. Organisation 6 scores close to mean and organisation 2 and 4 are less innovative then average.

4.1.3 Coherency

Perceptual agreement is used to reflect the coherency of the climate. For measuring climate among employees, the climate survey questionnaire is filled in by employees of the NPD/R&D department. This questionnaire is used to compare the results given among the employees. The scores of the employees are also compared with the score of the manager.

First the standard deviation is used which reflects the dispersion around the mean. The higher the standard deviation, the lower the perceptual agreement, which indicates an incoherent climate. Besides the standard deviation is analysed if infrequent deviations are present which can cause a misinterpretation of the standard deviation.

In appendix 8.3 all results of the climate questionnaire can be found. For analysing these results some summarising tables are presented.
First the individual scores in the company are shown. These tables present the scores given per respondent per dimension

Organisation 1	Challenge/ inv	Freedom	Openess/T rust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
respondent1	6,7	5,3	5,7	6,2	5,8	6,4	6,3	6,0	4,3	5,9
respondent2	4,3	5,3	4,8	5,7	5,2	4,6	5,8	5,4	3,7	5,0
respondent3	6,2	4,8	4,8	4,5	5,7	5,0	5,8	5,7	4,8	5,3
respondent4	5,0	5,7	4,5	5,5	4,7	5,9	4,8	4,9	4,5	5,0
respondent5	6,5	5,2	5,3	5,3	6,2	5,7	6,5	5,6	4,7	5,7
respondent6	7,0	6,0	6,0	7,0	6,0	5,7	6,5	7,0	4,0	6,1
respondent7	5,5	5,5	4,2	5,5	6,5	5,4	5,2	5,4	5,3	5,4
respondent8	2,7	5,5	3,8	2,5	4,8	4,7	3,7		5,0	4,1
Average	5,5	5,4	4,9	5,3	5,6	5,4	5,6	5,7	4,5	5,3
Standard deviation	1,45	0,35	0,74	1,33	0,65	0,63	0,98	0,66	0,54	0,63
Manager	7	6	6	5	5	5	5	6	5	5,6

Organisation 1

Organisation 1 has several cases in which disunion among all employees takes place. The range is sometimes even 7, and all possible scores are given. Although some indictors show no agreement at all, a high standard deviation can be caused by some extreme scores, particularly by respondent 8. In some cases his/her score is completely the opposite of the score of the other employees, which answers do correspond. Within the category *Debates,* respondent 8 gives no answers at all and in most cases the scores of are far below average. The overall climate score of all respondents is 5,3 while with exclusion of respondents 8 this is 5,5. The standard deviation is 0,43 instead of 0,63 when respondent 8 is excluded. The mean score of the employees almost corresponds with the manager, and almost completely when respondent 8 is excluded.

The most important dimensions for innovation, *Idea time, Idea support, debates* and *risk taking,* show also agreement between the manager and employees. The standard deviation of Idea time is quite high, but this is also caused by responded 8. Without his/her extreme low score the standard deviation would only be 0, 77.
The employees share the perception of the manager; both give the highest score of climate of this sample. As a results of this the highest innovativeness is expected of this organisation

Organisation 2	Challenge /inv	Freedom	Openess/trust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
respondent1	5,8	5,4	6,3	4,7	5,5	6,0	5,8	4,1	4,0	5,3
respondent2	6,0	5,4	6,0	5,0	5,8	5,3	6,7	4,7	4,2	5,5
respondent3	6,2	4,6	4,5	3,2	5,0	4,7	3,7	4,6	4,5	4,5
respondent4	6,0	5,0	5,3	4,8	4,8	5,0	5,7	3,9	5,0	5,0
respondent5	5,4	4,8	5,3	4,5	5,2	5,0	5,2	4,0	3,2	4,7
Average	5,9	5,0	5,5	4,4	5,3	5,2	5,4	4,3	4,2	5,0
Standard deviation	0,30	0,35	0,69	0,73	0,40	0,51	1,11	0,37	0,68	0,38
Manager	7	6	6	1	4	6	3	4	2	4,3

Table 11. Climate scores employees organisation 2

Organisation2

When analysing the scores of organisation 2 we see that the employees agree on the scores mostly, in only a few cases disagreement exist. And in cases of disagreement within one indicator, the range is maximum 5, and no complete extremes are given. Particularly on the dimension *Ideas support* the standard deviation is high compared to others .This is mostly to blame on respondent 3, who causes most of outliners.

The mean climate score of the employees is somewhat higher then the score of the managers. This is mainly due to extreme low scores on Idea time and risk taking of the manager. Also the different perception of Idea support of the manager compared to the employees is notable. Since these are three of the four main indicators for an innovative climate disagreement on these factors may affect the innovativeness. Although coherency among employees seems pretty high looking at the standard deviations and lack of many outliners, the agreement on crucial dimensions the between manager and employees is limited.

Organisation 3	Challenge /involvem	Freedom	Openess /trust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
respondent1	4,5	4,3	5,5	1,8	4,7	4,9	5,7	5,0	1,8	4,2
respondent2	5,7	5,3	5,8	2,3	4,2	5,6	5,8	3,7	4,0	4,7
respondent3	4,8	5,0	5,2	5,0	5,2	5,1	5,0	5,3	4,5	5,0
respondent4	6,3	5,8	5,5	7,0	6,2	6,1	7,0	6,7	5,3	6,2
respondent5	3,2	4,2	3,7	3,7	3,8	4,3	4,8	3,7	2,8	3,8
Average	4,9	4,9	5,1	4,0	4,8	5,2	5,7	4,9	3,7	4,8
Standard deviation	1,21	0,69	0,85	2,10	0,92	0,70	0,86	1,25	1,38	0,92
Manager	7	4	4	6	4	2	5	4	3	4,3

Table 12. Climate scores employees organisation 3

Organisation 3

Organisation 3 has the weakest climate based on the standard deviation. Besides several indicators of complete disagreement (Appendix 8.3) a lot of indicators are characterised by deviations. These are scores are given by varying respondents, although respondent 4 is noted because of his/ her high scores. In cases of deviating scores of one respondent this may be due to misinterpretation of the respondent and can be appointed as random error. But these varying scores indicate an incoherent climate.

The overall climate score of the manger is a little lower then the mean of the employees. Important is that the standard deviation of the overall score of the employees is high. This does indicates a limited coherency.
Also the standard deviations on several variables; *Challenge/involvement*, *Idea time, debates* and *Risk taking* are rather high. This is caused by different respondents. Except the dimensions *Challenge/involvement, Idea time* and *Conflict*, the scores of the employees correspond with the scores of the manager. But because of the high standard deviations caused by overall varying scores of respondents can be stated that the climate is incoherent.

Organisation 4	Challenge /involvm.	Freedom	Openess/trust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
respondent1	5,3	4,5	5,6	6,0	4,7	5,7	5,8	4,6	3,7	5,1
respondent2	5,5	4,6	4,6	6,0	3,6	5,4	6,0	4,2	2,0	4,7
respondent3	5,7	5,0	6,0	6,7	6,0	6,1	6,2	6,9	2,7	5,7
respondent4	4,3	5,2	5,3	5,4	4,3	6,5	5,3	4,6	4,2	5,0
respondent5	5,7	5,2	5,3	5,8	6,8	6,3	6,5	5,1	3,3	5,6
Average	5,3	4,9	5,4	6,0	5,1	6,0	6,0	5,1	3,2	5,2
Standard deviation	0,56	0,32	0,51	0,46	1,31	0,45	0,43	1,06	0,85	0,42
Manager	6	5	6	3	4	7	2	2	5	4,4

Table 13. Climate scores employees' organisation 4

Organisation 4

When comparing the employees with the manager major differences of perception on the dimensions *Idea time, Idea support debates* and *Risk taking* can be found. These are all the specific dimensions that of all dimensions are the most important for an innovation oriented climate. Among employees the agreement on these dimensions is not very low. Certainly on *Idea time* and *Idea support* employees share the perception. Also on the overall climate score the employees do agree considerably. All employees appreciate the climate better then the manager does. The manager has the perception that the climate is not very suitable for innovation, while the employee's experience it more positive.

Organisation 5	Challenge /involvm.	Feedom	Openess/trust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
Respondent 1	3,7	4,8	4,7	3,3	6,0	4,5	4,8	4,7	3,3	4,4
Respondent 2	5,0	3,8	5,3	1,8	4,3	4,1	5,5	4,7	2,8	4,2
Respondent 3	4,5	4,7	4,7	4,8	5,2	4,4	5,3	4,7	4,2	4,7
Respondent 4	4,0	3,8	4,2	3,5	5,0	5,3	5,3	4,4	3,3	4,3
Respondent 5	5,2	4,7	4,0	4,7	4,8	5,0	5,5	4,9	3,3	4,7
Respondent 6	5,2	4,8	4,5	3,0	5,7	4,3	5,0	5,9	1,7	4,4
Respondent 7	5,2	4,2	4,8	4,2	4,7	4,6	5,0	5,6	3,3	4,6
Respondent 8	2,8	5,2	4,3	4,0	3,8	4,1	2,7	5,1	4,0	4,0
Average	4,4	4,5	4,6	3,7	4,9	4,5	4,9	5,0	3,3	4,4
Standard deviation	0,87	0,50	0,42	0,98	0,70	0,41	0,93	0,49	0,77	0,25
Manager	4	4	5	3	4	5	2	4	4	4,0

Table 14. Climate scores employees organisation 5

Organisation 5

Looking at the answers in appendix 8.3 we see that on some indicators big disagreement exist. The aggregation of the indicators to one score per dimension leads to a view in which this disagreement is not so much present anymore.

The standard deviation of the mean climate score is the smallest in the sample. On each dimension the standard deviation is also limited. Also the overall score of the manager correspondents with the mean of the employees (4,0 and 4,4). With the exception of Idea support, the scores on the dimensions of the manager and employees are close. Not one respondent is noted for strongly deviating scores on all dimensions. Important to note is that the employees rate as well idea time and risk taking pretty low, because these do matter much for innovation. With exception of idea support, the perception of the employees corresponds with the view of the manager. All in all can be stated that the climate is coherent.

Organisation 6	Challenge/ involm.	Freedom	Openess/ trust	Idea time	Pleasantery	Conflict	Idea support	Debates	Risk taking	Overall
Respondent 1	5,2	5,7	4,8	7,0	5,5	6,0	5,3	5,6	6,5	5,7
Respondent 2	4,2	5,0	5,0	5,3	6,3	6,5	5,5	4,7	4,5	5,2
Respondent 3	5,0	4,0	5,0	5,3	4,0	3,0	5,0	5,8	5,5	4,7
Respondent 4	5,3	4,7	5,2	4,2	5,3	5,0	4,5	4,4	4,7	4,8
Respondent 5	3,7	5,0	4,5	5,3	5,3	4,3	5,3	5,0	5,0	4,8
Respondent 6	5,2	4,8	5,3	5,5	4,7	6,0	5,8	5,7	5,0	5,3
Respondent 7	5,3	4,5	5,0	4,3	4,2	5,1	5,2	4,9	5,0	4,8
Respondent 8	5,2	4,2	6,0	1,8	6,0	6,7	6,7	5,9	5,0	5,3
Respondent 9	5,5	4,8	4,5	5,3	4,5	4,6	4,8	3,6	5,0	4,7
Respondent 10	4,0	4,5	4,0	2,3	3,7	4,6	3,8	3,9	5,0	4,0
Average	4,9	4,7	4,9	4,7	5,0	5,2	5,2	4,9	5,1	4,9
Standard deviation	0,65	0,47	0,54	1,55	0,89	1,14	0,76	0,81	0,55	0,47
Manager	5	4	5	3	3	5	4	5	3	4,1

Table 15. Climate scores employees organisation 6

Organisation 6

Major differences between the manager and employees are the scores of the dimensions *Idea time, Pleasantry* and *Risk taking are* present. The scores of the manager on these dimensions are considerable lower then the score of the employees. This results in a lower total score on climate of the manager. On the other dimensions the scores given by employees and the manager nearly correspond. The biggest disagreement among employees is about the *Idea time.* The maximum score of 7 is given by respondent 1, while two extreme low scores, 1.8 and 2.3, are present as well. The innovativeness may be a little higher then is assumed by the perception of the manager since the employees rate the overall climate higher, but also on *Idea support*, *Idea time* and *Risk taking* the score of the employees is higher.

In the following tables an overview of all organisations is given. The climate scores given by the managers are presented as well, to see the difference between managers and employees.

Climate score Employees	Dimensions Innovation	Dimensions climate	Standard deviation climate employees
Organisation 1	5,2	5,2	0,63
Organisation 2	4,6	4,9	0,38
Organisation 3	4,6	4,7	0,92
Organisation 4	5,1	5,1	0,42
Organisation 5	4,2	4,3	0,25
Organisation 6	4,9	4,9	0,47
Average	4,8	4,9	0,51

Table 16. Climate scores employees and standard

Climate score Manager	Dimensions Innovation	Dimensions Climate
Organisation 1	5,5	5,6
Organisation 2	3,7	4,3
Organisation 3	4,3	4,3
Organisation 4	3,7	4,4
Organisation 5	3,5	4,0
Organisation 6	3,8	4,1
Average	4,1	4,5

Table 17. Climate scores managers

When comparing the 6 organisations a few things are notable. Theory suggest that managers tend to rate the climate higher then employees. But in this sample, with exception of organisation 1, the mean of the employees is higher then the score of the manager.
Another point is the score of the 4 specific dimensions for innovation. Comparing the mangers score on the overall score this is in most cases notably higher the mean of the 4 dimensions. However, the differences between both scores of employees are much smaller. The scores almost correspond. Also with the individual analyses of the organisations that managers sometimes rate a dimension far lower then employee's do.

