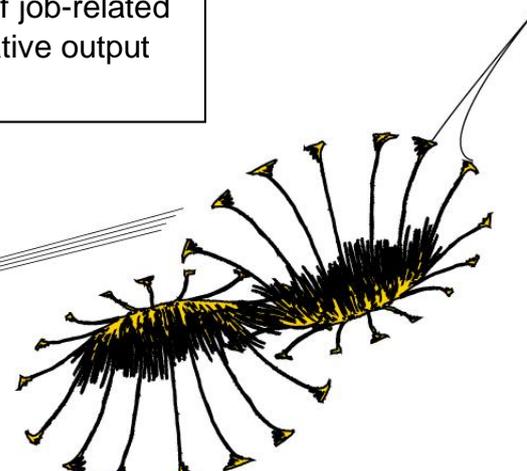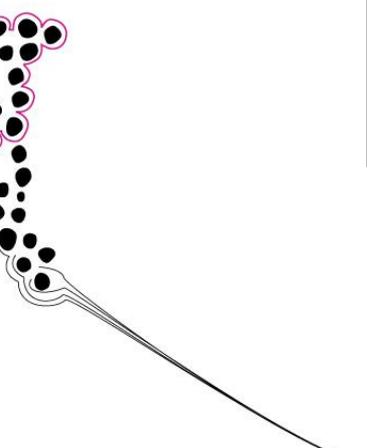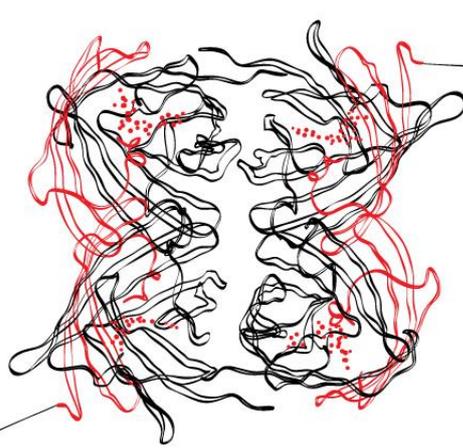# FINDING THE RIGHT BALANCE OF EMPLOYEE DIVERSITY ATTRIBUTES

Developing an instrument to measure effects of job-related and job-unrelated diversity attributes on innovative output within work groups

Master thesis
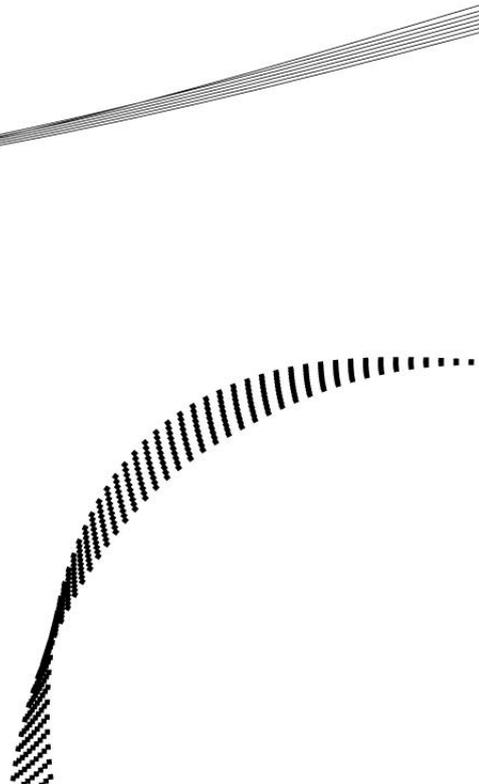**Business Administration – HRM**
Inken Hamel (s1011979)
13-08-2014

First supervisor:
André Veenendaal

Second supervisor:
Prof. Dr. Jan Kees Looise

UNIVERSITY OF TWENTE.

'Innovation has nothing to do with how many R&D dollars you have. It's not about money. It's about the people you have, how you're led, and how much you get it.'

-   Steve Jobs (Schlender & Kirkpatrick, 1998)

ABSTRACT

Purpose – Organizations aim to reach competitive advantage through innovation. Based on the resource based view it can be argued that employees are crucial for innovative output because people are the origin for innovative ideas. In particular, it is assumed that heterogeneous teams are even more innovative than homogenous teams as the innovation process is built on diverse qualities of employees. However, findings of previous studies show inconsistent findings. Therefore this research aims to shed light into the black box regarding the relationship between diversity attributes of work groups and their innovative output. Therefore, diversity attributes are categorized into job-related and job-unrelated diversity attributes and innovative output into radical and incremental innovation. This leads to the following research question: *"How do employee diversity attributes within a workgroup impact, directly or indirectly, innovative output of work groups?"*

Methodology – To answer the research question a multi-method design is used, including qualitative as well as quantitative research. The qualitative method is based on interviews with four team members who are interviewed by means of the TSTI (Three Steps Test Interview). By means of analyzing the TSTI the developed questionnaire is revised and tested with seven work groups. Further, statistical analyses are executed that aim to collect data with respect to the relationship between diversity attributes and innovation.

Results – The analysis of the data show only a few significant correlations. However, there was no correlation found by means of the regression analysis. Further the subjective perception of diversity attributes and the innovative output is not in line with the actual diversity Index and innovative performance of the work group. That is why a conclusion regarding the propositions is hard to draw.

Limitations / Implications – As current research was a pilot study, the research was limited regarding the sample size. Future research should further investigate the studied relationship by collecting more data. Furthermore, all variables should be measured in an objective way and different types of work group should be taken into account.

Conclusion – This research was a first step to develop a general instrument that is able to measure work group diversity and innovative output within work groups in an appropriate way. However, there is still a black box between those the variables that asked for a complex model that takes all possible moderators and mediators into account.

Key words: work group diversity, job-related diversity attributes, job-unrelated diversity attributes, incremental innovation, radical innovation, measurement instrument

ACKNOWLEDGEMENTS

1 TABLE OF CONTENTS

LIST OF FIGURES..

LIST OF TABLES..

1 INTRODUCTION

In this thesis a conceptual model was developed to get a better understanding of the relationship between diversity attributes and performance. Based on existing literature, diversity attributes are classified into job-related and job-unrelated diversity attributes. The innovative output of work groups is divided into the two forms of innovation: radical and incremental innovation. Qualitative as well as quantitative pilot studies were executed in order to develop an instrument that is able to measure the model. Before further explaining the executed studies, the first chapter gives more insights into the research background, problem statement, research questions and relevance of the research. The focus of this study lies on the Netherlands, in particular on Dutch organizations.

1.1 RESEARCH BACKGROUND

Nowadays, organizations have to perform under a high worldwide competitive pressure and the only certainty is that their environment is uncertain and constantly changing. To handle this environment organizations aim to gain (sustained) competitive advantage. One way to reach competitive advantage and outperform competitors is innovation. New products and technologies allow organizations to differentiate themselves from other competitors (Shipton, West, Dawson, Birdi, & Patterson, 2006). In addition, there is evidence that within Dutch organizations the innovation process and economic performance are related to each other (Klomp & Leeuwen, 1999). Hereby it is important to notice that innovation is based on people, in particular on several employees that form together a work group[1] and not on single employees (Basadur & Head, 2001).

Not only in the business world has innovation been a prevalent topic over several years but also in academic research, as the interest in innovation has not let off. This counts in particular for the research field of strategic human resource management (SHRM) because ideas are created by people who are the foundation of innovation (Van de Ven, 1986). One academic approach that tries to explain when and why an organization can gain sustained competitive advantage is the resource based view (RBV) of the firm (Barney, 1991). Moreover, this approach plays an important role within the SHRM literature (Kostopoulos, Spanos &

---

[1] The term work group refers to (work) teams as well as to work groups. The term work group and (work) team are used interchangeably throughout this paper. Both terms refer to 'collections of individuals who are interdependent, share responsibility for outcomes, are views as an intact social entity' (Webber & Donahue, 2001). The popular management literature favor to use the word 'team', whereas academic literature tend to use the term "group" (Cohen and Bailey 1997).

Prastacos, 2002). The RBV implies that organizations can reach and sustain competitive advantage by means of their resources. Those resources can be classified into physical capital, human capital and organizational capital which are all sources of competitive advantage. As innovation is based on the assumption that 'people, not products, are an company's major asset' (Gupta & Singhal, 1993), this paper will focus on human capital as a necessary resource for innovation that leads to competitive advantage. In addition, it can be argued that products and technologies are easier to imitate than a mix of individual characteristics, such as knowledge, behavior and skills (Jiménez-Jiménez & Sanz-Valle, 2008). In line with this thinking, it is argued that organizations should invest in human capital, such as human resources (Torrington & Hall, 2008), because human capital can be a strategic resource that is crucial for innovation (Gupta & Singhal, 1993). Thereby the RBV focuses not only on employee behavior but also on knowledge, skills, abilities (KSA) and competencies because these employee attributes have a greater long-term effect than behavior (Torrington & Hall., 2008).

In 1991, Barney constructed the RBV framework by pointing out the four criteria, also called VRIN criteria, which are crucial in order to sustain competitive advantage from a resource. According to the VRIN criteria, a resource has to be valuable, rare, inimitable and non-substitutable (VRIN) (Boselie, 2010). By means of the argumentation of Wright, McMahon and McWilliams (1994), who pointed out why and how human resources fulfill the VRIN criteria, it can be argued that a work group with diverse members also fulfills the VRIN criteria. First, human resources are valuable because the supply of labor is heterogeneous which makes replacing employees difficult. The second VRIN criteria, rarity, is related to the first (Torrington & Hall, 2008) because employees with high cognitive abilities are rare in the population. The third criterion, inimitable, is also fulfilled because the human resource is not easy to duplicate. Finally, human resources are non-substitutable because the human resource is more adaptable, than for example technology. In turn, the human reosurce cannot be replaced in the long-term. In line with the argumentation of Wright et al. (1994,) it can be argued that a work group scores even better on the VRIN criteria compared to an individual human resource. Hence, products and technologies are easier to imitate than a mix of individual characteristics, such as knowledge, behavior and skills (Jiménez-Jiménez & Sanz-Valle, 2008). A combination of diverse employees is even more difficult to substitute than single individuals as it can be assumed that the combination of employee's attributes and organizational context makes a work group unique. Furthermore, the talent pool for organizations is limited which makes finding an employee that fits the work group even more difficult. In addition, diverse groups can handle the increase in customer diversity better (Jayne & Dipboye, 2004) and even more important

they are more creative through better problem solving styles (Jayne & Dipboye, 2004). Thus, it can be argued that a diverse work group cannot be easily reproduced and imitated. This makes diverse work groups also a rare and valuable resource that enhances the organizational competitiveness (Yang & Konrad, 2011). Hence, it can be assumed that a work group with diverse members is a source of competitive advantage as it is a crucial resource for the innovation process. Different scholars have already recognized that diversity within work groups might be positive related to innovative outputs (Østergaard, Timmermans, & Kristinsson, 2011) through diverse ideas, knowledge and approaches to work (Van der Vegt & Janssen, 2003).