Looking at the agreement only among employees differences between organisations are observable as well. In the overview in appendix 8.3 all given answers can be found.
The analysis as presented above is based on the standard deviation of the total score per dimension. . Since the analysis is manly done on the level of each dimension this measure is used. But looking more closely to the indicators we see that this may cause misinterpretation.
An example is the comparison of the scores on the dimension *Openness* of organisation 1 and 2. Although the standard deviation of the total dimension scores per respondents is almost equal (0,74 vs. 0,69) the pattern of answers varies strongly. The yellow marked indicators of organisation 1 show that a range of 7 exists and standard deviations per indicator are much higher. By aggregating the indicators to one final score per dimension these differences are levelled out.

Glick (1985) stated that under the condition that the agreement is not exceptional low, all those random errors and sources of bias will cancel each other out when the scores are aggregated. According to him this is the reason that aggregated scores of climate can be marked as valid and reliable (Glick 1985, p. 605). But for analysing coherency, different responses are exactly what is of importance.

4.1.4 Control variables

In the following tables, an overview of the results of the control variables is given.

Industry/ Environment and country

The organisations in this research operate in three industries: Automotive, medical devices en Radio and Television Broadcasting and Communications Equipment. The environment scores of all organisations are close. Only organisation 1 has a much higher score on environment compared to the other organisations in the medical devices industry. A possible explanation could be that organisation 1 is originating from The Netherlands and organisation 3 and 4 from Spain.

Organisation	Environment	Industry	Country
1	5.5	Medical Dev	The Netherlands
2	4.1	Automotive	The Netherlands
3	4.2	Medical Dev	Spain
4	4.1	Medical Dev.	Spain
5	4.5	Automotive	Australia
6	4.5	Radio& T.V Communications Equipment	Australia

Table 18.Results Industry/ Environment and country

Size

Differences in organisation size among the participating organisations are large. Organisation 4 is the smallest organisation with 36 FTE's and organisation 5 is the biggest organisation with 620 FTE's. Organisation 1,3 and can be classified as small, organisation 2 as medium and organisation 5 and 6 as large.
When looking at the FTE's spend in the NPD department also big differences are present.
Organisation 1 and 2 spend relatively twice or three times as much FTE's on NPD. Remarkable is that the scores of the three countries almost corresponded.

Organisation	Size (No of FTE's)	FTE's in NPD	
1	40	12	30%
2	200	75	37,5%
3	49	7	14%
4	36	5	13,8%
5	620	68	10,9%
6	350	40	11,4%

Table 19. Results size

Business Strategy

Organisations 1 and 6 have deviating results compared to the others. Organisation 2,3,4 and 5 are analyses and are characterized by stable, limited lines of products. Organisation 1 is a prospector and is more focused on searching for market opportunities and anticipating on the environment. Organisation 6 is a defender; the focus is on improving the efficiency of operations instead of focusing on new products or markets.

Organisations	Business strategy
1	Prospector
2	Analyzer
3	Analyzer
4	Analyzer
5	Analyzer
6	Defender

Table 20. Results Business strategy

Organisations	Industry	Environment	Country	Size (No of FTE's)	FTE in NPD	Business strategy
1	Medical Devices	5,5	The Netherlands	40	12	Prospector
2	Automotive	4,1	The Netherlands	200	75	Analyzer
3	Medical devices	4,2	Spain	49	7	Analyzer
4	Medical devices	4,1	Spain	36	5	Analyzer
5	Automotive	4,5	Australia	620	68	Analyzer
6	Radio+TV communications	4,5	Australia	350	40	Defender

Table. 21. Overview Control variables

4.3 Analysis

In this chapter we will look at the relationships between the main variables and the influence of control variables. By doing this we will answer the sub questions and eventually the main question.

4.3.1. Climate and Innovativeness

For sub question 1 we focus on the relationship between climate and innovativeness. As became clear in the chapter on the literature used for this research is the relationship between climate and innovativeness discussed extensively. General statement is that climate influences innovativeness. The literature discussed in this assignment, particularly Ekvall, isn't very consistent about the concept of innovativeness. Although he refers himself to product innovation, some statements are more concerning organisational innovation.
Therefore besides the nature of innovations is assessed how much of the sales are generated by innovative and non modified products.

Climate is measured by the PNPD questionnaire which is filled in by the manager. As was stated in the problem statement gives the climate score a certain expectation on innovation. A manager that rates the several dimensions high, rates the department as a matter of fact suitable for innovation.

Additionally Ekvall makes the distinction of acknowledging 4 of the 9 dimensions as crucial for innovation.

The climate score of 5,6 given by the manager of organisation 1 was the highest score of the sample. Also the score of the 4 dimensions for innovation was considerably higher then other organisations. The manager assesses the department as suitable for innovation. Looking at the results on sales, organisation 1 was noted again for being the only organisation with all sales originating from innovative products. The image of the manager is confirmed.

All other organisations have a score on climate that is almost equal. When comparing the score of nine dimensions with the score of the 4 "innovation" dimensions was noted that the mean of these four dimensions was considerably lower then the 9 dimensions. Only for organisation 3 the score on the innovation dimensions was the same as the overall score of the 9 dimensions. Based on this the expectation is that organisation 3 has the highest innovativeness of organisations 2 ,3,4,5,and 6. With a percentage of only 10 on non modified products organisations 3 has the second score after organisations 1 on sales from innovative products.
The organisation with the worst score on climate is organisations 5. As well as the 9 dimensions as on the mean of the 4 innovation dimensions has this organisation the lowest scores. Nevertheless, the organisations gains 80 % of its sales from innovative products. The expectation was that organisation 5 would have a lower score on innovativeness compared to the other organisations.

The organisations with the least sales originating from innovative product are organisations 2 and 4, each with 50% resulting from innovative products. This is high above average. Their climate scores are almost equal (4,3 and 4,4) and the scores on the innovation dimensions are exactly the same (3,7).
In the cases of organisations 1 and 3, a high and relative high score on climate of the manager and a high score on innovativeness based on sales are detected. The expectation that a high score on climate leads to a higher score on innovativeness is confirmed.
The low scores on climate and its specific dimensions for innovation do in some cases result in confirmation of expectations (organisation 2 and 4), but the scores of organisation 5 and 6 are taking the edge of the relation.

4.3.2 The influence of coherency

Now the results of the variables are given and the relationship between climate and innovativeness is described. I will continue to explore the importance of a coherent climate.
The hypothesis of this research was that a coherent climate has a stronger influence on innovativeness.
Analysing this hypothesis is done in the following order. First is assessed what the scores on climate is. " The" climate score is the score given by the manager. Then is the question; do employees share the perception of the manager, and how coherent is the climate among employees. After that the innovativeness is given.

Hypothetically should a high score on climate given by the managers that is shared among employees lead to a high innovativeness. A low score of the manager on climate which is shared by employees leads proportionally to a moderate or low innovativeness.
In he case of an incoherent climate the influence of climate on innovativeness is according to the hypothesis limited. Because the scores deviate among employees and/or is not shared with the manager the innovativeness as result of the climate is hard to predict. The relationship between climate and innovativeness is limited in this case.

We use the perceptual agreement to indicate if the climate coherent or not. Therefore it is important to realize that particularly in organisations with very varying answers between several or all employees the climate incoherent. A high standard deviation can be caused by extreme scores given by one respondent. The coherency among the most employees may be present, but one respondent can cause misinterpretation of the standard deviation. An employee who is quite new to the organisation may have a limited scope of the climate. Or maybe a question was incorrectly understood. Therefore should be analysed is standard deviation is result of a random error, or that all respondents have very varying answers.

The score on climate given by the managers was the highest score on the sample. The score of 5.6 is also high compared to the mean of N=209, which is 4,9.
The climate of organisation 1 was evaluated as coherent. One respondent, (nr. 8) caused a distorted image but by exclusion of the respondent became clear that as well the perception among employees as the perception with the manager is shared. Both total scores of climate were the highest of the sample and also the score on the 4 innovation dimensions was rated as highest by employees and manager. The sample of employees is with a response of 66,6% a reliable sample.
In this case a high score, given by managers and employees does indeed lead to a high score on innovativeness.

Before analysing organisation 2 it needs to be acknowledged that the reliability of the sample of organisation 2 is limited. The NPD department consist of 75 FTE's, while only 5 respondents have answered the questionnaire. It is not known if those 75 employees are active in that one department in which the questionnaire is distributed or that it is the total number of FTE's in NPD of the organisation. Therefore the reliability of these observations can't be ascertained.
The score of the manager is relative low. The score of 4,3 is below average. Also the score on the 4 dimensions for innovation, 3.7, is below average.
The coherency among employees is strong when looking at the standard deviations. Very extreme scores are not present although respondent 3 gives considerable lower scores in some cases. But overall the employees are fairly unanimous
The employees rate the climate of the department better then the mangers does. Because of extreme low scores of the manager on *Idea support, Idea Time and Risk Taking* a big discrepancy of between the climate perception of the manager and the employees exist. Since it concerns 3 of the most important dimensions for innovation the discrepancy is of importance. On the other

dimensions and the overall score the difference is limited. Overall the managers and employees do agree, but on important dimensions, the difference is big.

The innovativeness is with the lowest percentage of sales resulting from innovative product limited. It is the least innovative organisation of the sample, but also based on the mean of N=210 the organisation scores below average.
In this case, the climate perception of the mangers corresponds best with these sales results. The employees have a more positive image that in case is overrated.

The score on climate given by the manager of organisation 3 is average (4,3) and correspondents with the score of organisations 2,3,4,5 and 6. But based on the 4 "innovation" dimensions this organisation was noted because it had the same score on both measurements, while other originations had a lower score on these 4 dimensions then the 9 dimensions. Based on this a higher innovativeness was expected compared to organisation 2 ,4,5 and 6.
The score on climate among the employees was a little higher then the score of the manager, as well on 3 of the 4 dimensions for an innovative climate. But the standard deviation of these dimensions was high without the possibility to blame this on one specific respondent. This indicates an incoherent climate. Also this sample was representative for the department. With a response of 71,4 % this is a reliable sample.
Although incoherent answers among employees and a relative low score on climate, 90% of the sales are originating from innovative products. In this sample the organisation had the second best climate score, but compared to the mean of N=209 of 4,9 the climate is in an average degree suitable for creativity, change and innovation.
The climate score of the manager is average and the scores of the employees are incoherent but the innovativeness is high.

Organisation 4 had a average score on climate given by the manager (4,4). The score on the dimensions for innovation is even pretty low as well.
The employees are a bit more positive; the overall score on climate is higher and also the score on the 4 dimensions for innovation the sore is relative high. The sample is reliable since all FTE's in NPD have filled in a questionnaire. In this organisation we see a clear difference of perception of the manager and employees. The coherently among employees is present, but the score of the manger is deviating. This perception of the manager was confirmed with the sales result on innovative products, which were the lowest of the sample. Thus although all employees share the perception of a climate that is oriented towards change, creativity and innovation, the results are not forthcoming.

Organisation 5 can be characterised as the origination with the worst climate. The score on the overall climate as well the score on the 4 dimensions for innovation has the worst scores given by the manager and employees. The low standard deviation on the overall climate score indicates that this perception is shared among all employees. But also in this case the reliability of the sample can be put into question since is unknown what the exact response rate is.

Such a low score creates the strong expectation of a low innovativeness. But this was not the case. Compared to the other organisations in this sample and the mean score on N=210, organisation 5 scores above average on innovative sales.
Although managers and employees strongly share the perception of a climate that is not very suitable for innovation, the facts show the different results. A coherent perception of a climate which is not very suitable for creativity, change and innovation is present yet, the innovativeness is high.

At last organisation 6 is analysed. The score of the manager (4.1) is again not very stimulating for creativity, change and innovation.
The employees assess the climate more oriented towards creativity, change and innovation then the manager does but still the score is also average.
Again, the manager rates the important dimensions *Idea time, Idea support* and *Risk Taking* (much) lower then employees perceive those dimensions. The coherency is threatened by several outliners, caused by different respondents. But the reliability of this sample is not proved since the response rate is not known for certain.
The innovativeness based on sale results is average. 70 % is gained by innovative products what is a little bit below the mean of 73,3 % (N=210).

Now sub question 1 and 2 are discussed the main questions will be answered. This includes looking at the influence of perceptual agreement of climate on the relationship between climate and innovativeness.

Based on the results of this study, no clear pattern for approving or rejecting the hypothesis can be found. The number of cases is too limited. In the sample of organisations too much variance is present on which no conclusion can be based.
In one case a coherent climate with a strong orientation towards innovation also a high innovativeness is observed. But in another case the coherent perception of a climate that is less oriented towards innovation the innovatively is still pretty high. 7

4.3.3 Control variables

Before giving a final conclusion on the influence of the coherency of the climate on the relation between climate and innovativeness the control variables are discussed in relation with the main variables. In the preceding paragraph became clear that the results on the main variables are very varying. Because of the small sample it is impossible to recognise any patterns. Therefore the control variables are not very useful in this case. Control variables are used to control for possible effects on relationships, but he main relationships in this research were not found. Also for the control variables counts that the sample of N=6 is to small too assign a cause to a certain result.

Environment, Industry and country

The results of variable ' environment ' are nearly the same for all organisations, only organisation 1 is an exception with a higher score. A high score suggests a market in which innovativeness is important and thus high. This image is confirmed by the sales results, which are all originating form innovative products. The other companies have practically the same score on environment. Scores on climate are equal as well for all organisations but innovativeness varies.
The factor industry doesn't reflect any possible influences in this sample because the results are not discriminating enough.

In this research the organisations were originating from 3 different countries; The Netherlands, Spain and Australia.
Remarkable is that the percentage of employees in NPD of the total number of FTE's is approximately the same within each country. The Dutch organisations (1 and 2) with the relative largest amount of employees in NPD are also the originations with the highest climate scores. However, these organisations operate in different industries and have different scores on environment. Also organisation 1 is the most innovative while organisation 2 has the lowest score of the sample and has an innovativeness below average.

Size

Looking at the size of the 6 organisations we see a clear separation. Organisation 5 and 6 are considered large organisations, organisation 2 medium and organisation 1, 4 and 6 are small organisations. Such a clear pattern could not be observed in on the climate or innovativeness scores.

Besides total organisation size is measured how many people work in NPD. As written above was the percentage of FTE's for each country approximately the same, further variables were to varying.

Business strategy

Again, organisation 1 has an outstanding score. Organisation 1 has a *prospector* strategy which means they are strongly directed towards market opportunities and experimenting with environmental trends. This fits with the results on innovativeness, which is high.

The most attentive strategy is an *analyzer* strategy, which is used by organisation 2, 3, 4 and 5. This strategy aims to carefully monitor product and market developments but major attention is devoted to maintain a stable, limited line of products or services. Organisation 6 has a 6 *defender* strategy which is the least oriented towards innovation. Different innovation scores are present within the analyzer strategy and the defender strategy of organisation 6 doesn't lead a discriminating score on innovativeness.

All scores of the control variables are varying, no clear patterns are present. Because of the limited cases it is impossible to draw conclusions on such results. The only organisation that really stood out was organisation 1. The scores on all the variables were aligned. The high score on climate and environment in combination with a prospector strategy and large number of FTE's in NPD suspected a high level of innovativeness, what was indeed the case. The scores of the other companies didn't show such an aligned of variables. As a result of the variance of all scores no clear patters could be distracted.

5. Conclusion

To be or not to be, that's question. This famous question originating from William Shakespeare's play Hamlet written at start of the 17th century is used many, many times as inspiration for others. Although the question is rather outdated, it is perfectly applicable in this case. Being innovative or not is, as was drawn in the introduction and problem statement, the key to success and survival. It is a necessary condition to stay competitive in current markets.
This research aims to investigate if a coherent climate has a stronger influence on innovativeness then an incoherent climate. Organisations are compared to see if the coherency is of importance on the assumed relationship between climate and innovativeness.

The results of the 6 samples were very varying on the different variables. Organisation 1 was the only organisation with consistency of answers. All scores of the variables were aligned. The high score on climate by the manager was shared by the respondents. Also the innovativeness was high. Also the control variables all directed towards an innovative climate. In this case the coherent high score did result in a high innovativeness as expected.
The other scores however didn't show convincing results. The scores on climate of the other organisations were almost equal, but innovativeness varied, and also the control variables could not be applied to explain the innovativeness.
Despite the fact that the results were very varying, some results were conspicuous. Four of the nine climate dimensions are stipulated as important factor for stimulating innovation. In 4 of the 6 cases, the score of the mangers on those 4 dimensions was much lower then the mean of the 9 dimensions. This difference was not present with the scores of the employees. In theory is presumed that managers rate the climate more positive, but in this research the opposite was often observed. This affected mostly the dimensions *Idea Time, Idea Support* and *Risk Taking* which are dimensions that are of importance for a climate oriented towards innovation.

The analysis to investigate the possible influence of a coherent climate had many defects. The sample size of 6 organisations was too small to find discriminating scores that formed a pattern. The dataset was to varying. One company in the sample, organisation 1 was the only organisation which showed a pattern as could be expected. But the other 5 organisations didn't show such clear results. Sometimes they were even contradicted towards expectations and among each other.
Also, the samples of the employees were not reliable in 3 of the 6 cases. Furthermore was no accurate measure available to reflect the degree of coherency. The use of the standard deviation has it limitation and besides that, no clear standard was present. A clear statement about the coherency of the climate of an organisation was therefore hard to give.

Because the coherency could not precisely be demonstrated, its effect is hard to determine. This, and the lack of cases and reliable samples, has as a result that no valid conclusion about the effects of the coherency of climate, thus if it increases the influence of climate on innovativeness, can be given.

Given the lack of a relevant conclusion that present results, the recommendations for further research are of major importance.

6. Recommendations

In this research a start is made at looking at the importance of a coherent climate when analysing the relationship between climate and innovativeness. In the conclusion it became clear that is not valid to give a proper conclusion based on the analysis that is done.

Firstly, the sample of selected organisations is limited. For making generalisations about the importance of a coherent climate more organisations should be compared and analysed. The number of 6 attributes is even not suitable for using means. This should at least be 30 according to generally accepted norms. Variations are too big to make comparisons. For more in depth statistical analysis a bigger sample of originations is needed.

Other threats of reliability and validity are caused by the measurement of the variables. The measurement of climate among employees within the NPD department is not reliable in some cases because the response rate is not known. With only a small sample of the total NPD department the sample of those respondents may not be representative. Therefore, in further research the reliable needs to be increased by guaranteeing representative samples.
A threat to the causality of the research is that all measurements are done at one moment of measurement. For causality the variables should be measured on more moments of time. Certainly the variables that are concerned in this research. A department may be having a climate that is very much oriented towards creativity, change and innovation at one moment, but the sales results, of the innovative products, may be due to organisational or technological processes be generated years after they were invented.
By measuring climate and innovativeness at the same, one point at the time the sales results reflecting the innovativeness may be originating from products invented 2 years ago, when the climate was possibly different, considering the ability that climates could change.
The current recommendations can be executed when more time is available for the research and more time can be spend on selection and measurement of organisations and respondents.

Some of the shortcomings of this research are not easy to overcome because those concern the measurement methods of the variables.
The measurement of climate based on perceptions is a problem acknowledged in existing theory. But the same literature also brings forward that climate can only be measured by perceptions of individuals. In former research the validity and reliability of aggregated scores is demonstrated as a result of which this is a generally accepted method.
The problem of measuring perceptual agreement or coherency of the climate is that the most common method is to use the standard deviation. As was drawn before, one major outliner may cause misinterpretation of results. Also the comparison of the overall score of the employees with the managers is too vague. It is not clear when a discrepancy can be identified as big or small.. For this comparison no norm or reference was present as well. This made it impossible to draw sound conclusions if managers and employees really agree or not.

For the scores of climate and innovativeness the PNPD database with a sample of 210 organisations could be used to draw some reference points, based on existing data on those variables. Because of this, climate and innovativeness- scores of this research could be categorised as low, average or high scores based a calculated means of a bigger sample.
For the measurements done on the employees this data wasn't available. Because no norm for coherency is present, the statements of the degree of coherency or incoherence are not valid. Use of the standard deviation has its limitations but the disability to make clear statements about the standard deviation make in even worse.

Further research

Now, outliners are tagged as random errors. In further investigation could the role of an outliner be analysed more in depth. Is it really a random error because someone didn't understand a question or is someone new in the organisation and does really experience the work environment optimally? Since the climate is an attribute of the organisation composed of behaviours, attitudes and feelings ,a strong diverging perception may influence the climate. Someone with a very negative attitude can influence the climate negatively since is it composed of behaviours. Therefore the origin of outliners and the possible results could be taken in consideration as well. Another extra factor that could be taken in considering is the style of the manager and the relation with the employees. Leadership style is an important factor in influencing the climate and his behaviour and contact with employees may be important when assessing the score and coherence of the climate.

In the literature chapter on innovativeness the level of product innovation was already mentioned. The novelty of products could also be related towards climate. Radical innovations are completely new products for the department or organisation and require higher adaptability then only small incremental changes to existing products. The dimensions that measure the climate for creativity and change can also be used to assess the degree in which the organisation would be able to radical innovation. It could then be assessed if coherency plays a part if the degree in which the climate enables radical innovation.

But before extra factors are included the main point is improving the reliability and validity. At first the number of cases needs to be increased and the samples of respondents need to be reliable. The most important step is developing of a better method to measure and determine the coherency. Also in further research the measurements should be done on more moments on time. This creates the possibility for drawing causal relations. The sample of organisations needs to be bigger , at least 30, and the samples of the respondents need to be more reliable by representative sample sizes. The measurement to assess if a climate is coherent needs to more valid and reliable. If a much bigger sample of originations is used at least statistics could be used to rate the coherence based on the existing pattern.

7. References

Amabile T.M, Conti, R., Coon, H., Lazenby, J., Herron, M., (1996), Assessing the work environment for creativity, Academy of Management Journal, Vol. 39 , No. 5, pp 1154-1184

Altena, J, (2005), The Holistic Assessment of New Product Development organizations and their Performance: Design of a Structure for the "Patterns in NPD" Descriptive Database, graduation thesis University of Twente, Enschede

Burton, R.M, Lauridsen, J., Obel, B., (2004) The impact of organizational climate and strategic fit on firm performance, Human Resource Management, vol. 43, No. 1 , pp 67-82

Brown, S.L., Eisenhardt, K.M., (1995) product development: past research, present findings, and future directions, Academy of Management Review, Vol.20, No,2,pp 343-378

Clark, K. B. and Wheelwright, S. C. ,(1993). Managing New Product and Process Development. New York, The Free Press

Eijk van der, C, (2001)Measuring Agreement in Ordered Rating Scales, Quality & Quantity, vol. 35, pp 325-341

Ekvall, G. , (1987), The climate metaphor in organization theory . In B. Bass & P. Drenth (Eds.), Advances in organizational psychology, Beverly Hills, CA Sage

Ekvall, G. , (1996), Organizational Climate for Creativity and Innovation, European Journal of work ands organizational psychology, vol. 5, no 1, pp. 105-123

Ernst, H. (2002), Success factors of a new product development: a review of the empirical literature, International journal of Management Reviews, Vol. 4, No 1 , pp-1-40

Ernst, H., Teichert, T.,(1998) The R and D/ marketing interface and single informant bias in NPD research: an illustration of a benchmarking case study, Technovation, Vol.18, no. 12, pp 721-739

Glick, W.H., (1985), Conceptualizing and Measuring Organizational and Psychological Climate: Pitfalls in Multilevel Research, Academy of Management Review, vol. 10, no 3, p. 601-616.

Green, S.B, (1991) , How Many Subjects Does It Take To Do A Regression Ananlysis?, Multivariate Behavioral Research, Vol. 26, No. 3, pp 499-510

Guion, R.M., (1973), A Note on Organizational Climate, Organizational behavior and human performance, Vol.9, pp120-125

Hofstede, G., Neuijen, B., Ohayv, D.D, Sanders, G., (1990), Measuring organizational cultures: A qualitative and Quantitative Study across Twenty Cases, Administrative Science Quarterly, Vol. 35, pp 286-316

Isaksen, S.G., Lauer, J.L., (2002), The Climate for Creativity and Change in Teams, Creativity and Innovation, Vol. 11, No 1 , pp 74-86

Isaksen, S.G., Lauer, J.L., (2001), Convergent Validity of the Situational Outlook Questionnaire: Discriminating Levels of Perceived Support for Creativty, north American journal of psychology, vol3, no 1

Isaksen, S.G., Lauer, J.L., Ekvall, G., Britz, A., (2000-2001) Perceptions of the Best and Worst Climates for Creativity: Preliminary Validation Evidence for the Situational Outlook Questionairre, Creativity Research Journal, Vol13, No. 2, pp 171-184

Isaksen, S.G., Lauer, J.L., Ekvall, G, (1999), Situational Outlook questionnaire: a measure of the climate for creativity and change, Psychological reports, Vol. 85, no. 2, pp. 665-674

Jackofsky, E.F., and Slocum JR. , J.W . (1988), A Longitudinal Study of Climates, Journal of Organizational Behavior, Vol. 9, No. 4. pp. 319-334.

James, L.R, (1982), Aggregation Bias in Estimates of Perceptual Agreement, Journal of Applied Psychology, vol. 67, no.2 , pp, 219-229

James, L.R., Jones, A.P., (1974), Organizational Climate; A review of theory and research, Psychological Bulletin, Vol. 81. No. 12, pp 1069-1112

Joyce, W.F and Slocum Jr., J.W, (1984), Collective Climate: Agreement as a Basis for Defining Aggregate Climates in Organizations, *The Academy of Management Journal*, Vol. 27, No. 4. , pp. 721-742.