During the last year's the domain of diversity is getting more and more attention because the workforce and work groups are getting more diverse (Guillaume, Dawson, Priola, Sacramento, Woods, Higson, & West., 2013; Jackson, Joshi & Erhardt, 2003). To fully understand what is meant by diversity it is important to understand which trends caused the development of team diversity. There are three mayor trends that can be identified: Uniqueness, demographic change and globalization. First, employees do not particular strive to "fit in' within the organization (Thomas, 1991). As a result the workforce itself becomes more diverse regarding socio-demographic attributes and also regarding employee's needs and expectations (Bogaert & Vloeberghs, 2005; Delery & Doty, 1996; Van Knippenberg & Schippers, 2007). Secondly, demographic change is caused by the feminization that leads to more working women as well as by an ageing population caused by an increased expectation of life and declining birth-rate (Shen, Chanda, D'Netto, & Monga, 2009). At this point of time, three generations are represented in the labor market which all have different characteristics and preferences. Further, due to the decline in birth-rates, the workforce faces a labor shortage in the coming years and in particular a talent shortage that causes the so called 'war of talent' (Armstrong, Flood, Guthrie, Liu, MacCurtain, & Mkamwa, 2010). Because the 'war of talent' threats organizational competitive advantage (Chambers, Foulon, Handfield-Jones, Hankin, & Michaels, 1998), organizations strive to recruit a diverse workforce. Third, not only demographic change cause changes in the labor market but also globalization (Tyran & Gibson, 2008). This means that employees often do not work anymore in their home country. This development is caused by the expanding of the European Union in 2005/2007 and the decreasing barriers to work in the Netherlands for citizens of the EU. The workforce mobility leads to an increase of foreign workers from all over the world that bring more diversity attributes than just their nationality into the Netherlands. Additionally, this development gets reinforced by the war of talent that asked for more talents from all over the world.

The three trends show that diverse teams are caused by different developments within the workforce. Concluding, diversity can appear in different ways and in many areas within organizations (Kreitz, 2008).

1.2 PROBLEM STATEMENT

Whereas work groups have become essential for organizations, their complexity challenges organizations at the same time. As the research background shows, a diverse workforce is caused by many factors and diversity attributes can be visible (e.g. age, race, gender) as well as invisible (e.g., work experience, knowledge). That is why diversity attributes are not always easy to recognize. Furthermore, work group diversity does not necessarily enhance performance and competitive advantage (Cox, Lobel, & McLeod, 1991; Jayne & Dipboye, 2004) as so many scholars claim (Guzzo & Dickson, 1996). Diversity can cause problems in terms of communication, turnover rate and group conflicts through prejudice and discrimination (Jehn, Northcraft, & Neale, 1999; Østergaard et al., 2011; Pelled, Eisenhardt, & Xin, 1999, Dahlin, Weigart & Hinds, 2005). That makes gaining competitive advantage from a diverse workforce difficult (Shipton, Fay, West, Patterson, & Birdi, 2005).

Among other studies, the literature review of Jackson et al. (2003) shows that there is still a pattern of mixed results regarding the influence of work group diversity on performance. Whereas positive as well as negative impact of diversity are grounded in different theories, it is still unclear why heterogeneous work groups have the potential to perform better than homogenous work groups but are not able do this in practice (Tyran & Gibson, 2008). It can be assumed that there is a black box between a diverse team and (innovative) performance as it is very complex and still unclear (Martín-Alcázar, Romero-Fernández, & Sánchez-Gardey, 2012; Pelled et al., 1999). Another problem is that diversity attributes are distinguished in different ways. On the one hand, some scholars (Webber & Donahue, 2001) argue to distinguish between job-related diversity attributes and job-unrelated diversity attributes as research has shown that job-related diversity attributes (e.g. educational and functional background) have a stronger effect on performance, such as innovation than job-unrelated diversity attributes. On the other hand, researchers request to distinguish diversity attributes into surface-level diversity characteristic and deep-level diversity characteristics (Harrison, Price & Bell, 1998; Tyran & Gibson, 2008). This disagreement about classifying diversity attributes may lead to inconsistent findings and confusion. Apart from the discussion how diversity attributes should be classified, varies scholars do not take the full range of diversity attributes into account, but only study the effect of one or several attributes.

This research aims to explain parts of the black box between diversity attributes and performance. Therefore this research will take a broader range of diversity attributes into account that may have direct and indirect impact on performance. It is aimed to get a better understanding of the right balance between diversity attributes within work groups which may stimulate innovative output of work groups. However, before explaining the relationship between these variables, it is first necessary to develop an appropriate instrument that is able to measure the variables.

1.3 RESEARCH QUESTION

Based on the problem statement, a central research question can be formulated:

"How do employee diversity attributes within a workgroup impact, directly or indirectly, innovative output of work groups?"

In order to answer the central question different sub-questions were formulated that guide the research. First, it is important to conceptualize the term innovation at the work group level. In addition, it is important to take a closer look to previous research to find out which forms and types of innovation are commonly used. To fully understand the concept of diversity, an overview of the development of diversity and it is relevance are provided. Finally, it is argued how work group diversity is related to the different forms of innovation. The following sub-questions were formulated:

- ➢ What is innovation?
- ➢ What forms and types of innovation are commonly used in present studies?
- ➢ What is diversity and what is its relevance?
- ➢ Which types of diversity attributes exist?
- ➢ Which impact does diversity attributes have on innovative output of work groups?

1.4 RESEARCH RELEVANCE

This research has theoretical as well as practical relevance because workforce diversity will further increase in the coming years (Harrison, Price, & Bell, 1998). In addition, every organizations faces diversity issues because it is questionable if the workforce can be even truly homogenous (Litvin, 2000). To get a better understanding of the relationship between diversity attributes and innovation, this research develops an instrument that may help to provide further insight into how organizations should balance diversity attributes within work groups to enhance innovative outcome. In addition, this instrument is used to provide first insight with respect to the research question as quantitative data is collected.

There is still not enough known about the effects of diversity on work outcomes because it is still unclear how, when and why diversity may have impact on performance (Guillaume et al., 2013; Van Knippenberg & Schippers, 2007). In addition, it is still unclear how different diversity attributes interact with each other (Guillaume et al., 2013). Thus, work group diversity is a complex phenomenon that demands more research to explain the relationship between diversity attributes and group performance (Webber & Donahue, 2001). Furthermore, there are four main problems of previous studies.

First, diversity effects on work group outcomes are mostly studied in terms of performance and do not distinguish different forms of it, for example innovative performance. Furthermore, research almost ignores different forms of innovation as radical and incremental innovation and mostly focuses on the group level (West & Farr, 1989). There is no instrument that measures team innovation and distinguishes between radical and incremental innovation. Most common innovation instruments focus on product or technology measures or on financial measures. Product measurement measures new products, product improvement or patents (Elenkov & Manev, 2009; Jung, Wu, & Chow, 2008). Whereas financial measures concentrate on the relationship between R&D costs and sales of new products/service, for example in terms of ROE (Czarnitzki & Kraft, 2004). These instruments mainly measure radical innovation and do not take incremental innovation into account, as firms do seldom patent improvements in products. However, there is also another way to measure innovation that is mostly forgotten: subjective measurement. Examples are innovative work behavior (De Jong & Den Hartog, 2010) or organizational innovation (Chen, Tjosvold, & Liu, 2006). Hence, in order to measure work group innovation with respect to radical and incremental innovation this research will develop an instrument to measure it.

Secondly, there are only a few instruments that include multiple dimensions by measuring diversity attributes. There is evidence that diversity attributes interact with each

other that makes a multiple dimensional instrument necessary. For example the research of group efficiency depends on the interaction between informational (educational background and functional background) and social diversity (sex and age). That is why this research will focus on multiple diversity attributes and take a closer look to its interaction.

Third, still most studies are limited to laboratory studies or experiments with (MBA) students (McLeod & Lobel, 1992) and thus lack practical evidence of the business. Despite the fact that this research is a pilot study, it will give first indication if employees understand the questionnaire in which manner subjective diversity measurement and objective diversity measurement differ. This is relevant because more studies within organizations are needed that help to get more knowledge about diversity (Benschop, 2001). Hence, this research has theoretical relevance as it is executed in organizations and thus provides empirical evidence.

Finally, most existing literature did not take the time that work groups interact with each other into account. Different scholars agree that performance differences between homogenous and heterogeneous teams change over time (Milliken & Martins, 1996) as it is argued that demographic diversity has less influence if teams have work together for a time (Cox & Blake, 1991; Harrison, Price, Gavin, & Florey, 1998). The time in which work groups had the chance to know each other enhances the probability that prejudices can be reduced and even refute. Hence, this research will also take the aspect of time into consideration.

In addition to the theoretical relevance, this research also holds practical relevance. Besides that employing diverse people is the right thing to do, it is also of high strategic relevance (Thomas & Ely, 1996). Organizations have become more diverse over the last years and will become much more diverse (O'Reilly, Williams, & Barsade, 1998; Van Knippenberg & Schippers, 2007). However, having a diverse workforce does not automatically implicate that they enhance performance. Most Dutch organizations have recognized the importance of managing diversity (Ollapally & Bhatnagar, 2009) and more than half of the organizations acknowledge that they try to handle diversity (Cox & Blake, 1991). However, organizations find it difficult to manage diversity effectively (Guillaume et al., 2013). Hence, this research has an added value for the business world by providing more insights into how diversity is related to performance outcomes in terms of innovation. Additionally, this research also holds further practical relevance by focusing on work groups. Research regarding the relationship between work group diversity and innovation is scare and mostly diversity research focuses on top management teams and organizational performance (Bantel & Jackson, 1989; Knight, Pearce, Smith, Olian, Sims, Smith, & Flood, 1999; Simons, Pelled, & Smith, 1999; Talke, Salomo, & Rost, 2010; West & Anderson, 1996). The research offers organizations a way to

manage a diverse workforce more effectively by giving more insight into the effects of diversity attributes. Finally, this research has especial highly practical relevance for Dutch organizations because most research is executed in the US (Jackson, 1992) while employee characteristics may differ between countries. All in one, new insights on these topics are an important contribution to the existing literature and to the business world.

2   THEORETICAL FRAMEWORK

The present study is an attempt to link previous research on work group diversity and innovation. In order to develop a model and a measuring instrument, the research variables are defined. In paragraph 2.1 the term innovation is conceptualized, types and forms of innovation are distinguished and it is pointed out how innovation is effected by diverse work groups. Next, paragraph 2.2 conceptualized the concept of diversity and the development of work group diversity. In addition, it is explained why previous research findings were inconsistent based on the underlying theories. Finally, paragraph 2.3 connects the variables in relationship to each other, based on the theoretical foundation. Furthermore diversity attributes are classified into job-related diversity attributes (educational background, tenure and functional background) and job-unrelated diversity attributes (age, gender, nationality).