Kumar, N., Stern, L.W., Anderson, J.A., (1993) , Conducting interorganizational research using key informants, Academy of Management Journal, Vol. 36, No.6, pp 1633-1651

Nystrom, P.C, Ramamurthy, k., Wilson, A.L, (2002), Organizational context, climate and innovativeness; adopting of imaging technology, journal of Engineering and technology Management, Vol. 19, pp 221-247

Mishra, S., Kim, D., and Lee, D.H., (1996) Factors Affecting New Product Success: Cross-Country Comparisons, Journal of product innovation management, Vol 13. , pp 530- 550

Patterson, M., War, P., West, M., (2004) Organizational climate and organisation productivity: The role of employee affect and employee level,, Journal of Occupational and Organizational Psychology, Vol. 77, pp 193-216

Patterson, M., War, P., West, M., (1996) Collective Climates : a test of their sociopsychological significance, Academy of Management Journal, Vol. 39, No. 6 , pp 1675 -1691

Peterson, M.F, Castro, S.L, (2006) , measurement metrics at aggregate levels of analysis: Implications for organization culture research and the GLOBE project, the leadership Quarterly, Vol. 17, pp 506-521

Rogers, M, (2004), Networks, Firm Size and Innovation, Small Business Economics, Volume 22, pp 141-153

Salavou, H, (2004) The concept of innovativeness: should we need to focus? , European Journal of Innovation management, Vol. 7 No.1 pp33-44

Salomo, S. Strecker, N. Talke, K., (XXXX), Innovation Strategy-Investigating the Performance effects of Innovativeness, Familiarity, Driver of Innovation, and Innovation Field Orientation

Weerd-Nederhof, P.C de, Visscher, K., Altena, J., Fisscher, O.A.M., forthcoming , Assessing Operational NPD Effectiveness and Strategic NPD Flexibility for the Design of New Product Development configurations, International Journal of Technology Management, Vol. X, No.X, pp. 000-000

Weerd-Nederhof, P.C de, Bos, G.J., Silva Gomes, J.F. da, Kekäle, T., Visscher, K ., (forthcoming), Patterns in NPD: searching for consistent configurations. A Pilot of Dutch, Finnish and Portugese cases

Internet sources:

- http://www.patters-in-npd.com (May, June 2007)

- http://bww.dnb.com.au/ (July 2007)

- http://www.southaustarlia.biz (July 2007)

- http://www.business.gov.au/Business+Entry+Point/Information/Glossary.htm#s_bookmark (2 July)

- http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm (2 July)

8. Appendices

8.1 Questionnaire “Patterns in NPD”

For this research, the following questions are used:

- 6: Organisation size
- 9 : Industry
- 13:Environment
- 14: Business Strategy
- 17: Innovativeness
- 37: Organisational Climate

Questionnaire
“Patterns in New Product Development”

- Strictly confidential -

In the questionnaire you will find instructions for each set of questions. We understand that in some cases you may find that the particular question does not entirely fit your case. Whenever such situations happen, please use your best judgment to answer the question and try not to skip it. We sincerely appreciate your efforts in completing all questions.

Please note that individual responses will be strictly confidential and only known to the research team. However, sometimes it is relevant to us to cite a company name. We will always ask written permission in these cases. Please indicate whether you want to stay anonymous in all cases, and/or whether we may contact you again for further collaboration

☐ Yes, I wish to remain anonymous in all cases
☐ Yes, I am happy to be contacted again

Thank you very much for your cooperation!

Your name:	
Your email address:	
Your telephone number:	
Your position within the	

organization:	
The name of your business unit (if applicable):	
Your mailing address:	

Description of the Strategic Business Unit

1. What is the name of your business unit?

2. What best describes your business unit (tick one)

- ☐ Independent company — Go to 4
- ☐ A division / business unit belonging to a parent company — Go to 3
- ☐ A single location / plant — Go to 3

3. What is the name of your parent company?

4. What is the year of establishment of your business unit?

5. What is the primary geographic region where you do business?

- ☐ Limited to a single location
- ☐ Spread out over a single geographic region

☐ Nationwide
☐ International

6. Please answer the next questions about the size of your business unit:

What are total annual sales?		Million EUR
What is the total number of employees in full time equivalent?		FTE

7. How would you describe the primary product mix (tick one)?

☐ High volume/high mix
☐ High volume/low mix
☐ Low volume/ High Mix
☐ Low volume/low mix

Products and Processes

8. Identify the Core Products for which you will answer all questions in the questionnaire.

9. Please indicate the industry sector for this Core Product [SIC code(s)]:

10. What proportion of your customer orders for the Core Products identified are:

% Industrial products (products to be used by other companies for their transformational processes).
% Consumer products (products are intended to the final consumer market and no more transformations).

11. Please indicate the type of process that is used to manufacture your Core Products (Tick one answer):

☐ Engineer to order: Design, purchasing, manufacturing and assembly is done for a designated customer. (Go to 12)
☐ Manufacture to order: Design, raw materials, and components are in stock. (Go to 13)
☐ Assemble to order: Just subsystems and subassemblies are in stock and the final assembly occurs based on a designated customer order. (Go to 13)
☐ Produce to stock: Products are produced and are kept in stock near the customer or at the company. (Go to 13)

12. Please specify the influence of customer demand (Tick one answer).

When an order arrives we start our engineering activities based upon ...

☐ ... a specific technology.

- ☐ ... pre-defined product families.
- ☐ ... pre-defined product sub-functions and solution principles.
- ☐ ... pre-defined product modules.
- ☐ ... pre-defined generally detailed finished goods.

Environment

13. Each of the following items consists of a pair of statements, which represent two extremes on characteristics of your industrial sector (as filled in for your Core Products) or on your business unit. Please circle the number on the scale that best approximates the actual conditions.

a.	Safe, little threat to the survival and well being of the organization.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Risky, one false step can mean my organization's undoing.
b.	Rich opportunities in investment and marketing.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Few opportunities, stressful, hostile, hard to keep afloat.
c.	A dominant organization that can control and manipulate the environment to its own advantage.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	A dominating environment in which our initiatives count for very little against environmental forces.
d.	Our organization must rarely change its practices to keep up with the market and competitors.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Our organization must frequently change its practices.
e.	The rate at which products are getting obsolete in the industry is low.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	The rate at which products are getting obsolete in the industry is high.
f.	Actions of competitors are easy to predict.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Actions of competitors are unpredictable.
g.	Demand for the product and consumer tastes are easy to predict.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Demands for the product and consumer tastes are unpredictable.
h.	The production	1	2	3	4	5	6	7	The production

	technology is subject to little change.	☐	☐	☐	☐	☐	☐	☐	technology is subject to much change..
i.	The nature of the competition is about the same for all products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	The nature of the competition varies a great deal from one product to another.
j.	The required methods of production are about the same for all products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	The required methods of production vary a great deal from one product to another.
k.	Customers' buying habits are about the same for all products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	Customers' buying habits vary a great deal from one product to another.

Business Strategy

14. Which of the texts below most closely describes your business unit's approach your Core Product's marketplace?

- [ ] We continuously search for market opportunities and regularly experiment with potential responses to emerging environmental trends. Therefore, we often are the creators of change and uncertainty to which our competitors must respond.

- [ ] We attempt to maintain a stable, limited line of products or services, operating routinely and efficiently through the use of formalized structures and processes. At the same time, we monitor a carefully selected set of promising new product and market developments in different industries.

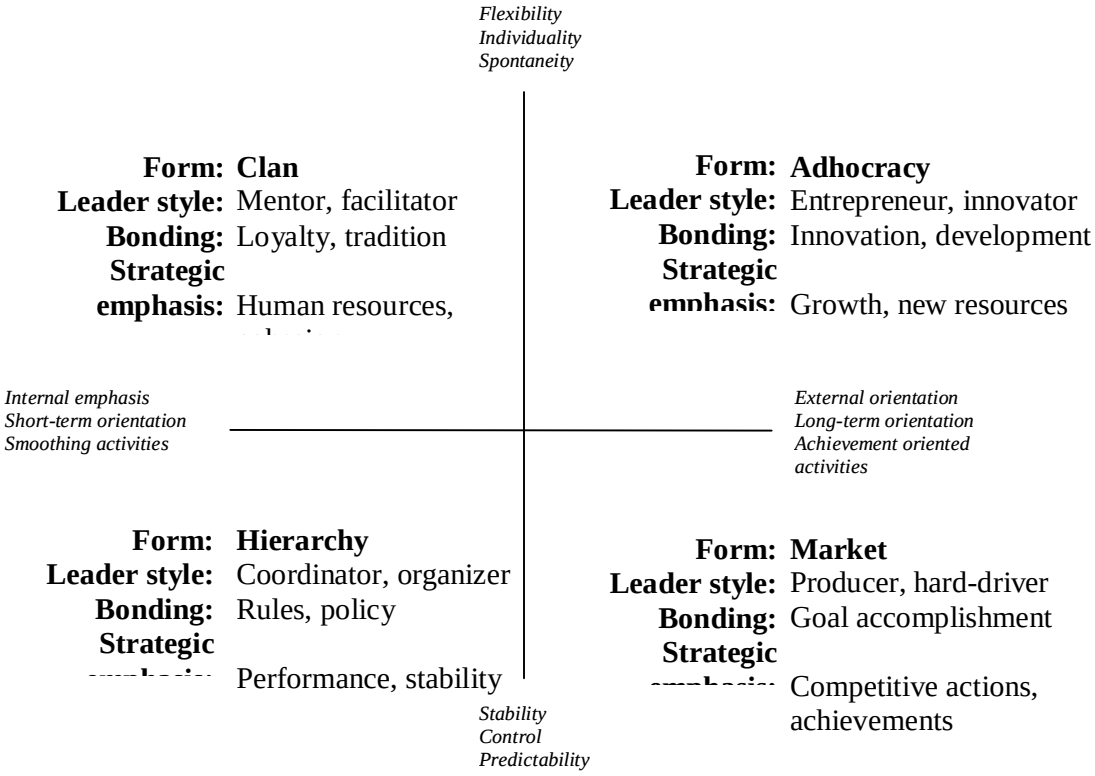
- [ ] We have narrow product-market domains. Our top-managers are experts in their business-limited area of operation but do not tend to search outside of their domains for new opportunities. We seldom need to make major adjustments in our technology, structure, or methods of operation. We devote primary attention to improving the efficiency of our operations.

- [ ] We frequently perceive change and uncertainty occurring in our organizational environments but are unable or unwilling to respond effectively. We lack a consistent strategy-structure relationship, and we seldom make adjustments of any sort until we are forced to do so by environmental pressures.

Business Unit's Culture

15. Please have a look at the picture below visualizing various types of organizational culture. Which of these most closely describes your *business unit's* culture (choose one)?

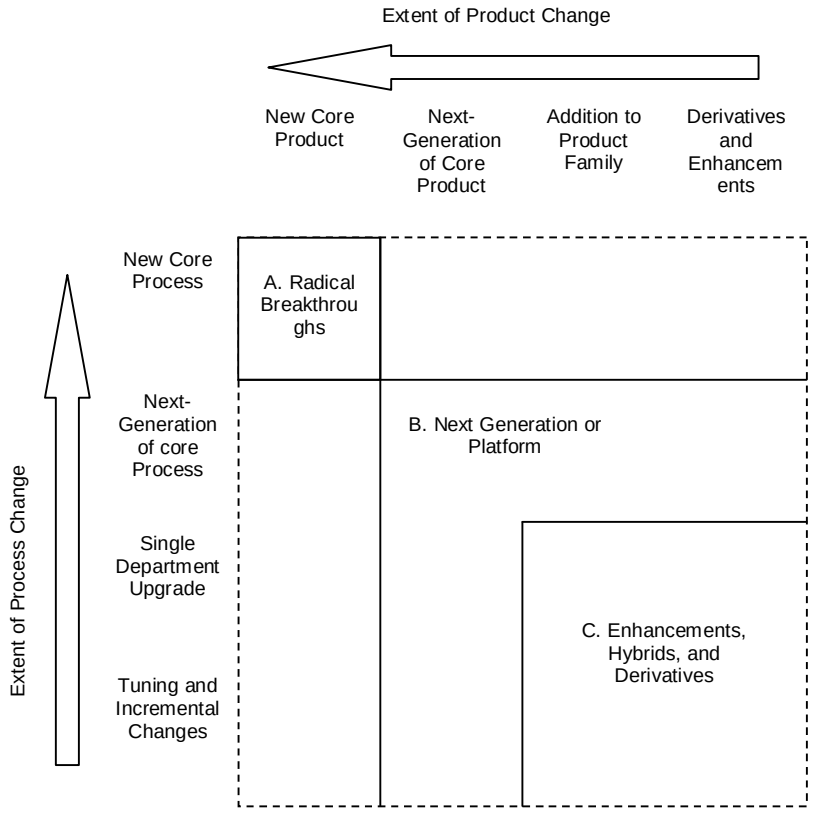
- ☐ Clan
- ☐ Adhocracy
- ☐ Hierarchy
- ☐ Market



Description of the New Product Development Function

With the *NPD Function*, the set of activities necessary to initiate, coordinate, and accomplish the product and related production process development activities of the business unit is meant. Please note therefore that the NPD function includes but is not necessarily restricted to the activities of the NPD department.

16. Please estimate the percentage of your organization's total new product development activities accounted for by the Core Products of each of the following three types.



%	A. Radical breakthroughs in core products and processes
%	B. Next generation of core product and / or process
%	C. Enhancements, hybrids, and derivatives of core product and or process
100 %	

17. Please distribute the percentages of your total annual sales (as filled in in question 6) originating from the following types of new products which have been introduced the last three years (the total sums up to 100%).

%	Breakthrough new products
%	Next generation new products
%	Addition to Product Family and/or Derivatives/Enhancements
%	Non modified products
100 %	

18. Please indicate below for which part of the NPD function you are responsible (more than one answer is possible):

☐ Radical Innovation (Breakthrough New Products and/or Next Generation)

☐ Incremental Innovation (Addition to Product Family and/or Derivatives/enhancements)

19. Please answer the following questions about the size of your NPD function:

What is your total NPD budget in % of annual sales?	
How is this divided over the different types of NPD activities?	☐ Not divided ☐ Radical Innovation: % ☐ Incremental Innovation: %
What is the total number in fulltime	

equivalent of employees in NPD?	
How is this divided over the different types of NPD activities?	☐ Not divided ☐ Radical Innovation: FTE ☐ Incremental Innovation: FTE

Operational Effectiveness and Strategic Flexibility of your NPD Function

20. In this section please indicate your level of achievement on objectives concerning the *fit with market demands* achieved by your NPD function and the ability to *anticipate* on them.

		Not at all achieved						Very well achieved	Don't know
a.	Our new products meet customer requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Our new products are delivered on time.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	The cost of our new products is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	The quality of our products is good.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	The impact of our NPD program on our sales level is positive.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	We get good returns from our NPD program relative to our spending on it.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	Our current development projects include new product-market options.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h.	We prefer NPD projects that generate options for future product development	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	NPD is successful in opening new markets to our organization.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
j.	NPD is successful in leading our organization into new product areas.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
k.	Our NPD activities open new technologies to our organization.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
l.	We incorporate solutions to	1	2	3	4	5	6	7	

	unarticulated customer needs in our new products.	☐	☐	☐	☐	☐	☐	☐	☐

21. In this section please indicate your level of achievement on objectives concerning the *fit with firm competences* achieved by your NPD function and the ability to *build* these competencies.

		Not at all achieved						Very well achieved	Don't know
a.	The degree of manufacturing cost advantage that NPD provides is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Few manufacturing problems occur during production start-up phases.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Only few product design changes are needed to solve manufacturing performance.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	Marketing and NPD often share information.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	Conflicts between marketing and NPD are of a constructive kind.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	Marketing and NPD are more like teammates than competitors.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	Our competence to explore new technological developments from inside the BU is well developed	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h.	We built upon manufacturing competences for the exploration of new technological developments	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	We are very much inspired by marketing for the development of new ideas form inside the BU.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
j.	We can pass lessons learned on across organizational boundaries.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
k.	We can pass lessons learned on over time.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
l.	We are able to enhance our competences by tapping into	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

	external sources		

In the following section please indicate your level of achievement on objectives concerning the *speed* of the processes carried out by your NPD function as well as your ability to *anticipate* on future time constraints.

You may first want to take a look at this figure that shows the concepts of Development Time, Concept To Customer time and Total Time which are used in this question.

<table>
<tr><td>Stage</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Name</td><td>Concept generation</td><td>Project evaluation</td><td>Development</td><td>Manufacturing development</td><td>Commercialization</td></tr>
<tr><td>Starting activity</td><td>Surfacing of idea</td><td>Developing of specs</td><td>Spending on physical development</td><td>Documentation of process development</td><td>Production trials (End: manufacturing for sales)</td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Development Time (DT)</td></tr>
<tr><td></td><td></td><td colspan="4">Concept To Customer time (CTC)</td></tr>
<tr><td colspan="6">Total Time (TT)</td></tr>
</table>

22. Please indicate your level of achievement on following objectives:

		Not at all achieved						Very well achieved	Don't know
a.	Our new products are launched on schedule.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Scheduled time is in line with total development time (TT).	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Our Development Time (DT) is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	Our Concept to Customer Time (CTC) is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	Our Total Time (TT) is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	The speed of the NPD decision making process is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	We can estimate future	1	2	3	4	5	6	7	

	requirements on our total development time (TT).	☐	☐	☐	☐	☐	☐	☐	☐
h.	We are able to adjust our NPD process to future time requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	We can estimate future requirements on the speed of our NPD decision making process.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
j.	We are able to adjust our NPD decision making process to future requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
k.	We are able to forecast the future requirements on the commitment to translating our NPD decisions into actions.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
l.	We are able to adjust the commitment to translating NPD decisions into actions to the requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

23. In this section please indicate your level of achievement on objectives concerning the *productivity* of your NPD function as well as your ability to *anticipate* on future productivity constraints.

		Not at all achieved						Very well achieved	Don't know
a.	We can develop the same products with a lower budget than assigned.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Development costs of our products hardly exceed budgets.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Beyond-budget products do not exceed budgets with a large amount.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	Our development costs are relatively low.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	Realized development hours do not often exceed budgeted hours.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	We can estimate the future	1	2	3	4	5	6	7	

	internal cost requirements for our development process.	☐	☐	☐	☐	☐	☐	☐	☐
g.	We are able to adjust our development process to the future cost requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h.	Our ability to predict future development costs is well developed.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	We are well capable to adjust development costs	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
j.	We are able to adjust the number of development hours to future requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

24. In this section please indicate your level of achievement on objectives concerning the *flexibility* of the processes of your NPD function as well as the ability to *anticipate* on future needs for operational process flexibility.

		Not at all achieved						Very well achieved	Don't know
a.	The average time of product enhancement is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	The average time of product redesign is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Our ability to change the design fast, after being confronted with new specs, is well developed.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	The average cost of redesign is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	We can process a change of specs without a lot of extra financial resources.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	Our ability to change specs late is satisfactory.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	We are able to forecast the requirements on the time of redesign.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h.	We are able to adjust the average time of product redesign to future requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	We are capable in forecasting the future requirements on the cost of product redesign.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
j.	We are capable to adjust the average cost of product redesign to future requirements.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
k.	We are able to predict changes in specifications.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
l.	We are able to anticipate on changes in specifications.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

NPD process and roles

25. Please check the box that most closely describes your business unit's incremental development processes. Please tick one answer.

- ☐ No standard approach to new product development.
- ☐ While no formally-documented process is followed, we have a clearly understood path of the tasks to be completed in product development.
- ☐ We have a formally-documented process where one function completes a set of tasks, then passes the results on to the next function which completes another set of tasks.
- ☐ We have a formally-documented process where a cross-functional team completes a set of tasks; management reviews the result and gives the go-ahead for the team to complete the next set of cross-functional tasks.
- ☐ We have a formally-documented process where a facilitating "process owner" helps cross-functional teams move through stages and management reviews.
- ☐ We have a formally-documented process where a cross-functional team uses a staged process with overlapping, fluid stages and "fuzzy" or conditional stage decisions.

26. Please check the box that most closely describes your business unit's radical development processes. Please tick one answer.

- ☐ No standard approach to new product development.
- ☐ While no formally-documented process is followed, we have a clearly understood path of the tasks to be completed in product development.
- ☐ We have a formally-documented process where one function completes a set of tasks, then passes the results on to the next function which completes another set of tasks.
- ☐ We have a formally-documented process where a cross-functional team completes a set of tasks; management reviews the result and gives the go-ahead for the team to complete the next set of cross-functional tasks.
- ☐ We have a formally-documented process where a facilitating "process owner" helps cross-functional teams move through stages and management reviews.
- ☐ We have a formally-documented process where a cross-functional team uses a staged process with overlapping, fluid stages and "fuzzy" or conditional stage decisions.

27. The development of a new product is often described as a series of interdependent and possibly overlapping stages. Below are descriptions of several development activities. Please cross the activity if your business units' new product development process includes this activity. (Tick one or more answers for each type of innovation.)

	Incremental	Radical
Project Strategy Development: Delineate the target market, determine market need, attractiveness.	☐	☐
Idea / Concept Generation: Identify opportunities and initial generation of possible solutions.	☐	☐
Idea Screening: Sort and rank solutions, eliminate unsuitable and unattractive options.	☐	☐
Business Analysis: Evaluate the concept financially, write business case, prepare protocol/development contract.	☐	☐
Development: Convert concept into a working product.	☐	☐
Test and Validation: Product use, field, market and regulatory testing with customers.	☐	☐
Manufacturing Development: Developing and piloting the manufacturing processes.	☐	☐
Commercialization: Launching the new product or service into full scale production and sales.	☐	☐

28. Please indicate for each of the roles described below whether these behaviors can be identified throughout your NPD function.

	Present in NPD? [yes/no]	Limited to one phase					Throughout the whole NPD process
Idea Generator							
- searching for breakthroughs by linking diverse ideas - testing feasibility of ideas	☐ Yes ☐ No	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
Champion							
- sells new ideas to others in the organization and gets resources - recognizes, proposes and pushes a new technical idea for formal management approval	☐ Yes ☐ No	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
Project Leader							
- provides the team leadership	☐ Yes	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐

and motivation - plans and coordinates the diverse sets of activities and people involved in moving a demonstrated idea into practice	☐ No	
Gatekeeper - collects and channels information about important changes in the internal and external environments - passes information on to others	☐ Yes ☐ No	1 2 3 4 5 6 ☐ ☐ ☐ ☐ ☐ ☐
Sponsor - provides encouragement, guidance, and acts as a sounding board for the project leader and others - guides and develops less experienced personnel in their roles	☐ Yes ☐ No	1 2 3 4 5 6 ☐ ☐ ☐ ☐ ☐ ☐

NPD Strategy

29. How important is the role of the following competitive priorities in your business unit's NPD strategy? Please indicate for each of the indicators if their priority has changed over the last three years and also if you expect their importance to change over the next three years.

	Over the last three years the competitive priority has							Over the next three years the competitive priority will							
	become less important			stayed the same		become more important		become less important			stay the same		become more important		Don't know
Product price	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Product functionality	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Conformance quality	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Time-to-market for new products	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

Product design/innovation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Product customization	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Product range	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Company reputation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Environmentally sound products	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
Others, namely: _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

30. In this section please indicate your level of agreement with each statement about NPD strategy.

		Strongly disagree						Strongly agree	Don't know
a.	The role of NPD in achieving business goals is clearly articulated.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	There is a formally stated NPD strategy.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	We have clearly defined goals for all our individual new products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	Systematic project portfolio management is in place.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	The project portfolios are aligned with the business strategy.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

31. Each of the following items consists of a pair of statements, which represent the two extremes on goals mentioned in your NPD Strategy. Please circle the number on the scale that best approximates the actual content of your NPD strategy.

a.	We primary focus on long-term growth.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	We primary focus on short-term profit.
b.	We primary focus on projects with risky outcomes.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	We primary focus on projects with predictable outcomes.
c.	We are mainly focused on creating breakthrough new products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	We are mainly focused on creating incremental new products.
d.	We mainly focus on long-term performance of our NPD function.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	We mainly focus on short-term performance of our NPD function.

32. In this section please indicate your level of agreement with each statement about NPD technology strategy

		Strongly disagree						Strongly agree	Don't know
a.	We clearly identify technological areas that focus our NPD efforts.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Future technological trends are important in our NPD planning.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Our project portfolio is balanced across technologies.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

33. In this section please indicate your level of agreement with each statement about NPD product strategy

		Strongly disagree						Strongly agree	Don't know
a.	We clearly identify future products as a focus of our NPD efforts.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Future products are explicitly included in our NPD planning.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Our project portfolio is balanced across products.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

34. In this section please indicate your level of agreement with each statement about NPD market strategy

		Strongly disagree						Strongly agree	Don't know
a.	The focus of our NPD efforts clearly relates to target markets.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	Future markets are explicitly addressed in our NPD planning.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	Our project portfolio is balanced across markets.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

NPD structure

35. How are people within the NPD function organized?

☐ Departments
☐ Project teams
☐ Matrix management
☐ Self-managed work teams
☐ Other

36. Please indicate which of the structures pictured and described in the next figure is / are the most common NPD structure(s) within your business unit.

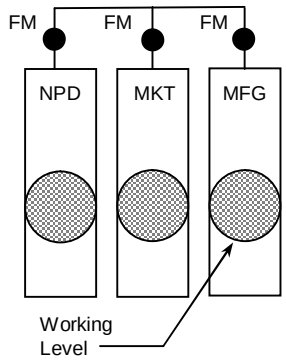
If your NPD function is divided, please tick the most common structures for both incremental and radical innovation. If your NPD function is not divided, just fill in the appropriate structure for the whole NPD function.

	Functional Team Structure	Lightweight Team Structure	Heavyweight Team Structure	Autonomous Team Structure
Structure for Radical innovation	☐	☐	☐	☐
Structure for Incremental Innovation	☐	☐	☐	☐

(If your NPD function is not divided:)

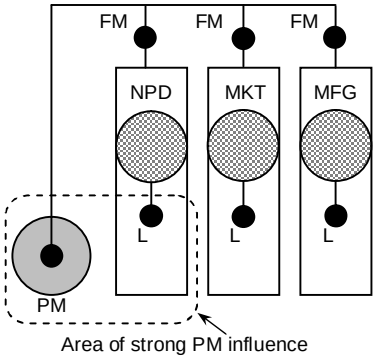
One structure for the whole NPD function	☐	☐	☐	☐

Functional Team Structure



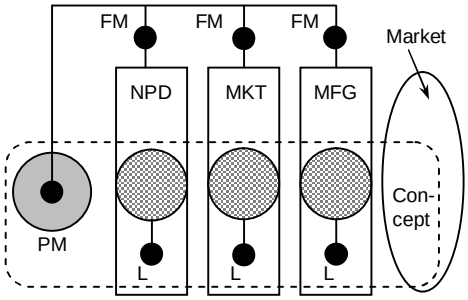
1. People are grouped principally by functional areas.
2. They work under the direction of a Functional Manager (FM).
3. Over time, primary responsibility for the project passes sequently from one function to the next.

Lightweight Team Structure



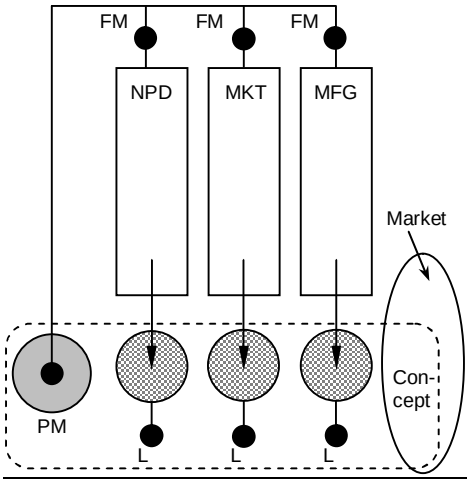
1. Like structure A, those assigned to the team reside physically in their functional areas
2. However, they designate a Liaison person (L) to "represent" it on a coordinating committee.
3. A Project Manager (PM) coordinates the different functions' activities. The Project Manager does not have power to reassign people or reallocate resources.