2.1   INNOVATION

Nowadays, innovation is crucial for organizations that operate in a very fast changing environment (Van der Vegt & Janssen, 2003). Innovation is one of the key competitive strategies that predict organizational competitive advantage through new, different and better products and technologies (Butler, 2008; Schuler & Jackson, 1987; Shipton et al., 2006). Furthermore, innovative organizations are likely to have an increase in success, growth, market share and profitability that lead to competitive advantage (Tidd & Bessant, 2011).

2.1.1   Conceptualization of Innovation

Innovation can be seen as 'buzzword' because it can appear in various contexts and meanings (Veenendaal, Van Velzen, & Looise, 2009). This leads to many innovation definitions which each focus on different aspects. Like Schumpeter (1935), who recognized the importance of innovation defined innovation in terms of novelty (Trott, 2008), Crossan and Apaydin (2010) focus on the process and outcome of innovation. The followed quote is a general definition of innovation: 'innovation is the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit role performance, the group, the organization or the wider society' (West & Farr, 1989, p.16). This definition shows the broad range of innovation and the levels at which innovation can be studied: organizational, team and individual level. Most research focus on innovation at the organizational level (macro-level), whereas only a few studies focus on the individual (micro-level) and the team/group level (meso-level) of innovation (Crossan & Apaydin, 2010; West & Farr, 1989). It is a noticeable shortcoming that

only a few studies focus on the group level of innovation because innovation is usually executed by work groups (Hülsheger, Anderson, & Salgado, 2009). As mentioned before, this is in line with the RBV, arguing different people are the mayor asset for innovation because they create new and novel ideas (Boselie, 2010). In addition, Kahn, Barczak, and Moss (2006) developed a best practice framework for new product development (NPD). One of their six NPD dimensions refers to people and states that organizations are most successful if they have cross-functional teams and NPD focuses on teams. Guillaume et al. (2013) support this by stating that teams are the best predictor of employee innovation, effectiveness and well-being. In addition it can be argued that different forms of innovation require diverse employee attributes because ideas are created by different people (Janssen, 2000). Thus, innovation depends on different employees and not on a single employee. Furthermore, it can be argued that every employee is a performer of innovation (Shipton et al., 2006).

In conclusion, the focus of this research lies on the work group and innovation is interpreted as 'the introduction or application within a team of ideas, processes, products, or procedures that are new to that team and that are designed to be useful' (West & Farr, 1989; p. 16).

2.1.2 Types and Forms of Innovation

Innovation is a widely discussed topic and literature has distinguished innovation in several ways. Two distinctions of innovation will be discussed. The first distinction is between four types of innovation: Product, process, position and paradigm innovations, which are called the 4 P's of innovation (Tidd, Bessant, & Pavitt, 1997). Product innovation refers to changes regarding products or services that are offered to the end user. Process innovation changes the way products and services are created or delivered. Position innovation is a repositioning of the context in which the product or service is introduced. Finally, paradigm innovation refers to changes in underlying mental models which frame the organizational activities. The other distinction of innovation refers to two forms of innovation that can create competitive advantage (Bassett-Jones, 2005; Tidd et al., 1997). Radical innovation is built on new knowledge and/or resources that lead to extreme changes that are completely different (Tidd & Bessant, 2011; Trott, 2008). Therefore idea exploration is of utmost important because without discovering new opportunities radical innovation is not possible. Incremental innovations are small or simple changes in existing technologies, products or services (Dewar & Dutton, 1986). This means that incremental innovation requires less new knowledge but exiting knowledge and/or resources that lead to better outcomes (Trott, 2008). The major differences between those

two forms of innovation are knowledge and skills of employees (Dewar & Dutton,1986). Concluding, radical and incremental innovation causes different performance outcomes because they are based on different capabilities, cultures, processes, strategies and structures (He & Wong, 2004).

Further, it is important to discuss the role of creativity with respect to innovation. Most researchers agree that creativity is the first step and precondition of the innovative process (Bassett-Jones, 2005; Shipton et al., 2006; Taylor & Greve, 2006), in particular for radical innovation. However, innovation includes not only the creation of a new idea regarding a product, service, process and/or procedure but also the promotion and implementation of the idea (De Jong & Den Hartog, 2010; Scott & Bruce, 1994; Van der Vegt & Janssen, 2003). The two stage definition by Van de Ven (1986) emphasizes this: 'innovation is the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context' (p.591). These two stages are crucial for the innovation process (Butler, 2008). Moreover, innovative outcomes can be distinguished in long-term and short-term effects. As radical innovation fits the definition of exploration and incremental innovation of exploitation it can be argued that long-term outcomes are associated with incremental innovation and short-term outcomes with radical innovation (Greve, 2007; Trott, 2008; Veenendaal et al., 2009). For example, if an organization introduces incremental innovation monthly, it can be assumed that this organization is able to keep their market share over a long time. Whereas an organization that introduced radical innovation just once, it will be successful in the first place but after a while other organizations copied the innovation and the organization cannot keep their market share.

Thus, successful organizations must balance both forms of innovation by looking backward to existing products and looking forward to be prepared for the future (O Reilly & Tushman, 2004). According to Johannessen, Olsen, and Lumpkin (2001) both forms of innovation include the same innovation activities, such as new methods of production. Nevertheless, the two forms differ regarding to whom the innovation is new. This means that an innovation activity is incremental if it is perceived as new to the organizations but is already introduced by other companies into the industry. Whereas a radical innovation activity is not only perceived as new to the company but also perceived as new to the industry in which the company operates. By distinguishing the two forms of innovation, this research will follow the work of many other researchers who also emphasized the importance of the incremental and radical distinction (Ettlie, 1983, Dewar & Dutton, 1986, Koberg, Detienne & Heppard, 2003)

Hence, the two forms of innovation, radical or incremental innovation, do not exclude each other but rather should be congruence (Damanpour, Szabat, & Evan, 1989). That is why this study takes both forms of innovation into consideration and measures work group innovative output in terms of:

1.) Incremental innovation
2.) Radical innovation

2.1.3 *Diversity as Driver of Innovation*

As mentioned before, innovation will be studied at the group level because work groups have a positive effect on both radical and incremental innovation (Prester & Bozac, 2012). In addition, work groups are essential for organization to be innovative (Basadur & Head, 2001). Hülsheger et al. (2009) identified in their meta-analysis about team-level predictors of innovation at work that innovation is determined by the following variables: team-size, team longevity, job-relevant diversity, background diversity, task interdependence and goal interdependence. This research will further focus on the relationship between diversity and innovation because different scholars argue that diversity is a driver of innovation (Morgan, 1989). Also companies have recognized this relationship because diverse team-based organizational structures play a crucial role in the competitive environment of organizations that replace bureaucratic homogenous organizations (Cady & Valentine, 1999). In addition, there is also empirical evidence that innovative companies have diverse work groups to create more ideas based on different points of view (Kanter, 1983). However, there is 'jungle of inconsistent findings' of team innovation literature (West and Farr, 1989). To determine which diversity attributes are related to work group innovation it is first important to explain how workforce diversity is occurred and defined.

2.2 (WORK GROUP) DIVERSITY

To fully understand work group diversity it is first important to better understand the term diversity by conceptualizing and defining diversity. Next, the development of diversity within the workforce is described in order to understand how the perception with respect to diversity is changed over the years. Further, different theoretical explanations are investigated to find an explanation for the inconsistent findings of diversity research. Based on the reasons for the inconsistent findings a new model is developed that fits and combines the existing theories.

2.2.1 *Conceptualization of Diversity*

Over the time, the scope of diversity got much broader and more types of diversity were distinguished. Table 1 gives a short overview of work group diversity literature that studied diversity attributes and shows the development of diversity attributes. The overview shows three types of diversity attributes. The first diversity type is defined in different ways, such as demographic characteristics, surface-level characteristics, observable attributes or readily-detectable attributes. Moreover, this type is studied most and it mostly focuses on age, race/ratio-ethnicity and sex/gender as attributes (Milliken & Martins, 1996; O'Reilly et al., 1998). Some definitions also include tenure, education, social class, religion, nationality, sexual identity, university degree, training and functional experience as characteristic of the first diversity type. The second diversity type is classified as less visible/underlying attributes, functional characteristics, deep-level characteristics, cognitive or human capital diversity. Most researchers agree that this type includes values, knowledge, skills and abilities (KSA) as diversity attributes. Additionally, this diversity category is also defined by other attributes such as tenure, functional- and socioeconomic background, material status (Price, Harrison, & Gavin, 2006) belief (Hicks, 2002) and personality, values and attitude (Harrison, et al., 2002). The third way to distinguish diversity attributes is labeled as job-related and thus implies attributes that directly related to work, such each educational background. However, as table 1 shows diversity attributes of employees are mostly categorized into the first two types.

Nowadays, most researchers agree that both types (underlying- and readily-detectable diversity) must be taken into consideration. Thomas (1992) already stated at the beginning of the nineties that not only gender and race should be managed but all dimensions of diversity should be recognized and taken into account. Thus, he requested to define diversity very broad. It is assumed that if surface diversity attributes increase, underlying (cognitive) attributes will also increase (Watson, Kumar & Michaelsen, 19930) because underlying diversity depends on demographic diversity attributes, such as age and gender (McGrath, Berdahl, & Arrow, 1995). In turn, several scholars argued that readily-detectable attributes do not cover all underlying attributes of employees (Bantel & Jackson, 1989; Østergaard et al., 2011; Van der Vegt & Janssen, 2003). While Milliken and Martins (1996) argue that underlying characteristics should not be overrated, at the same time readily-detectable diversity attributes should be kept in mind.

Hence, this research takes both types of diversity categories into account because it is not enough to focus on one dimension of diversity (Pelled et al., 1999). The two diversity categories are labeled as readily-detectable diversity attributes and underlying diversity attributes. To define work group diversity the two types of diversity are added to the definition

of Van Knippenberg and Schippers (2007) because their definition includes actual existing differences as well as perceived differences. It is important to include perceived differences because they could influence the effect of diversity in work groups. However, perceived differences were often neglected by other researcher, which might be incorrect. In this research they will be referred to perceived as subjective. In turn, actual existing differences as objective. Hence, work group diversity is defined as '*readily-detectable and underlying diversity attributes of a social grouping that reflects the degree to which there are objective or subjective differences between people within the group'*.