Heavyweight team Structure



1. Liaisons from the functions still reside in the team.
2. In contrast to structure B, the Project Manager (PM) has primary responsibility for the work of all those involved in the project.
3. However, team members are not assigned to a team on a permanent basis as is the case in structure D.

Autonomous Team Structure



1. Individuals from the different functional areas are formally assigned, dedicated, and co-located to the project team.
2. The Project Manager (PM) is given full control over the resources contributed by the different functional groups.
3. Team members are assigned permanently and the team will be held fully accountable for the results of the project.

NPD climate

37. In this section please indicate your level of agreement with each statement regarding your overall innovative climate

		Strongly disagree						Strongly agree	Don't know
a.	People are emotionally involved in goals set.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	People have freedom to define their own work.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
c.	There is a high level of trust between people.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
d.	There is time for people to develop unplanned new ideas.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	There is a relaxed atmosphere.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	There is a high level of conflict.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	There is a strong support for further development of new ideas.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h	People are involved in debates about differing viewpoints.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
I	High risk taking behavior is tolerated.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

38. If your radical innovation activities are organized separately from your incremental innovation, please indicate to what extent the climate in your more radical NPD differs from the overall innovative climate.

	In our radical NPD…	Strongly disagree						Strongly agree	Don't know
a.	The degree to which people are emotionally involved in goals is higher.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
b.	People have more freedom to define their own work.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

c.	There is a higher level of trust between people.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

d.	There is more time for people to develop unplanned new ideas.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
e.	There is a more relaxed atmosphere.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
f.	There is often a higher level of conflict.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
g.	There is a stronger support for further development of new ideas.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
h.	People are more involved in debates about differing viewpoints.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐
i.	Higher risk taking behavior is tolerated.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	☐

This is the end of the questionnaire. Thank you again for your cooperation!

Your answers will be treated with full confidentiality and the names of companies, business units, products or individuals will not be released!

Appendix 8.2 Results Climate Survey questionnaire

Fir this research only question 1-9 is used

Survey questionnaire on Organisational Climate and Culture

Dear participant,
We are conducting a case study on your organisation in the area of New Product Development. This survey questionnaire entails your perception of the organisational climate and culture you work in. Thank you for your time and cooperation.

Please indicate before you fill this in your function in the NPD organisation (i.e. engineer, project leader, product manager etc.):

All results will be dealt with in strictest confidence and anonymity!

A) Organisational Climate

1. Involvement

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People are committed in contributing to the goals of the organization.	1	2	3	4	5	6	7	n/a
2.	People lack interest in their work.	1	2	3	4	5	6	7	n/a
3.	People are intrinsically motivated to contribute to the success of the organization.	1	2	3	4	5	6	7	n/a
4.	People view work as an opportunity not as obligation.	1	2	3	4	5	6	7	n/a
5.	Interpersonal interactions are dull.	1	2	3	4	5	6	7	n/a
6.	People feel associated with the long-term goals of the organization.	1	2	3	4	5	6	7	n/a

2. Freedom

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People carry out their work in prescribed ways	1	2	3	4	5	6	7	n/a

	with little room to define their tasks.								
2.	People in the New Product Development function make choices about their own work.	1	2	3	4	5	6	7	n/a
3.	People are given resources to define their own work.	1	2	3	4	5	6	7	n/a
4.	People here exercise discretion in day-to-day activities.	1	2	3	4	5	6	7	n/a
5.	Individuals are provided the opportunity to share information about their work.	1	2	3	4	5	6	7	n/a
6.	People work in strict guidelines and roles.	1	2	3	4	5	6	7	n/a

3. Openness

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function trust each other.	1	2	3	4	5	6	7	n/a
2.	People count on each other for personal support.	1	2	3	4	5	6	7	n/a
3.	People here copy each others' ideas.	1	2	3	4	5	6	7	n/a
4.	People give credit where credit is due.	1	2	3	4	5	6	7	n/a
5.	People closely guard their plans and their ideas.	1	2	3	4	5	6	7	n/a
6.	People find it difficult to openly communicate with each other.	1	2	3	4	5	6	7	n/a

4. Idea time

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function take the time to consider new ways of doing things.	1	2	3	4	5	6	7	n/a
2.	Time is available to explore new ideas.	1	2	3	4	5	6	7	n/a
3.	Possibilities exist to discuss suggestions not included in the task assignment.	1	2	3	4	5	6	7	n/a
4.	The New Product Development function incorporates flexible timelines that permit people to explore new avenues and alternatives.	1	2	3	4	5	6	7	n/a

5.	Within the New Product Development function every minute is booked and specified.	1	2	3	4	5	6	7	n/a
6.	The time pressure here makes thinking outside the instructions and routines impossible.	1	2	3	4	5	6	7	n/a

5. Pleasantry

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function have fun doing their work.	1	2	3	4	5	6	7	n/a
2.	There is a great deal of good-natured joking.	1	2	3	4	5	6	7	n/a
3.	People here exhibit a sense of humor.	1	2	3	4	5	6	7	n/a
4.	The atmosphere is characterized by seriousness.	1	2	3	4	5	6	7	n/a
5.	Jokes and laughter are regarded as improper.	1	2	3	4	5	6	7	n/a
6.	The climate is seen as easy-going.	1	2	3	4	5	6	7	n/a

6. Conflicts

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function set traps for each other.	1	2	3	4	5	6	7	n/a
2.	There are power and territory struggles here.	1	2	3	4	5	6	7	n/a
3.	Groups and individuals dislike each other.	1	2	3	4	5	6	7	n/a
4.	Personal differences yield gossip.	1	2	3	4	5	6	7	n/a
5.	People have psychological insight and control of impulses.	1	2	3	4	5	6	7	n/a
6.	People deal effectively with diversity in ideas.	1	2	3	4	5	6	7	n/a
7.	People deal effectively with diversity in colleagues.	1	2	3	4	5	6	7	n/a

7. Idea support

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	New ideas are received in an attentive way by other people.	1	2	3	4	5	6	7	n/a
2.	People listen to each other's initiatives.	1	2	3	4	5	6	7	n/a
3.	People usually feel welcome when presenting new ideas here.	1	2	3	4	5	6	7	n/a
4.	The atmosphere is constructive when considering new ideas.	1	2	3	4	5	6	7	n/a
5.	At the proposal of new ideas the automatic "no" is prevailing.	1	2	3	4	5	6	7	n/a
6.	Fault-finding and obstacle-raising are the usual styles of responding to new ideas.	1	2	3	4	5	6	7	n/a

8. Debates

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function discus opposing opinions.	1	2	3	4	5	6	7	n/a
2.	A wide variety of viewpoints are expressed here.	1	2	3	4	5	6	7	n/a
3.	Many voices are heard when searching for solutions for problems.	1	2	3	4	5	6	7	n/a
4.	People are keen on putting forward their ideas for consideration.	1	2	3	4	5	6	7	n/a
5.	People often discus opposing opinions.	1	2	3	4	5	6	7	n/a
6.	People follow authoritarian patterns without questioning them.	1	2	3	4	5	6	7	n/a
7.	People can often be seen sharing a diversity of perspectives.	1	2	3	4	5	6	7	n/a

9. Risk taking

To what extent do you agree with the next statements, please circle the right answer (1 = disagree, 7 = agree, n/a = not applicable).

		Disagree						Agree	
1.	People in the New Product Development function feel as though they can go out on a limb and be first to put an idea forward.	1	2	3	4	5	6	7	n/a

2.	People tolerate uncertainty and ambiguity when making decisions.	1	2	3	4	5	6	7	n/a
3.	People here often venture into unknown territory.	1	2	3	4	5	6	7	n/a
4.	People feel as though they can “take a gamble” on their ideas.	1	2	3	4	5	6	7	n/a
5.	People try to be on the “safe side”.	1	2	3	4	5	6	7	n/a
6.	People tend to cover themselves in many ways.	1	2	3	4	5	6	7	n/a

8.3 Appendix 3: Results Climate survey questionnaire

	Organisation 1								
Respondent	1	2	3	4	5	6	7	8	average
A organisational climate									
1: Involvement									
1)committed	6	6	7	7	7	7	7	2	6,1
2)lack interest	7	6	7	7	7	7	7	2	6,3
3)motivated to contribute	7	3	6	3	6	7	4	6	5,2
4)work is opportunity	6	5	4	5	6	7	5	3	5,1
5)interactions are dull	7	4	7	7	7	7	6	2	5,4
6)association long term goals	7	2	6	1	6	7	4	1	4,2
	6,7	4,3	6,2	5,0	6,5	7,0	5,5	2,7	5,5
2: Freedom									
1)work is done in prescribed ways	6	6	2	7	6	7	7	7	5,6
2)people can make choices about there own work	6	6	4	7	6	7	7	5	6,1
3)people are given resources to define own work	6	5	5	5	5	7	5	6	5,3
4)people exercise discreation in activities	2	4	5	4	2	1	2	4	3,1
5)opportunity to share information	6	6	7	4	6	7	5	5	5,8
6)people work in strict guidelines and roles	6	5	6	7	6	7	7	6	5,7
	5,3	5,3	4,8	5,7	5,2	6,0	5,5	5,5	5,3
3: Openness									
1)trust eachother	7	5	6	7	7	7	6	6	6,4
2)count on eachother for personal support	6	6	5	4	6	7	4	4	5,1
3)copy each others ideas	4	5	4	6	1	1	2	2	3,3
4)give credit where credit is due	4	3	2	6	5	7	5	1	4,2
5)people closely guard plans and ideas	6	5	6	3	6	7	2	6	4,8
6)it's difficult to openly communicate	7	5	6	1	7	7	6	4	5,1
	5,7	4,8	4,8	4,5	5,3	6,0	4,2	3,8	4,8
4: Idea Time									
1)people take the time to consider new ways of doing things	6	6	4	5	6	7	4	1	4,9
2)time is available to explore new ideas	6	5	4	7	5	7	5	1	4,9
3)possibilities to discuss suggestions outside normal tasks	7	5	5	6	6	7	6	1	5,4
4)flexible timelines that permit people to explore alternatives	6	6	6	5	5	7	5	1	5,1
5)every minute is booked and specified	5	6	4	7	5	7	6	7	5,4
6)time pressure makes thinking outside the box impossible	7	6	4	3	5	7	7	4	5,0
	6,2	5,7	4,5	5,5	5,3	7,0	5,5	2,5	5,1
5: Pleasantry									
1)people have fun doing their work	6	6	6	5	7	7	7	1	5,6
2)there is a great deal of good natured joking	6	6	6	5	7	7	6	6	6,1
3)people here exhibit a sense of humor	6	3	6	4	7	7	6	5	5,6
)atmosphere is characterized by seriousness	4	4	4	3	5	1	6	5	3,8

5)jokes and laughter are regarded as improper	7	6	7	7	7	7	7	6	6,1
6)the climate is seen as easy-going	6	6	5	4	4	7	7	6	5,8
	5,8	5,2	5,7	4,7	6,2	6,0	6,5	4,8	5,6
6: Conflicts									
1)people set traps for each other	7	5	7	7	7	7	7	7	6,1
2)there are power and territory struggles	6	2	5	5	6	6	3	4	4,3
3)groups and individuals dislike each other	7	4	7	7	1	6	6	2	4,7
4)personal differences yield gossip	6	5	4	5	6	1	5	6	4,6
5)people have psychological insight and control of impulses	6	5	4	7	6	6	5	4	5,1
6)people deal effectively with diversity in ideas	6	6	4	5	7	7	6	6	5,8
7)people deal effectively with diversity in colleagues	7	5	4	5	7	7	6	4	5,6
	6,4	4,6	5	5,9	5,7	5,7	5,4	4,7	5,4
7: Idea Support									
1)new ideas are received in an attentive way	6	6	6	3	6	7	2	1	4,8
2)people listen to other initiatives	7	6	6	5	6	7	6	6	6,1
3)people usually feel welcome when presenting new ideas	7	6	6	5	7	7	6	1	5,7
4)atmosphere is constructive when considering new ideas	7	6	7	6	7	7	6	1	5,9
5)at the proposal of new ideas the automatic no is prevailing	6	6	7	7	7	7	7	7	6,2
6)fault finding and obstacle raising is usual respond to new ideas	5	5	3	3	6	4	4	6	4,4
	6,3	5,8	5,8	4,8	6,5	6,5	5,2	3,7	5,6
8: Debates									
1)people discuss opposing opinions	6	5	6	4	5	7	5	-	5,5
2)wide variety of viewpoints are expressed	6	6	6	6	7	7	6	-	6,3
3)many voices are heard when searching for solutions	7	6	4	5	6	7	5	-	5,6
4)people are keen on putting forward their ideas for consideration	6	5	6	5	6	7	5	-	5,6
5)people often discuss opposing opinions	5	5	6	3	5	7	5	-	5,1
6)people follow authoritarian pattersns easily	6	6	6	6	5	7	7	-	5,6
7)people share a diversity of perspectives	6	5	6	5	5	7	5	-	5,4
	6,0	5,4	5,7	4,9	5,6	7,0	5,4		5,7
9: Risk taking									
1)people can go out on a limb with new ideas	4	4	5	5	7	4	6	-	5,1
2)people tolerate uncertainty when making decisions	5	3	5	4	3	4	5	7	4,7
3)people often venture into unknown territory	6	5	6	6	5	4	7	-	5,5
4)people feel they can take a gamble on new ideas	2	3	6	4	3	4	5	-	4,0
5)people try to be on the safe side	3	3	3	3	5	4	3	-	3,5
6)people tend to cover themselves in many ways	6	4	4	5	5	4	6	3	4,6
	4,3	3,7	4,8	4,5	4,7	4	5,3	5	4,5