Table 1

Overview: Diversity attributes

Diversity attributes 1	Diversity attributes 2	Diversity attributes 3	Study
Demographic characteristics **Age, tenure, education, race and sex**			(Tsui, Egan, & O'Reilly, 1991)
Observable /readily detectable attributes Race or ethnic background, age or gender	***Less visible or underlying attributes*** Education, technical abilities, functional background, organizational tenure, socioeconomic background, personality, characteristics, values		(Milliken & Martins, 1996)
Highly visible Age, gender, race, group tenure	***Low Visible*** Organizational tenure, education and functional background	**High job-related** Group tenure, organizational tenure, education, functional background	(Pelled, 1996)
Demographic characteristics Race and ethnicity	**Functional characteristics category** Knowledge, skills and abilities		(Ashkanasy, Härtel, & Daus, 2002)
Demographic approach Directly measurable demographic attributes of individuals, such as gender, age and tenure	*Cognitive approach* Knowledge, values and skills		(Van der Vegt & Janssen, 2003)
Readily detected attributes Age, sex, ratio-ethnicity	**Underlying attributes** Personality, knowledge, values	**Job-related attributes** Education, tenure	(Jackson, Joshi, & Erhardt, 2003)
Surface-Level diversity Overt, biological characteristics, such as age, sex, race/ethnicity	**Deep-level diversity** Verbal and nonverbal behavior, such as belief, attitudes, values, knowledge and skills		(Harrison et al., 1998)
Surface characteristics/Demographic variables Age, ethnicity/race and gender	*Cognitive diversity/cognitive diversity* Diversity of Knowledge/task-,work-, and organizational experience		(Taylor & Greve, 2006)
Surface-level characteristics Gender and ethnicity	**Deep-level characteristics** Verbal and nonverbal behavior, reflecting underlying attitudes, beliefs, values, knowledge and skills		(Tyran & Gibson, 2008)
Demographic diversity Age, gender and nationality, university degrees, training, tenure and functional experience	**Human capital diversity** A set of knowledge, skills and abilities; Values and individuals cognitive approaches (know-how)		(Martín-Alcázar et al., 2012)

2.2.2 The Rise of Work Group Diversity

The shift in the definition of diversity over the years is caused by different developments within the business world. Today, the term diversity plays an important role in research and business due to the assumption that employee diversity is positively associated with firm performance (Østergaard et al., 2011; Richard, 2000). However, the first attempt of organizations to handle diversity issues did not aim to take advantage of diversity into account but to decrease discrimination. That was done through positive discrimination caused by the anti-discrimination movement that affiliate to political issues that reflect moral and legal attitudes (Ashkanasy et al., 2002). Positive discrimination, also called affirmative action favors a certain group by hiring and admission opportunities. It was one of the first attempts to respond to the changes in the workforce (Martín-Alcázar et al., 2012). During the years diversity was more seen as richness for organizations instead of problematic (Wilson & Iles, 1999) whereby affirmative action programs changed into diversity management programs (Kelly & Dobbin, 1998; Shen et al., 2009) which also is described as ' the valuing diversity' approach (Cox & Blake, 1991). The two approaches mostly differ from each other with respect to their goals. Whereas, affirmative action programs are targeted to groups that experience disadvantages, diversity management programs assume that people are unique (Ollapally & Bhatnagar, 2009). Additionally, affirmative action approach focuses on demographic attributes whereas diversity management implies voluntary policies and programs that try to involve employees with diverse backgrounds into the organization (Barak, 2010). Diversity management can be seen as the successor of the affirmative action approach (Ashkanasy et al., 2002) because affirmative action programs lead to a social and legal context that is the basis for diversity management (Barak, 2010). The changes in diversity policies is apparent in this research.

The interest in studying diversity first arose during the sixties (Ashkanasy et al., 2002) and researchers defined diversity for a long time only in terms of race, age and gender. Thus, research focused mainly on readily-detectable diversity attributes. In addition, most research only included one or two dimensions of diversity (Pelled, 1996). During the years diversity definitions became more general: 'diversity simply means variety or a point of respect things differ' (Milliken & Martins, 1996, p. 1). At this point of time, most diversity research still refer to gender (Jackson et al., 2003; Shen et al., 2009) but research regarding other attributes of diversity increases, such as knowledge, skills and abilities (Rink & Ellemers, 2007). Underlying diversity attributes are more and more accepted and included in diversity research, as can be seen in Table 1. This development is in line with the chosen definition of work group diversity as it refers to both types of diversity.

2.2.3 Theoretical Explanations

As mentioned before, researchers have different opinions whether work group diversity enhances or inhibit performance. These differences are also reflected by the underlying theories. On the one hand, the 'value in diversity approach' supports the advantages of heterogeneity. This approach states that heterogeneity has an added value to the organization and argues that heterogeneous teams would perform better than homogenous teams (Cox & Blake, 1991; Kleysen & Street, 2001). The approach is supported by the information/decision making perspective that assumes that diverse teams perform better than homogenous teams (Guillaume et al., 2013). Diverse groups have more resources available in terms of skills, abilities, (task-relevant) knowledge and information (Guillaume et al., 2013; Van Knippenberg, De Dreu, & Homan, 2004; Van Knippenberg & Schippers, 2007; Dahlin et al., 2005) that lead to different ways of thinking (Van Knippenberg et al., 2004) and a broader range of opinions and viewpoints that lead to critical thinking (Bogaert & Vloeberghs, 2005).

On the other hand, heterogeneous work groups also have negative effects (Delery & Doty, 1996) that can be explained by the similarity-attraction paradigm, the social identity theory and the social categorization theory (Tsui et al., 1991). The similarity-attraction paradigm states that people who are similar to each other, are more attracted to each other (Harrison et al., 1998). Based on this paradigm the other two theories assume that similarity leads to a feeling of identification that stimulates attraction between individuals that lead to better group work, for example through better communication and higher satisfaction (Tsui et al., 1991). The social categorization theory states that people tend to classify each other into in-groups based on common characteristics. Classification on the basis of demographic attributes, such as race gender and age, have more influence than cognitive factors that determine if and how we categorize others (Kassin, Fein, & Markus, 2008). The identity theory suggests that people strive to have a personal and social identity. To achieve both, people enhance their self-esteem by preferring their own group more than out-groups (Kassin et al., 2008). Members of heterogeneous teams can less identify with other team members that result in less satisfaction (Milliken & Martins, 1996), more conflicts, communication problems (Bassett-Jones, 2005; Ollapally & Bhatnagar, 2009; Van der Vegt & Janssen, 2003) and higher turnover rate (Shen et al., 2009; Van der Vegt & Janssen, 2003). Finally, the wish to work with similar people is greater than being unique (Tsui et al., 1991). However, in organizational environments it is nearly impossible to create workgroups with similar individuals.

Concluding, there are sufficient theories that try to explain the effect of diversity on performance outcomes but meta-analyses show that the evidence therefore is ambiguous

(Horwitz & Horwitz, 2007; van Dijk, van Engen, & van Knippenberg, 2012). That is why scholars argue that those theories only explain main effects and are not applicable on the complex relationship between diversity and work outcome (Van Knippenberg & Schippers, 2007). Therefore it is necessary to develop a new conceptual model that takes the existing literature and complexity of the diversity-outcomes relationship into account.

2.2.4 Developing a Conceptual Model

At the end of the 90's, Williams and O'Reilly (1998) already requested a model that takes the complexity of diversity into account because their literature review of diversity research came to the conclusion that there is no continuous main effect between diversity and performance. They were one of the first who proposed to distinguish employee diversity attributes into informational and demographic diversity, also called underlying and readily-detectable diversity attributes. However, as the previous section has shown there is still a black box between diversity attributes and performance.

Table 1 shows that there is another way to distinguish diversity attributes, namely based on their relationship two work. This leads to two categorizations: job-related diversity attributes and job-unrelated diversity attributes. For example, Jackson et al. (2003) mentioned job-related diversity attributes as a third diversity type that distinguishes (readily-detectable and underlying) diversity attributes based on their relationship to work. They stated that readily detectable (age, sex, ratio-ethnicity) and underlying attributes (personality, knowledge, values) are less related to work than education and tenure that direct influence work. Moreover, distinguishing diversity attributes based on their relation to work takes the complexity of diversity into account because it is argued that different diversity characteristics have different effects on performance (Pelled et al., 1999) and on conflicts (Jehn et al., 1999). Furthermore, if diversity attributes are related to work they can 'increase the total pool of task-related skills, information and perspectives' (Simons et al., 1999, p. 663). Furthermore, the meta-analysis of Hülsheger et al. (2009) found strong evidence that research should distinguish between job-relevant and background diversity. They examine different tem-level predictors of innovation based on 104 studies. Among other variables, they analyzed the effect of diversity attributes on innovation. They hypothesis that job-relevant diversity is positively related to innovation, whereas background diversity is negatively related to innovation. They found that job-relevant diversity, measured at the team level, is positive related to innovation. In line with this, the meta-analysis of van Dijk et al. (2012) found significant evidence that job-related diversity is positively related to innovative performance.

It is a logical argumentation that job-related diversity attributes have a direct impact on work group outcomes, whereas job-unrelated diversity attributes may have none or less impact on work group performance. Further, it can be assumed that most job-related diversity attributes are in line with underlying diversity attributes and job-unrelated diversity attributes with readily-detectable diversity attributes. That is why diversity attributes that are related to work are mostly invisible, whereas attributes that have no direct impact on the work are visible. As visible attributes enhance the chance of effecting work, it can be assumed that also job-unrelated diversity attributes have an impact on performance. Thus, in the same way as underlying and readily-detectable attributes, job-related and job-unrelated diversity attributes must be most taken into account.

There is a disagreement between researchers which diversity attributes are job-related, as table 2 shows. Whereas Jackson et al. (2003) label knowledge, skills, abilities, function, tenure and education as job-related attributes, Webber and Donahue (2001) classified job-related attributes as education, functional, occupational and industrial background. However, table 2 shows that most scholars agree that job-related diversity attributes include education, tenure and functional background and job-unrelated diversity attributes refer mostly to age, gender and race/ethnicity. Hence, those diversity attributes are further explored in this research.

Based on the assumption of Pelled and colleagues (Pelled, 1996; Pelled et al., 1999), Webber and Donahue (2001) request that research should distinguish diversity attributes into job-related and job-unrelated. However, they found no significant evidence that the two types of diversity are related to performance. They explain it by the fact that most research does not take time and tenure as a variable into account. It is assumed that if employees work together for a longer time, prejudices will be reduced and thus negative effects of diversity attributes. This may also be an explanation for the inconsistent findings with respect to the relationship between underlying and readily-detectable diversity attributes and performance, as described before. Finally, they recommend more research that does not act on the assumption that diversity and performance have a straightforward relationship.

Hence, this research follows an approach that distinguishes diversity attributes in terms of job-related and job-unrelated. Furthermore, this research is one of the first studies that empirically test the relationship between job-(un)related diversity attributes and innovative performance, because the researches listed in table 2 are meta-analyses. In addition, this research takes the time that work group members interact with each other into account because it may impact the effect of diversity attributes on performance.