	Organisation 2					
Respondent	1	2	3	4	5	average
A organisational climate						
1: Involvement						
1)committed	5	5	6	7	6	5,8
2)lack interest	7	7	7	6	6	6,6
3)motivated to contribute	x	4	5	6	6	5,3
4)work is opportunity	5	6	5	5	4	5,0
5)interactions are dull	6	7	7	6	5	6,2
6)association long term goals	6	5	6	6	6	5,8
	5,8	6	6,2	6	5,4	5,9
2: Freedom						
1)work is done in prescribed ways	7	6	5	5	6	5,8
2)people can make choices about there own work	6	5	5	6	5	5,4
3)people are given resources to define own work	5	5	5	6	4	5
4)people exercise discreation in activities	4	4	3	3	4	3,6
5)opportunity to share information	7	7	4	6	5	5,8
6)people work in strict guidelines and roles	3	5	6	5	5	4,8
	5,4	5,4	4,6	5,0	4,8	5,0
3: Openness						
1)trust eachother	6	6	6	6	6	6
2)count on eachother for personal support	x	6	5	5	5	5,3
3)copy each others ideas	x	x	5	3	5	4,3
4)give credit where credit is due	6	6	3	5	5	5
5)people closely guard plans and ideas	6	5	3	5	5	4,8
6)it's difficult to openly communicate	7	7	6	5	5	6
	6,3	6,0	4,5	5,3	5,3	5,5
4: Idea Time						
1)people take the time to consider new ways of doing things	4	5	4	6	4	4,6
2)time is available to explore new ideas	5	4	2	4	3	3,6
3)possibilities to discuss suggestions outside normal tasks	6	6	5	5	5	5,4
4)flexible timelines that permit people to explore alternatives	4	4	2	5	4	3,8
5)every minute is booked and specified	6	7	4	5	6	5,6
6)time pressure makes thinking outside the box impossible	3	4	2	4	5	3,6
	4,7	5,0	3,2	4,8	4,5	4,4
5: Pleasantry						
1)people have fun doing their work	6	7	4	5	6	5,6
2)there is a great deal of good natured joking	6	6	6	5	5	5,6
3)people here exhibit a sense of humor	6	4	6	4	5	5
4)atmosphere is characterized by seriousness	4	4	5	7	4	4,8
5)jokes and laughter are regarded as improper	5	7	6	4	5	5,4
6)the climate is seen as easy-going	6	7	3	4	6	5,2
	5,5	5,8	5,0	4,8	5,2	5,3

6: Conflicts						
1)people set traps for each other	7	7	6	6	6	6,4
2)there are power and territory struggles	7	6	5	5	6	5,8
3)groups and individuals dislike each other	x	x	6	5	6	5,7
4)personal differences yield gossip	5	3	6	5	4	4,6
5)people have psychological insight and control of impulses	6	4	2	3	4	3,8
6)people deal effectively with diversity in ideas	6	6	4	5	5	5,2
7)people deal effectively with diversity in colleagues	5	6	5	6	5	5,4
	6,0	5,3	4,7	5,0	5,0	5,2
7: Idea Support						
1)new ideas are received in an attentive way	6	6	3	6	4	5
2)people listen to other initiatives	6	7	2	6	5	5,2
3)people usually feel welcome when presenting new ideas	6	7	4	6	5	5,6
4)atmosphere is constructive when considering new ideas	6	7	5	6	7	6,2
5)at the proposal of new ideas the automatic no is prevailing	6	7	6	5	5	5,8
6)fault finding and obstacle raising is usual respond to new ideas	5	6	2	5	5	4,6
	5,8	6,7	3,7	5,7	5,2	5,4
8: Debates						
1)people discuss opposing opinions	5	5	4	5	5	4,8
2)wide variety of viewpoints are expressed	3	4	6	3	5	4,2
3)many voices are heard when searching for solutions	4	5	4	5	2	4
4)people are keen on putting forward their ideas for consideration	6	6	6	5	4	5,4
5)people often discuss opposing opinions	4	4	5	3	5	4,2
6)people follow authoritarian pattersns easily	4	6	3	3	3	3,8
7)people share a diversity of perspectives	3	3	4	3	4	3,4
	4,1	4,7	4,6	3,9	4,0	4,3
9: Risk taking						
1)people can go out on a limb with new ideas	5	4	4	5	4	4,4
2)people tolerate uncertainty when making decisions	x	6	4	5	2	4,3
3)people often venture into unknown territory	3	3	5	5	5	4,2
4)people feel they can take a gamble on new ideas	x	3	5	5	3	4
5)people try to be on the safe side	x	4	5	5	2	4
6)people tend to cover themselves in many ways	x	5	4	5	3	4,3
	4	4,2	4,5	5,0	3,2	4,2

	Organisation 3					
Respondent	1	2	3	4	5	average
A organisational climate						
1: Involvement						
1)committed	3	7	5	6	4	5,0
2)lack interest	7	7	6	7	4	6,2
3)motivated to contribute	4	5	4	7	3	4,6
4)work is opportunity	6	2	4	6	2	4,0
5)interactions are dull	6	7	5	5	2	5,0
6)association long term goals	1	6	5	7	4	4,6
	4,5	5,7	4,8	6,3	3,2	4,9
2: Freedom						
1)work is done in prescribed ways	6	2	5	6	2	4,2
2)people can make choices about there own work	7	3	6	6	2	4,8
3)people are given resources to define own work	4	5	5	6	5	5,0
4)people exercise discreation in activities	5	2	2	1	3	2,6
5)opportunity to share information	4	7	6	7	4	5,6
6)people work in strict guidelines and roles	2	3	4	1	5	3,0
	4,3	5,3	5,0	5,8	4,2	4,9
3: Openness						
1)trust eachother	4	4	6	6	5	5,0
2)count on eachother for personal support	2	5	6	6	x	4,8
3)copy each others ideas	6	x	3	1	x	3,3
4)give credit where credit is due	7	7	6	6	3	5,8
5)people closely guard plans and ideas	7	7	5	7	x	6,5
6)it's difficult to openly communicate	7	6	5	7	3	5,6
	5,5	5,8	5,2	5,5	3,7	5,1
4: Idea Time						
1)people take the time to consider new ways of doing things	1	3	6	7	2	3,8
2)time is available to explore new ideas	1	1	5	7	3	3,4
3)possibilities to discuss suggestions outside normal tasks	3	3	5	7	4	4,4
4)flexible timelines that permit people to explore alternatives	2	4	4	7	4	4,2
5)every minute is booked and specified	2	2	6	7	5	4,4
6)time pressure makes thinking outside the box impossible	2	1	4	7	4	3,6
	1,8	2,3	5,0	7,0	3,7	4,0
5: Pleasantry						
1)people have fun doing their work	7	5	6	7	6	6,2
2)there is a great deal of good natured joking	5	5	5	5	4	4,8
3)people here exhibit a sense of humor	6	4	5	5	4	4,8
4)atmosphere is characterized by seriousness	2	2	5	7	3	3,8
5)jokes and laughter are regarded as improper	1	3	5	6	3	3,6
6)the climate is seen as easy-going	7	6	5	7	3	5,6
	4,7	4,2	5,2	6,2	3,8	4,8

6: Conflicts						
1)people set traps for each other	7	7	7	7	5	6,6
2)there are power and territory struggles	7	7	6	7	4	6,2
3)groups and individuals dislike each other	7	7	6	7	4	6,2
4)personal differences yield gossip	7	5	5	7	3	5,4
5)people have psychological insight and control of impulses	2	5	4	1	5	3,4
6)people deal effectively with diversity in ideas	2	5	4	7	5	4,6
7)people deal effectively with diversity in colleagues	2	3	4	7	4	4,0
	4,9	5,6	5,1	6,1	4,3	5,2
7: Idea Support						
1)new ideas are received in an attentive way	7	6	5	7	5	6,0
2)people listen to other initiatives	7	5	5	7	4	5,6
3)people usually feel welcome when presenting new ideas	6	5	5	7	5	5,6
4)atmosphere is constructive when considering new ideas	6	6	5	7	5	5,8
5)at the proposal of new ideas the automatic no is prevailing	4	6	5	7	5	5,4
6)fault finding and obstacle raising is usual respond to new ideas	4	7	5	7	5	5,6
	5,7	5,8	5,0	7,0	4,8	5,7
8: Debates						
1)people discuss opposing opinions	7	2	6	6	4	5,0
2)wide variety of viewpoints are expressed	7	4	6	7	3	5,4
3)many voices are heard when searching for solutions	5	5	6	7	4	5,4
4)people are keen on putting forward their ideas for consideration	4	3	5	7	4	4,6
5)people often discuss opposing opinions	7	4	5	7	4	5,4
6)people follow authoritarian pattersns easily	1	3	4	6	3	3,4
7)people share a diversity of perspectives	4	5	5	7	4	5,0
	5,0	3,7	5,3	6,7	3,7	4,9
9: Risk taking						
1)people can go out on a limb with new ideas	1	x	5	7	4	4,3
2)people tolerate uncertainty when making decisions	2	5	4	6	3	4,0
3)people often venture into unknown territory	2	5	5	6	2	4,0
4)people feel they can take a gamble on new ideas	4	5	5	6	4	4,8
5)people try to be on the safe side	1	2	4	4	2	2,6
6)people tend to cover themselves in many ways	1	3	4	3	2	2,6
	1,8	4,0	4,5	5,3	2,8	3,7

Respondent	Organisation 4					
	1	2	3	4	5	
A organisational climate						
1: Involvement						
1)committed	5	6	6	5	5	5,4
2)lack interest	6	6	6	5	7	6
3)motivated to contribute	6	6	6	3	6	5,4
4)work is opportunity	5	5	5	3	4	4,4
5)interactions are dull	5	5	6	6	7	5,8
6)association long term goals	5	5	5	4	5	4,8
	5,3	5,5	5,7	4,3	5,7	5,3
2: Freedom						
1)work is done in prescribed ways	6	6	6	6	6	6,0
2)people can make choices about there own work	6	x	3	6	6	5,3
3)people are given resources to define own work	5	5	6	6	5	5,4
4)people exercise discreation in activities	2	3	2	4	2	2,6
5)opportunity to share information	5	6	7	6	5	5,8
6)people work in strict guidelines and roles	3	3	6	3	7	4,4
	4,5	4,6	5,0	5,2	5,2	4,9
3: Openness						
1)trust eachother	6	x	7	6	7	6,5
2)count on eachother for personal support	5	4	7	6	6	5,6
3)copy each others ideas	x	1	1	2	2	1,5
4)give credit where credit is due	6	5	7	6	4	5,6
5)people closely guard plans and ideas	5	6	7	6	6	6,0
6)it's difficult to openly communicate	6	7	7	6	7	6,6
	5,6	4,6	6,0	5,3	5,3	5,4
4: Idea Time						
1)people take the time to consider new ways of doing things	6	6	7	6	7	6,4
2)time is available to explore new ideas	6	5	7	5	6	5,8
3)possibilities to discuss suggestions outside normal tasks	6	5	7	6	6	6,0
4)flexible timelines that permit people to explore alternatives	6	6	5	6	5	5,6
5)every minute is booked and specified	6	7	7	4	5	5,8
6)time pressure makes thinking outside the box impossible	6	7	7	x	6	6,5
	6,0	6,0	6,7	5,4	5,8	6,0
5: Pleasantry						
1)people have fun doing their work	5	x	5	4	7	5,3
2)there is a great deal of good natured joking	5	2	6	4	6	4,6
3)people here exhibit a sense of humor	5	4	6	4	7	5,2
4)atmosphere is characterized by seriousness	3	2	6	3	7	4,2
5)jokes and laughter are regarded as improper	5	4	6	6	7	5,6
6)the climate is seen as easy-going	5	6	7	5	7	6,0

	4,7	3,6	6,0	4,3	6,8	5,1
6: Conflicts						
1)people set traps for each other	7	x	7	7	7	7,0
2)there are power and territory struggles	6	x	7	6	7	6,5
3)groups and individuals dislike each other	6	3	6	x	6	5,3
4)personal differences yield gossip	5	6	3	x	6	5,0
5)people have psychological insight and control of impulses	5	6	7	x	6	6,0
6)people deal effectively with diversity in ideas	5	6	7	x	6	6,0
7)people deal effectively with diversity in colleagues	6	6	6	x	6	6,0
	5,7	5,4	6,1	6,5	6,3	6,0
7: Idea Support						
1)new ideas are received in an attentive way	5	6	7	5	6	5,8
2)people listen to other initiatives	6	6	7	5	6	6,0
3)people usually feel welcome when presenting new ideas	6	5	6	5	7	5,8
4)atmosphere is constructive when considering new ideas	6	5	7	5	7	6,0
5)at the proposal of new ideas the automatic no is prevailing	6	7	7	6	7	6,6
6)fault finding and obstacle raising is usual respond to new ideas	6	7	3	6	6	5,6
	5,8	6,0	6,2	5,3	6,5	6,0
8: Debates						
1)people discuss opposing opinions	4	x	7	6	6	5,8
2)wide variety of viewpoints are expressed	4	x	7	6	6	5,8
3)many voices are heard when searching for solutions	6	4	7	4	6	5,4
4)people are keen on putting forward their ideas for consideration	4	3	7	4	5	4,6
5)people often discuss opposing opinions	4	4	6	4	6	4,8
6)people follow authoritarian pattersns easily	6	6	7	5	3	5,4
7)people share a diversity of perspectives	4	4	7	3	4	4,4
	4,6	4,2	6,9	4,6	5,1	5,1
9: Risk taking						
1)people can go out on a limb with new ideas	5	x	2	4	6	4,3
2)people tolerate uncertainty when making decisions	4	2	3	4	2	3,0
3)people often venture into unknown territory	2	2	2	4	2	2,4
4)people feel they can take a gamble on new ideas	4	2	1	4	3	2,8
5)people try to be on the safe side	4	2	1	4	3	2,8
6)people tend to cover themselves in many ways	3	2	7	5	4	4,2
	3,7	2,0	2,7	4,2	3,3	3,2