Table 2

Distinguishing diversity into job-related und job-unrelated diversity attributes

Authors	Diversity concept	Diversity attributes
(Pelled, 1996)	*Low job-related attributes*	Age, gender and race
	Highly job-related	Group tenure, organizational tenure, education, functional background
(Simons et al., 1999)	*Less job-related diversity*	Age
	More job-related diversity	Educational level, functional background and tenure
(Pelled et al., 1999)	*Low job-related attributes*	Age, gender and race
	Highly job-related attributes	Functional background and tenure
(Jehn et al., 1999)	*Social category diversity*	Age and sex
	Informational diversity	Education, functional area and position in the firm
(Webber & Donahue, 2001)	*Less job-related diversity attributes*	Age, gender and race/ethnicity
	Highly job-related attributes	Education, functional, occupational and industrial background
(Jackson et al., 2003)	*Relations-oriented attributes*	Age, sex and ratio-ethnicity
	Task-related attributes	Knowledge, skills, abilities, function, tenure and education
(Hülsheger et al., 2009)	*Background diversity*	Age, gender and ethnicity
	Job-relevant diversity	Function, profession, education, tenure, knowledge, skills or expertise
(van Dijk et al., 2012)	*Demographic diversity*	Age, ethnicity, gender, and educational level
	Job-related diversity	Functional background, educational background, and tenure

2.2.5 *Sub Conclusion*

The previous section explained that readily-detectable and underlying diversity attributes refer to individual diversity. However, as this research will examine the relationship between diversity attributes and innovation on a work group level it is necessary to label and categorized diversity attribute in another way. Therefore work group diversity attributes can be best subdivided into job-related and job-unrelated diversity attributes. Further, since organizations see innovation as key element to reach competitive advantage it is important to take both forms of innovation into account because successful organizations are ambitious. The two forms of innovation are radical and incremental innovation. The dashed line in Figure 1 shows the research focus.
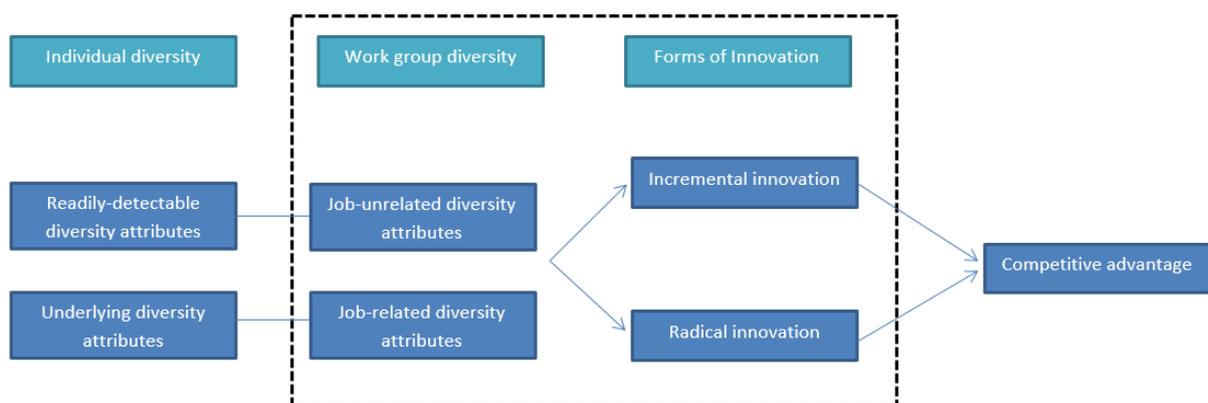
Figure 1. Research focus

2.3 DIVERSITY ATTRIBUTES RELATED TO INNOVATION

As the short review of the diversity history shows, research has developed and changed over time, from antidiscrimination to a value in diversity approach. That is why it is questionable if diversity research that is built on the anti-discrimination approach is suitable for this research because demographic attributes are not necessarily job-related attributes. This makes it difficult to use existing research to determine, which diversity attributes are related to the two forms of innovation. Thus, it is questionable in what extent demographic attributes have an impact on performance. Furthermore, it is argued that different diversity attributes have different impact on performance (Webber & Donahue, 2001). Because there exist no research that studies the relationship as shown in Figure 1 it necessary to further explore this relationship. Due to the fact that we cannot build our research on an existing research model a closer look to the existing literature about the impact of diversity attributes is necessary. Therefore, the following diversity attributes were taken into account: age, gender, ethnic, education, tenure and functional diversity.

2.3.1 Job-related Diversity Attributes

As mentioned before, this research investigates education, function and tenure as job-related diversity attributes. Based on the information/decision-making perspective it can be argued that these diversity attributes lead to a broader range of task-relevant KSA's and viewpoints within work groups (O'Reilly et al., 1998). Dahlin and colleagues (2005) explain this by the fact that those diversity attributes are expertise diversity and thus have a positive influence. Furthermore, it is argued that these effects are directly positive related to innovation (van Knippenberg & Schippers, 2007) as they are directly related to work. In the following section it is examined how these diversity attributes are related to both forms of innovation.

2.3.1.1 Educational Background

Diversity research that focuses on education as predictor for performance mostly studied diversity at the organizational level (Jackson, 1992; Simons, 1995; Wiersema & Bantel, 1992; Wiersema & Bird, 1993). However, some scholars also studied performance as work group outcomes. Generally, most research found a positive effect of educational diversity on affective outcomes as well as performance outcomes. Tsui et al. (1991) found that educational diversity is positive associated with the intention to stay within an organization. Furthermore, different scholars state that educational diversity is positive related to innovation, as it influences innovative work behavior (Janssen, 2000) and the likelihood to innovate (Østergaard et al., 2011). This can be explained by the fact that educational diversity is the basis for variation in knowledge, perspectives and working styles within a team (Janssen, 2000), whichis why educational diverse teams have a higher ability to access and use new information (Dahlin, Weingart, & Hinds, 2005). In addition, educational background can be an index for task-relevant KSA and that contribute to one's expertise (Dahlin et al., 2005).

However, Dahlin et al. (2005) found that educational diersity can hinder and help work gorups to use information. Furthermore, Jehn et al. (1999) found that educational diversity was positive related to task and process conflicts. But task and process conflicts are not necessary negative because research has shown that those conflicts can stimulate the innovation process. Whereas relationship conflicts have an negative effect on team effectiveness (De Dreu & Weingart, 2003) and innovation (De Clercq, Thongpapanl, & Dimov, 2009), task conflicts may have a positive impact on innovation because it stimulates different viewpoints (De Clercq et al., 2009). In line with that, Jehn et al. (1999) found that educational diversity increases conflicts but also is also positive associated with work group performance. Thus, it can be concluded that those conflicts do not moderate the relationship between educational diversity and performance.

Based on existing literature it can be argued that educational diversity has a positive impact on performance and in particular on work group innovation. It can be assumed that educational diversity causes a variety in knowledge, perspective and working styles that are all positive related to the innovation process of incremental as well as radical innovation. In addition, there is evidence that educational diversity is positive related to the intention to stay within an organization (Tsui et al., 1991). This is of high importance for incremental innovation because it can be assumed that this type of innovation depends on knowledge about the already existing product and procedures within the organization. Further, research has shown that educational diverse teams make better use of information by a better range, depth and integration of information (Dahlin et al., 2005). It can be assumed that the efficient use of information plays an important role for radical innovation. Radical innovation depends on new insights to create something new but if work groups are not able to combine the already existing information they will fail to developed a radical innovation. In addition, teams with different educational background are more likely to not only create a new radical idea but also to promote and implement it. For example, a technical radical innovation is mostly developed by technical innovators. However, those people are mostly not able to formulate their idea in such a way that business people would understand and promote it (Leifer, 2000). Thus a team with different educational background is needed. Hence, educational team diversity will be positively related to both incremental and radical innovation.

Proposition 1a: Educational background diversity within a work group will be positively related to incremental innovation.

Proposition 1b: Educational background diversity within a work group will be positively related to radical innovation.

2.3.1.2 Tenure

Work groups with various degrees of tenure have diverse team members with a mix of recent and previous hires. Different scholars argue that a group or team that work together for a long time can outperform a mix team with respect to tenure within the team. Those teams that have worked together for a long time share more mental models within the team. These models have a positive impact on the belief that the team will perform successful (Gibson, 2001). Further, work groups that have experience in working together increase the performance quality (Taylor & Greve, 2006). In addition Tyran and Gibson (2008) explain this by the fact that teams that worked together for a long time are similar regarding their norms, beliefs and expectations.

Thus, highly tenure diverse teams miss these feeling of similarity that can increase the potential of emotional conflicts (Pelled et al., 1999). It can be assumed that this leads to higher turnover rates that in turn lead to knowledge and experience loss that inhibit the process of incremental innovation. In addition, Ancona and Caldwell (1992) found that tenure diversity is directly and indirectly negative related to performance. Furthermore, they found that tenure has more influence on internal group dynamics than on external communication. Based on the fact that incremental innovation depends on the whole team and not as radical innovation on champions within the team, it can be assumed that tenure diversity has more negative effects on incremental innovation within the team.

However, it can be assumed that tenure diversity is positive related to radical innovation. Jackson and Joshi (2004) argue that tenure diversity helps to understand the internal environment and the competition. The internal environment can be understood by members who worked for a long time in the organization. They may have a positive effect on the implementation of ideas because they have knowledge about the rules and procedures within the organization (Hayton & Kelley, 2006). That is important for radical innovation because if teams develop a radical innovation they will face resistance from established operating units (Dewar & Dutton, 1986, Leifer, 2000). In turn, it can be argued that employees who have a short tenure are more willing to introduce new perspectives and ideas (De Dreu & West, 2001). Further, new team members are not inhibited in their process of implementing new ideas by negative experience with the rules and procedures within the organization. Thus, a mix of tenure within the team can be positively affect the process of radical innovation if the team is able to combine the fresh ideas with the existing experience within the team. It can be assumed that tenure diverse teams are able to do so because tenure divers teams are more collaborative (Harrison et al., 2002), which in turn may increase the positive effects of tenure diversity (Ely, 2004). Further, diversity tenure has a positive effect on creativity (O'Reilly et al., 1998) and tenure is correlated to network heterogeneity (Reagans & Zuckerman, 2001). Hence, a highly tenure diverse team can be hindered to perform incremental innovation, whereas at the same time it can stimulate radical innovation.

Proposition 2a: Tenure diversity within a work group will be negatively related to incremental innovation.

Proposition 2b: Tenure diversity within a work group will be positively related to radical innovation.

2.3.1.3 *Functional Background*

As mentioned before, organizations try to increase their workforce diversity to enhance the assumed positive effects of a diverse workforce. Therefore organizations enhance the amount of cross-functional teams (Van Knippenberg et al., 2004). However, the research findings regarding the effect of team functional diversity on (innovative) performance are mixed.

Choi (2007) studied the impact of individual-level dissimilarities on creative behavior and found significant evidence that functional diversity increases creative behavior of individual employees. Drach-Zahavy and Somech (2001) found significant evidence that functional diversity can increase team innovation. Other scholars have found that functional diverse teams have a better frequency of communication (Glick, Miller, & Huber, 1993). Yeh and Chou (2005) studied cross-functional teams and found that functional diversity had a negative effect on team satisfaction and team performance. In general it is argued that cross-functional communication is a forerunner for innovation (Bantel & Jackson, 1989).

Based on the existing literature, it can be argued that functional diversity has more negative influence on incremental innovation, whereas at the same time the positive influence of functional diversity is more related to radical innovation. To explain this assumption we will further explore the results of the research of Keller (2001). His research found evidence that functional diversity had a negative impact on internal communication but positive impact on external communication. It can be argued that internal communication is more important for incremental innovation because it is built on existing knowledge. Thus employees have just to communicate with each other but not external to their business unit. Whereas radical innovation leads to high resistance within the organization that makes external communication an important determined of the success of radical innovation because one of the most common problems with radical innovation is that it is difficult to find support for a radical new innovative idea. Thus, the positive effect of functional diversity on external communication is more relevant for radical innovation. In addition, radical innovation requires a large amount of new knowledge and different knowledge that can be present by employees who have different functional backgrounds and based on their functional background received different trainings (Dewar & Dutton, 1986). Hence, radical innovation depends on cross-functional teams (Leifer, 2000) because teams with different points of view are more likely to develop radical innovation.

Proposition 3a: Functional background diversity within a work group will be negatively related to incremental innovation.

Proposition 3b: Functional background diversity within a work group will be positively related to radical innovation.

2.3.2   Sub Conclusion

In the previous section, different diversity attributes that are related to innovative outcomes were identified based on previous researches. For each attribute, its relationship to incremental and radical innovation as work group outcome is discussed. This leads to three propositions as displayed in a conceptual model. Figure 2 shows that job-related diversity attributes are the independent variables that may have impact on the dependent variables, incremental and radical innovation.
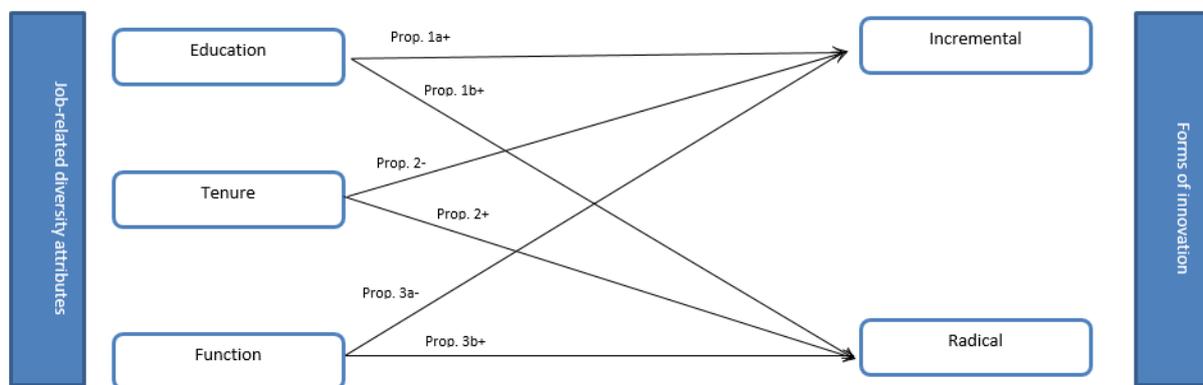
Figure 2. Conceptual Model 1 – Job-related diversity attributes and forms of innovation

2.3.3   The Moderating Effect of Job-unrelated Diversity Attributes

As mentioned before diversity is a 'double edge sword'. Scholars were not able to develop a framework that is in line with the inconsistent findings while at the same time is able to explain the effects of diversity on performance. The first attempt, as shown in Figure 2, measures performance in terms of innovation and diversity in terms job-related diversity attributes. However, the model still does not capture the full range of diversity. While some scholars argue that only job-related diversity attributes are related to performance, Webber and Donahue (2001) found no evidence that highly-job related diversity attributes are related to performance.

While the meta-analysis of van Dijk et al. (2012) found significant evidence that job-related diversity is positively related to innovative performance. But the relationship was heterogeneous and thus asking for identifying moderators of this relationship. Their research found no significant evidence that diversity cluster, task complexity or type of measurement is moderator of the diversity-performance relationship. Hence, another variable could possible moderate this relationship. In line with this, it is argued to further explore the relationship between diversity attributes and performance, it is necessary to look for moderators (Van Knippenberg et al., 2004) as team oriented HR practices (Chi, Huang, & Lin, 2009) or transformational leadership (Kearney & Gebert, 2009). However, before researchers should look for other variables it is first important to understand the full range of diversity. The following section explains our choice of job-unrelated diversity attributes (age, gender and ethnicity) as moderator by discussing each variable separately. Based on the discussion the final propositions are formulated.

2.3.3.1 Age
As the literature review of Jackson et al. (2003) shows, age diversity is one of the most studied diversity attributes in diversity research. Most research studied the impact of age diversity on performance outcomes and only a few took a closer look to affective outcomes. Tsui et al. (1991) took a closer look and tested if age had an effect on individual's psychological and behavioral attachment to the organization. They found no significant effect of age diversity on psychological commitment and frequency of absence. However age diversity had a negative effect on organizational attachment for man, but not for women. In addition, they found evidence that the effects of sex and race are stronger than the impact of age. Another research showed that age has a significant negative effect on the turnover of top management teams (Wierseman & Bird, 1993; Jackson et al., 1991) and individual turnover in teams (O'Reilly et al., 1998).

In general, researches that studied the impact of age diversity on performance outcomes found barely or negative effect. Jehn et al. (1999) found evidence that social categories diversity (including age diversity) increases relationship conflicts. Further, social category diversity is positive associated with perceived performance but not with actual group performance and group efficiency. Thus, in their research age diversity had no impact on group performance. Colquitt, Noe, and Jackson (2002) found significant evidence that age diversity was negatively related to climate strength that in turn moderates the relationship between climate level and team performance. There are also other researches that measured performance outcomes in terms of innovation. For example, the research of Østergaard et al. (2011) found that age

diversity is negatively related to the likelihood to introduce an innovation. Zajac, Golden, and Shortell (1991) explain that effect by the fact that age diversity results in more disagreements that lead to lower innovative performance. In line with this thinking Cady and Valentine (1999) found that age had no impact on the quality of innovation. Thus it can be argued that age diversity has an indirect negative impact on work group (innovative) performance.

Pelled (1996) aims to explain the black box between group diversity and individual and group outcomes. Therefore they cluster demographic attributes into a 2*2 matrix regarding visibility and job-relation. Based on the matrix they developed a theoretical framework that states that visibility of demographic diversity variables, such as age) are related to affective conflicts that in turn are related to turnover. In line with the framework of Pelled (1996), Pelled et al. (1999) studied if diversity indeed leads to conflicts that in turn shape performance. They found evidence that age diversity can diminish emotional conflict and in turn, similarities in age increase emotional conflicts. However, they found no evidence that emotional conflict is related to performance. Performance was measured as efficiency of team operations and number of innovations or new ideas introduced by the team.

Proposition 4a : Age diversity will moderate the effect of job-related diversity attributes on innovation, as the influence is a curvilinear relationship: the effect becomes positive with increasing job-unrelated diversity attributes but becomes negative after the highest level.

2.3.3.2 Gender/Sex

Also research findings regarding gender diversity are contradictory. Most researchers had found mixed effects of gender diversity on affective outcomes, as well performance outcomes. Research that studies the effect of gender diversity on affective outcomes found mostly a negative relationship. It is found that gender diversity increases relationship, interpersonal and emotional conflicts (Alagna, Reddy, & Collins, 1982; Jehn et al., 1999; Pelled et al., 1999). Hoffman and Maier (1961) explained that by the fact that gender diverse groups had more conflicts through different viewpoints. Further, gender heterogeneous groups have a negative impact on tension, agreeableness and respect within the team (Alagna et al., 1982) individual commitment, intention to stay within the organization and absence frequency (Tsui et al., 1991). In turn, some research found no significant effect of gender diversity on group efficacy, team process and performance (Ely, 2004; Kochan et al., 2003; Milliken & Martins, 1996; Pelled et al., 1999; Tyran & Gibson, 2008).

According to Cady and Valentine (1999) gender diversity is mostly studied in terms of employees perception and less regarding performance outcomes. They found that gender diversity was negative associated with quantity of innovation and not at all related to quality of innovation. In addition, Choi (2007) found that relational gender diversity was negative related to employee creative behavior. However, there is also research that suggest a positive effect of gender diversity on efficient and accuracy in solving problems, such as multiple choice problems (South, 1927), constructive group processes (Kochan et al., 2003), value to the quality of decisions (Rogelberg & Rumery, 1996), generation of novel ideas (Kent & McGrath, 1969) and are thus more likely to innovate (Østergaard et al., 2011).

Despite the significant findings it is argued that the impact of gender diversity is much more complex and the relationship between gender diversity and performance is not linear. First, different scholars argue that diversity depends on other diversity attributes that interact with each other (Pelled et al., 1999). For example, Shaw (1981) state that positive effect of gender diversity on performance is based on other diversity attributes, such as personality that is related to gender. In addition, (Tsui et al., 1991) linked gender diversity with ethnic diversity. Furthermore, they state that gender has more impact as it is associated with differences in status. In line with this, the research of Jackson & Joshi, 2004shows that the effect of diversity types (gender, ethnic and tenure) on team performance depends on the other types of diversity present in the team. Jehn et al. (1999) go a step further and argue that gender has not a direct effect on performance but is a moderator between the relationship of informational diversity and performance.

Proposition 4b : Gender diversity will moderate the effect of job-related diversity attributes on innovation, as the influence is a curvilinear relationship: the effect becomes positive with increasing job-unrelated diversity attributes but becomes negative after the highest level.

2.3.3.3 Ethnicity/Nationality

According to Milliken and Martins (1996) diversity research regarding race and ethnical background can be combined. In addition they state that most ethnicity research focuses on employees who are dissimilar to the majority or from their supervisor. According to Cady and Valentine (1999) most ethnic diversity research focuses on the affective performance outcomes. Such as that most research focuses on the experience of ethnical groups that are dissimilar from the majority. For example, researchers found evidence that employees who are different from their work unit regarding ethnic and race feel less committed to their organizations and thus are

more likely to be absent from work (Tsui et al., 1991). That can be explained by the fact that race heterogeneous teams have more emotional conflicts (Pelled et al., 1999). Additionally, Milliken and Martins (1996) argue that ethnical diversity can have negative effect if the ethnic majority feels less attached to the organization and experience not much positive responses of the organization because they were lower evaluated. That leads to a higher turnover rate of ethnical minorities. However, they also suggest that ethnic diversity is in some way positive related to group-level cognitive outcomes, such as a positive effect on the quality of generation of ideas (Cady & Valentine, 1999). In line with this, McLeod et al. (1996) found evidence that ideas of ethnic diverse groups have a higher quality than of homogenous groups while at the same time they do not necessarily produce more (unique) ideas. However, they also found evidence that homogenous group members feel more attracted to their group than members of diverse groups. Moreover, race is seen as an employee attribute that bring different individual perspectives into the organization (Hillman, Cannella & Harris,. 2002) and that it is supposed that ethnical diverse teams are more cooperative (Cox & Blake, 1991; Cox et al., 1991).