	Organisation 5								
Respondent	1	2	3	4	5	6	7	8	average
A organisational climate									
1: Involvement									
1)committed	4	6	5	5	5	7	5	3	5,0
2)lack interest	5	5	6	6	7	6	5	4	5,5
3)motivated to contribute	2	5	6	2	6	5	4	3	4,1
4)work is opportunity	3	3	3	4	5	5	5	2	3,8
5)interactions are dull	6	5	4	6	6	2	6	3	4,8
6)association long term goals	2	6	3	1	2	6	6	2	3,5
	3,7	5,0	4,5	4,0	5,2	5,2	5,2	2,8	4,4
2: Freedom									
1)work is done in prescribed ways	5	6	6	6	5	4	7	7	5,8
2)people can make choices about there own work	4	6	5	5	4	6	6	6	5,3
3)people are given resources to define own work	5	3	4	2	6	4	3	3	3,8
4)people exercise discreation in activities	3	2	3	4	3	2	2	5	3,0
5)opportunity to share information	6	3	7	3	5	6	3	4	4,6
6)people work in strict guidelines and roles	6	3	3	3	5	7	4	6	4,6
	4,8	3,8	4,7	3,8	4,7	4,8	4,2	5,2	4,5
3: Openness									
1)trust eachother	4	5	5	7	4	6	3	3	4,6
2)count on eachother for personal support	5	5	5	3	4	2	4	5	4,1
3)copy each others ideas	3	7	4	2	3	6	6	5	4,5
4)give credit where credit is due	5	6	5	5	4	5	6	5	5,1
5)people closely guard plans and ideas	5	6	5	4	4	6	5	3	4,8
6)it's difficult to openly communicate	6	3	4	4	5	2	5	5	4,3
	4,7	5,3	4,7	4,2	4,0	4,5	4,8	4,3	4,6
4: Idea Time									
1)people take the time to consider new ways of doing things	5	2	3	4	6	3	3	5	3,9
2)time is available to explore new ideas	2	1	4	1	4	2	4	2	2,5
3)possibilities to discuss suggestions outside normal tasks	3	3	6	5	3	3	5	5	4,1
4)flexible timelines that permit people to explore alternatives	1	1	4	1	4	1	2	2	2,0
5)every minute is booked and specified	4	2	7	7	5	6	6	6	5,4
6)time pressure makes thinking outside the box impossible	5	2	5	3	6	3	5	4	4,1
	3,3	1,8	4,8	3,5	4,7	3,0	4,2	4,0	3,7
5: Pleasantry									
1)people have fun doing their work	4	5	5	4	4	5	5	3	4,4
2)there is a great deal of good natured joking	7	4	6	5	4	6	4	4	5,0
3)people here exhibit a sense of humor	7	4	5	6	5	7	6	5	5,6
4)atmosphere is characterized by seriousness	6	5	6	6	5	6	4	3	5,1
5)jokes and laughter are regarded as improper	7	5	4	5	6	6	3	4	5,0
6)the climate is seen as easy-going	5	3	5	4	5	4	6	4	4,5
	6,0	4,3	5,2	5,0	4,8	5,7	4,7	3,8	4,9

6: Conflicts									
1)people set traps for each other	7	7	6	7	6	7	7	5	6,5
2)there are power and territory struggles	3	6	7	5	6	6	4	3	5,0
3)groups and individuals dislike each other	3	3	6	7	6	4	4	3	4,5
4)personal differences yield gossip	3	5	3	4	4	2	3	3	3,4
5)people have psychological insight and control of impulses	x	3	3	4	4	5	5	5	4,1
6)people deal effectively with diversity in ideas	5	3	4	4	4	3	4	5	4,0
7)people deal effectively with diversity in colleagues	6	2	2	6	5	3	5	5	4,3
	4,5	4,1	4,4	5,3	5,0	4,3	4,6	4,1	4,5
7: Idea Support									
1)new ideas are received in an attentive way	5	5	5	5	4	3	6	3	4,5
2)people listen to other initiatives	5	5	5	6	5	5	6	3	5,0
3)people usually feel welcome when presenting new ideas	5	6	6	6	5	5	4	2	4,9
4)atmosphere is constructive when considering new ideas	5	5	6	5	6	6	5	3	5,1
5)at the proposal of new ideas the automatic no is prevailing	6	6	6	4	6	6	5	3	5,3
6)fault finding and obstacle raising is usual respond to new ideas	3	6	4	6	7	5	4	2	4,6
	4,8	5,5	5,3	5,3	5,5	5,0	5,0	2,7	4,9
8: Debates									
1)people discuss opposing opinions	x	5	4	6	5	6	6	5	5,3
2)wide variety of viewpoints are expressed	5	5	6	4	4	6	6	5	5,1
3)many voices are heard when searching for solutions	5	2	3	3	6	6	5	6	4,5
4)people are keen on putting forward their ideas for consideration	5	3	5	4	6	6	6	3	4,8
5)people often discuss opposing opinions	5	6	5	4	4	6	5	5	5,0
6)people follow authoritarian pattersns easily	4	7	5	6	3	5	6	7	5,4
7)people share a diversity of perspectives	4	5	5	4	6	6	5	5	5,0
	4,7	4,7	4,7	4,4	4,9	5,9	5,6	5,1	5,0
9: Risk taking									
1)people can go out on a limb with new ideas	2	5	5	5	4	2	5	3	3,9
2)people tolerate uncertainty when making decisions	6	3	3	3	4	2	2	4	3,4
3)people often venture into unknown territory	3	2	5	3	4	1	3	5	3,3
4)people feel they can take a gamble on new ideas	2	2	5	3	3	2	3	5	3,1
5)people try to be on the safe side	3	2	4	3	3	2	3	4	3,0
6)people tend to cover themselves in many ways	4	3	3	3	2	1	4	3	2,9
	3,3	2,8	4,2	3,3	3,3	1,7	3,3	4,0	3,3

	Organisation 6										
Respondent	1	2	3	4	5	6	7	8	9	10	average
A organisational climate											
1: Involvement											
1)committed	6	7	5	5	5	6	7	6	6	5	5,8
2)lack interest	6	6	5	5	6	7	6	7	6	3	5,7
3)motivated to contribute	6	6	5	5	2	6	6	6	6	4	5,2
4)work is opportunity	6	4	5	6	5	5	5	6	6	4	5,2
5)interactions are dull	2	1	6	5	2	2	4	1	3	5	3,1
6)association long term goals	5	1	4	6	2	5	4	5	6	3	4,1
	5,17	4,17	5	5,33	3,67	5,17	5,33	5,17	5,5	4	4,9
2: Freedom											
1)work is done in prescribed ways	6	6	x	4	6	6	4	5	3	5	5,0
2)people can make choices about there own work	7	6	x	6	5	5	5	4	6	5	5,4
3)people are given resources to define own work	6	5	x	4	5	5	6	2	5	4	4,7
4)people exercise discreation in activities	2	1	3	2	3	3	3	2	3	4	2,6
5)opportunity to share information	6	6	5	6	6	6	6	7	6	4	5,8
6)people work in strict guidelines and roles	7	6	x	6	5	4	3	5	6	5	5,2
	5,7	5,0	4,0	4,7	5,0	4,8	4,5	4,2	4,8	4,5	4,7
3: Openness											
1)trust eachother	5	7	5	5	5	6	6	7	5	5	5,6
2)count on eachother for personal support	6	6	x	3	2	5	6	7	5	4	4,9
3)copy each others ideas	1	1	x	5	2	3	4	1	5	4	2,9
4)give credit where credit is due	7	6	x	6	6	6	4	7	5	3	5,6
5)people closely guard plans and ideas	5	6	x	6	6	6	5	7	3	5	5,4
6)it's difficult to openly communicate	5	4	x	6	6	6	5	7	4	3	5,1
	4,8	5,0	5,0	5,2	4,5	5,3	5,0	6,0	4,5	4,0	4,9
4: Idea Time											
1)people take the time to consider new ways of doing things	7	7	5	3	5	6	4	2	5	3	4,7
2)time is available to explore new ideas	7	2	5	3	5	4	3	1	5	2	3,7
3)possibilities to discuss suggestions outside normal tasks	7	5	5	5	5	6	5	1	5	3	4,7
4)flexible timelines that permit people to explore alternatives	7	5	5	3	5	4	5	1	5	1	4,1
5)every minute is booked and specified	7	6	6	6	6	6	5	3	6	2	5,3
6)time pressure makes thinking outside the box impossible	7	7	6	5	6	7	4	3	6	3	5,4
	7,0	5,3	5,3	4,2	5,3	5,5	4,3	1,8	5,3	2,3	4,7
5: Pleasantry											
1)people have fun doing their work	6	7	3	5	5	5	4	5	5	4	4,9
2)there is a great deal of good natured joking	5	5	3	6	5	4	4	6	4	3	4,5
3)people here exhibit a sense of humor	6	7	5	5	5	5	5	6	6	4	5,4
4)atmosphere is characterized by seriousness	6	7	3	6	6	6	4	6	4	3	5,1
5)jokes and laughter are regarded as improper	7	7	5	5	6	6	5	7	4	4	5,6
6)the climate is seen as easy-going	3	5	5	5	5	2	3	6	4	4	4,2
	5,5	6,3	4,0	5,3	5,3	4,7	4,2	6,0	4,5	3,7	5,0

6: Conflicts											
1)people set traps for each other	7	7	x	7	6	7	6	7	4	5	6,2
2)there are power and territory struggles	5	7	1	6	3	7	6	7	4	5	5,1
3)groups and individuals dislike each other	6	7	3	4	6	7	6	7	4	5	5,5
4)personal differences yield gossip	7	6	x	5	3	6	6	7	4	5	5,4
5)people have psychological insight and control of impulses	5	x	x	4	2	5	2	x	6	4	4,0
6)people deal effectively with diversity in ideas	6	6	5	4	5	5	5	6	5	4	5,1
7)people deal effectively with diversity in colleagues	6	6	x	5	5	5	5	6	5	4	5,2
	6,0	6,5	3,0	5,0	4,3	6,0	5,1	6,7	4,6	4,6	5,2
7: Idea Support											
1)new ideas are received in an attentive way	7	7	x	4	5	6	5	6	5	4	5,4
2)people listen to other initiatives	7	6	5	4	5	6	5	6	5	3	5,2
3)people usually feel welcome when presenting new ideas	6	5	x	5	5	6	5	7	5	4	5,3
4)atmosphere is constructive when considering new ideas	5	5	5	4	5	6	5	7	5	4	5,1
5)at the proposal of new ideas the automatic no is prevailing	5	7	5	6	6	5	5	7	6	4	5,6
6)fault finding and obstacle raising is usual respond to new ideas	2	3	x	4	6	6	6	7	3	4	4,6
	5,3	5,5	5,0	4,5	5,3	5,8	5,2	6,7	4,8	3,8	5,2
8: Debates											
1)people discuss opposing opinions	6	5	6	5	5	5	3	7	4	4	5,0
2)wide variety of viewpoints are expressed	7	5	6	4	5	6	6	6	3	3	5,1
3)many voices are heard when searching for solutions	5	2	5	4	5	6	6	6	4	4	4,7
4)people are keen on putting forward their ideas for consideration	5	5	6	4	4	6	7	6	5	4	5,2
5)people often discuss opposing opinions	6	5	x	5	5	6	3	6	3	4	4,8
6)people follow authoritarian pattersns easily	5	6	x	5	6	6	4	7	3	4	5,1
7)people share a diversity of perspectives	5	5	x	4	5	5	5	3	3	4	4,3
	5,6	4,7	5,8	4,4	5,0	5,7	4,9	5,9	3,6	3,9	4,9
9: Risk taking											
1)people can go out on a limb with new ideas	7	6	x	6		6	4	1	3	3	4,5
2)people tolerate uncertainty when making decisions	7	5	6	5	6	5	3	1	5	3	4,6
3)people often venture into unknown territory	7	5	5	5	5	5	2	1	3	3	4,1
4)people feel they can take a gamble on new ideas	7	2	x	4	5	5	1	1	3	3	3,4
5)people try to be on the safe side	6	3	x	4	3	5	4	2	3	2	3,6
6)people tend to cover themselves in many ways	5	6	x	4	4	6	4	3	3	4	4,3
	6,5	4,5	5,5	4,67	5,0	5,0	5,0	5,0	5,0	5,0	5,1

8.4 Appendix 4: Statistics Climate dimensions

Descriptive Statistics		Dimensions Climate			
	N	Minimum	Maximum	Mean	Std. Deviation
Challane/Involvement	194	1	7	5,1	1,3
Freedom	194	1	7	4,6	1,5
TrustOpeness	194	2	7	5,5	1,2
IdeaTime	194	1	7	4,4	1,5
Pleasantery	194	1	7	5,2	1,4
Conflict	194	1	7	5,3	1,4
IdeaSupport	194	2	7	5,0	1,3
Debates	194	1	7	5,1	1,2
RiskTaking	194	1	7	4,1	1,6