However, research found no significant effect of ethnic diversity on (innovative) performance. Richard (2000) found no significant evidence that racial diversity is positive associated with firm performance. Østergaard et al. (2011) found no significant relationship between diversity and ethnicity and argue that the impact depends on the type of work. Also Østergaard et al. (2011) found no significant effect of ethnic diversity on the likelihood to innovate. However, racial diversity enhance productivity (Richard, 2000).

Proposition 4c : National diversity will moderate the effect of job-related diversity attributes on innovation, as the influence is a curvilinear relationship: the effect becomes positive with increasing job-unrelated diversity attributes but becomes negative after the highest level.

2.3.4   *Sub Conclusion*
Before studying variables that may impact the relationship between diversity and performance it is first important to study diversity attributes in their full range. The previous section showed that research findings regarding job-unrelated diversity attributes are contradictory because they may have positive, none or negative effect. However, it can be assumed that age, gender and nationality have no direct effect on group performance but an indirect impact. For example, high age differences could cause relationship conflicts that may negatively influence the relationship between job-related diversity attributes and innovation. In line with this thinking, Hülsheger et al. (2009) argue that age, gender and ethnicity inhibit innovation through

communication problems and less ability to open discuss ideas and problems. Further, it can be argued that job-unrelated diversity attributes are more visible and thus cause problems that are based on stereotypes and prejudice. Different scholars argue that these problems within diverse work groups can be minimized if a work group works together for a longer time. The research of Harrison et al. (1998) shows significant evidence that readily-detectable attributes are less important than underlying attributes for group social integration if groups had interacted more often. In addition, the research of Harrison et al. (2002) also shows significant effect that readily-detectable attributes have less effect on team outcomes if time passes, whereas underlying attributes have a greater effect. However, it is argued that job-unrelated diversity attributes should still be taken into account because the effects of single diversity attributes on team performance depend on other types of diversity that exist within the team (Jackson & Joshi, 2004). Based on this it can be assumed that up to a certain degree job-unrelated diversity attributes are positive related to the relationship between job-related diversity attributes and innovation. For example, it could be assumed that a work group that has male and female group members has an increased chance of members with different functional background. In addition, it can be assumed that tenure diversity correlates with group member's age. Concluding, job-unrelated diversity attributes may have no direct impact but an indirect effect, as moderator, on the relationship between job-related diversity attributes and the innovation. In addition it can be assumed that this relationship is nonlinear because a high degree of job-unrelated diversity attributes can cause too much problems. Whereas a smaller degree of job-unrelated diversity attributes may be positive related to job-related diversity attributes.

Hence, this research is the first attempt to measure if job-unrelated diversity attributes moderate the linear relationship between job-related diversity attributes and innovation. Therefore the independent and dependent variable as measured in model 1 are summarized. This means that functional background, tenure and functional background are combined to job-related diversity attributes and radical and incremental innovation to innovation.
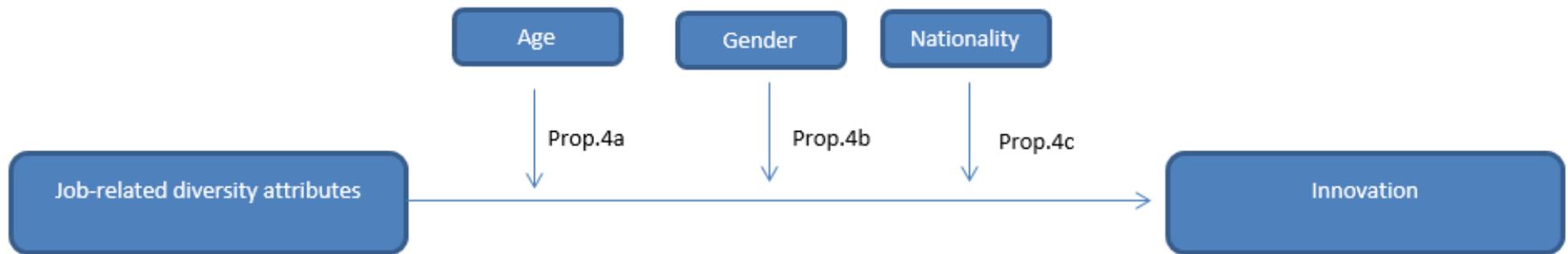
Figure 3. Conceptual model 2 – The moderating effect of job-unrelated diversity attributes on the relationship between job-related diversity attributes and innovation.

3 METHODOLOGY

The central topic of this chapter is the instrument that was developed to test the propositions of the theoretical model. The instrument was developed and tested in two steps. First, the developed questionnaire was evaluated by means of interviews with four participants. Based on the evaluation, the questionnaire was adapted and revised. Secondly, the revised questionnaire was filled in by a few work groups to test the extent individual and work group ratings were in line. In addition, the filled in questionnaires were used to collect data to give a first impression with respect to the propositions. In the first paragraph 3.1, the research design is pointed out, in order to show the overall strategy that brings the different elements of the research together. In paragraph 3.2, the research method is described which aims to improve the questionnaire and to collect data. Next, in paragraph 3.3 the different constructs of the variables and their measures of the first questionnaire are described. Finally, the way data can be analyzed is explained in paragraph 3.4.

3.1 RESEARCH DESIGN

The research design is a broad strategy which aims to answer research question (Saunders, Lewis & Thornhill, 2011). The design is based on the philosophy, approach and purpose of the research. According to Saunders et al. (2011) there are four main philosophies: positivism, realism, interpretivism and pragmatism. As this research is seen as the starting point to think in a different way about diversity research, it can be argued that this is in line with pragmatism. This philosophy implies that the research question is the most important element of the research. Pragmatism is the view that 'knowledge is derived from interaction among groups of individuals and the artifacts in their environment, which together create reality' (Schuh & Barab, 2008, p.72). This means that the researcher is free to use any method, technique and procedure that best fits the research problem. As mentioned before, there is a lot of research that links work group diversity with performance and in particular with innovative performance. Group diversity as well as innovation is not new to the academic world and the relationship between those two variables are accepted. Therefore it is not necessary to explore the concepts of this research with an interpretivism approach. However, the existing literature lacks an instrument that is able to measure if and when this relationship is positive or/and negative. To find an answer to the question *'How do employee diversity attributes within a workgroup impact, directly or indirectly, innovative output of work groups?'*, it is first important to develop a questionnaire that measures the variables in an appropriate way to ensure that data can be

collected which can answer the research question. Secondly, the developed questionnaire must be tested with members of a work group. This step shows if the questionnaire is understood well. Third, the questionnaire must be tested with a few work groups to evaluate the questionnaire further and to provide data which may give a first indication with respect to the propositions. This means the research consists of two methods that are quantitative and qualitative. Hence, this research is based on pragmatism philosophy, which means that mixed methods are used to answer the research question. First, face-to-face interviews with the focus group are used to improve the questionnaire. Secondly, the revised questionnaire is tested by means of a pilot study with a few work groups.

In the academic world two research approaches are known: deduction and induction. While deduction tests a theory, induction is radically different as theory follows the data collection and thus builds a theory. This research follows a deductive approach as the research fulfills the six steps of a deductive research (Blaikie, 2010). The research encourages propositions about the relationship of variables that were developed based on existing literature. Further, data is collected to test if the anticipated relationship between diversity and innovation indeed exist. If the findings show that there is no relationship between the variables or in another way then theory must be modified. As the roots of deduction lies in scientific research, findings can be generalized if the findings confirm the propositions. The research aims to create a valuable instrument that is replicable for future research as the researcher tests if the questionnaire is applicable.

According to Saunders et al. (2008) a research question as well as the purpose of a research can be exploratory, descriptive or explanatory. Because the variables of the research are defined, exploratory research is not used. Further, explanatory research can also be excluded as the research does not study the causal relationship between diversity and innovation by means of an experiment. In addition this research does not explain why the relationship exist rather it is an attempt to show that the relationship exist by developing a suitable instrument to measure the variables. Thus, as this research aims to develop a questionnaire to show that diversity attributes within work groups impact innovation the research is descriptive.

Hence, this research consists of both quantitative and qualitative research but follows only a deductive approach. The quantitative research as well the qualitative research enables the researcher to test the developed questionnaire while the quantitative research also gives insights regarding the formulated propositions. Concluding, the combination of mixed methods allows broader insights to answer the research question which is in line with the philosophy of pragmatism.

3.2 Research Method

The method of this study is a mixed method approach as qualitative data is used to develop and improve the measurement instrument and then the measurement is executed to collect quantitative data. Further, the time horizon of the research is cross-sectional because the research is a pilot-study and it can be accepted that the impact of group diversity will not change over time. In addition, as this research is a master thesis, only limited time was given to conduct this research.

3.2.1 Target group

This research aims to develop a questionnaire which is able to test work group diversity. Therefore it was necessary that the participants reflect the studied diversity attributes. This means that participants were chosen based on the following diversity attributes: gender, age, nationality, educational and functional background. In addition, most researchers measure innovation outcomes within R&D teams but innovation can appear in other departments as well. Furthermore, innovation can appear in both the service and manufacturing industry. It was therefore valuable to choose participants based on their department and on their industry. The most important selection criteria was that participants were members of a team. An overview of the target group is described in paragraph 4.1.

This research not only aims to develop a questionnaire but also to use the instrument to collect data. Therefore a pilot study with a few teams was executed to provide quantitative data. As the data was collected by means of a pilot study, it was important that work groups were diverse regarding their work group size to reflect a broad population.

3.2.2 Data collection

Data collection is an important part of every research as it helps to get a detailed picture of the studied topic. To develop and evaluate a measurement instrument quantitative method is used. The details of the quantitative method are further explored in paragraph 3.2.3.

The questionnaire was developed by a few guidelines. Mostly closed-ended questions were used to ensure conformity of answers (Babbie, 2012). In addition, the question could be answered on a 5 point Likert-scale. However, some questions had a sixth option 'N/A (not applicable)' to decrease the risk that participants skip a question if a question is problematic. The questionnaire was prepared in English as the likelihood of non-Dutch speaking participants is enhanced by doing research about diversity. There are different forms of questionnaire, such as telephone questionnaires, interview questionnaire and online questionnaire (Babbie, 2012). This research made use of an online questionnaire because it was less time intense for the

participants which may lead to a higher response. However, a risk of online questionnaires is a low response rate because participants can easily ignore them (Witmer, Colman & Katsman, 1999). That is why the questionnaire was send via E-mail and each member of the work group had two weeks' time to complete the survey.

3.2.3 Three-Step Test-Interview (TSTI)

It is generally accepted that before executing a questionnaire it should be tested with a pilot study (Saunders et al., 2011). The aim of pretesting the questionnaire is to enhance the validity and reliability by ensuring that the questionnaire is well understood. While some components of the research were based on existing questionnaires, most of the items were adapted to fit the work group level. For example, there are many and different manners to measure innovation but there is no instrument that measures work group innovation and also distinguish between radical and incremental innovation. The details of the used constructs are further addressed in paragraph 3.3. To ensure that the developed and adapted items of the questionnaire are valid and reliable the TSTI[2] is used to pretest the questionnaire. This interview technique is developed by Hak, van der Veer & Jansen (2004) and was used to test if the developed instrument measures the variables that should be measured. The method is based on cognitive interviewing which is used to analyze the interaction process between questionnaire and participant. Cognitive interviewing is based on two procedures: think aloud and probing. Respondents have to follow a three step procedure that includes those two procedures. First participants must fill in the questionnaire while at the same time think aloud. At the same time the interviewer observes the behavior of the participant and takes notes. During the second step the interviewer asks the participant about things that attracted the attention of the interviewer. For example, if the participants stopped talking while filling in the questionnaire, the interviewer will ask what the participant was thinking. Finally, the participant can express feelings, criticism or improvements, as well as give explanations for certain behavior or comments.

To prevent that topics were overlooked, an interview protocol was used (Appendix A). The interview protocol was divided into nine sections. To start the interview the interviewer has to introduce himself to the participant. In the following step an explanation of the topic and

---

[2] It is interesting to note that the TSTI method is still in its infancy but first studies have shown that the function of the instrument is positive. One example is the research of Jansen and Hak (2005) about a questionnaire about alcohol consumption. They found out that the TSTI method detected the same problems of the questionnaire as reviews of experts.

the aim of the research were given. Next, the main structure of the interview and the steps of three steps of the TSTI are explained. In order to ensure that the participant is able to think aloud, the interviewer gives the participants the opportunity to exercise this technique. Before the participant can start to fill in the questionnaire, the participant is asked for approval to record the interview. After the three steps of the TSTI are executed the interviewer thanks the participants and finishes the interview. To ensure that all data is available, the interviewer took notes and in addition recorded the interview by using a voice recorder. According to Opdenakker (2006) an interview record is more precisely than notes. The interviews were conducted in the native language of the participant to ensure that the participants were able to apply the think-aloud technique. Citations that have been used to illustrate the carried out adaptions of the questionnaire were translated in English. For the analysis of the interviews, the researcher used table 7 (Appendix C) which summarized the analysis of the TSTI. The analysis helped the researcher to revise the questionnaire. A pilot study with a few work groups was conducted to collect quantitative data. The collected data was used to evaluate the developed questionnaire. Furthermore, the data was analyzed in order to give some indications with respect to the propositions.

3.3 CONSTRUCTS & MEASURES

In the following section, the used constructs of the first questionnaire are described in detail. The revised version of the questionnaire is further evaluated in chapter four. The aim of the revised questionnaire is to provide data about job-related diversity attributes within the work group (independent variable), the two forms of innovation (dependent variable) and job-unrelated diversity attributes (moderator variable). To collect these data multiple choice questions were used.

Independent variable: Job-related diversity attributes

Job-related diversity attributes. The variable job-related diversity attributes was assessed in two ways: subjective perception and objective calculation. Both methods aim to collect data about the work group's diversity with respect to their educational background, tenure and functional background.

To measure job-related diversity attributes of work groups in an objective way, participants were asked to answer questions with respect to their educational background, organizational tenure and functional background. Each variable was measured by one question. Educational background diversity was measured by means of six categories: 1 = 'WO'; 2 =

'HBO'; 3 = 'MBO; 4 = 'BBL'; 5 = 'VMBO'; 6 = 'others'. Work group tenure was measured in five categories (1 = 'less than 1 year'; 2 = 'between 1 and 2 years'; 3 = 'between 2 and 5 years'; 5 = between 6 and 10 years; 6 = 'more than 11 years'). The item for functional diversity is based on Boone and Hendriks (2009) and included seven categories. To measure job-related diversity attributes in an objective way, work group diversity was calculated using Blau's Index that is the mean of measuring variation in categorical data (Blau, 1997; Harrison & Klein, 2007). $Blau's\ index = 1 - \Sigma \left(\frac{p}{i}\right)^2$. Where p is the proportion of individuals of a category and i is the total number of individuals in the group. For example, you have a team with eight members (including 4 Dutch, 2 Germans and 2 Belgian) the calculation would be as followed: $1 - (0,5^2 + 0,25^2 + 0,25^2) = 0,626$. The values of Blau's index can range from zero to one. If every individual in the group belongs to the same category, the value of Blau's index would be zero. For each team with respect to each diversity variable Blau index is calculated. This variable is added to SPSS.

The subjective way to collect data about job-related diversity of a work group was based on three questions, one question for each diversity attribute. The questions could be answered on a five-point Likert-scale ranging from highly diverse (1) to highly similar (=5). One example: 'How similar or different are the members of your work group with respect to their educational background?'. Per diversity attribute one question was asked.

Dependent variable: Innovation

The dependent variable is determined by dividing innovation into radical and incremental innovation. To our knowledge there is no measurement that measures the full range of radical and incremental innovation within a work group. For measuring radical and incremental innovation of a work group, the construct of Johannessen et al. (2001) is adapted to the work group level. The developed items of Johannessen et al. (2001) are based on the six types of innovation activities:

1.) New products
2.) New services
3.) New methods of production
4.) Opening new markets
5.) New sources of supply
6.) New ways of organizing

In addition to the six innovation activities a seventh item is added that measures radical and incremental innovation respectively. The two added items are based on definitions of radical and incremental innovation that were formulated as proposition. Both, radical innovation and incremental innovation were measured by seven items. To measure innovation respondents gave an answer based on a five-point Likert scale, ranging from 1 (Strongly agree) to 5 (strongly disagree) (Babbie, 2012). An example of radical innovation is 'During the last three years our work group implemented new methods of production that were perceived to be new to the industry in which our company operates'. An example for incremental innovation is 'During the last three years out work group implemented new ways of organizing that were perceived to be new for the company, but which have previously been used by other companies'. The Cronbach's alpha for both forms of innovation are very good. The items for incremental innovation have a value of .852 and radical innovation scores .992. As the value of Cronbach's alpha is high enough it is not necessary to delete any questions if it does not increase the value dramatically. However, as the innovation items display different innovation activities the scores are not averaged but the highest score is taken into account.

Moderator

Job-unrelated diversity attributes. Job-unrelated diversity attributes were measured by means of an objective and subjective way, which is the same way of measuring the job-related diversity attributes. Both ways measure age, gender and ethnicity as job-unrelated diversity attributes. The objective way measured age in years, distinguished in five categories (1 = 'younger than 20'; 2 = 'aged between 21 and 30'; 3 = 'aged between 31 and 40'; 4 = 'aged between 41 and 50'; 5= '50 years and older'). Gender/sex was measured by the two categories: 1 = 'male' and 2 = 'female'. Ethnicity/race included the following categories: 1 = 'Dutch'; 2 = 'Belgian'; 3 = 'German'; 4 = 'other European country' and 5 = 'not from Europe'. Ethnical diversity reflects not the physical location of participants but their national but asked about their national background, including five categories (1 = 'Dutch'; 2 = 'Belgian'; 3 = 'German'; 4 = 'Other European country'; 5 = 'Not from Europe'). The diversity index was also calculated by means of the Blau Index as described before. The subjective way to collect data about job-related diversity of a work group was equal to the used method to measure job-unrelated diversity attributes. One example: 'How similar or different are the members of your work group with respect to their age?'. Per diversity attribute one question was asked.

Control variables

In addition to the variables listed above, other predictors of innovation and work group diversity were added.

Subjective diversity. Subjective diversity may impact the effect on actual existing diversity because if employees do not even recognize the difference it can be argued that the effect of diversity decreases. Subjective diversity was measured on a 5 point-Likert scale from 1 (Not diverse) to 5 (very diverse). The two items are adapted from Paulus, Nakui, Parthasarathy, and Baruah (2004) and Harrison et al. (1998): 'How diverse do you think your work is in general?' 'How similar or different are the members of your workgroup with respect to their: age, gender, ethnic background, educational background?'

Firm size. Firm size may impact the type if innovation as little organizations is more likely to invent radical innovation than large organizations because large firms are more bureaucratic and fear the risk of radical innovation (Chandy & Tellis, 2000). Firm size will therefore classified into four categories: small business, small medium business, medium-sized businesses and (large) enterprises (Eastman, 2010).

Group size. Group size is likely to correlated with group heterogeneity because large groups are more likely to be diverse than small one (Bantel & Jackson, 1989). In addition, group size influences group effectiveness (Brewer & Kramer, 1986) and has an impact on innovation related group process (Curral, Forrester, Dawson, & West, 2001). Group size was measured as total number of members within the work group.

Group longevity. It is argued that group longevity impacts the effect of diversity on performance because readily-detectable attributes have less effect on group outcomes if time passes, whereas underlying attributes have a greater effect (Harrison et al., 2002). In addition group longevity can impact group effectiveness and interaction between group members (Pelled et al., 1999). Group longevity was measured as average length of time the members of a group had belonged to that group.

3.4 DATA ANALYSIS

In order to draw conclusion from the quantitative raw data, data must be processed to turn it into information (Saunders et al., 2011). The following section gives an impression of the used quantitative analysis techniques. Data were analyzed by means of the statistical analysis software package SPSS.

Missing Values

Every researcher aims to collect fully complete data sets. However, it is a common occurrence that researchers have to handle missing data (Babbie, 2012, Field, 2012). Reasons for missing data are too long and difficult questions, participants overlooked a question, data is not recorded, participants do not want to answer or do not know the answer (Field, 2012, Saunders et al., 2011). Therefore, to increase the reliability of the research missing data must be first identified and handled. As the research is a pilot study and thus only a few teams were included into the research, it was no option to exclude cases with missing data. Therefore, the means score of the work group is used as the missing item within one group. This conservative estimation decreased the 'clarity' of the data but it was the only way to keep the sample size as large as possible (Babbie, 2012).

Reliability Analysis

In order to test if the used measurements are consistent when they are measured in a different situation, reliability analysis is conducted. Reliability is 'the extent to which data collection technique or techniques will yield consistent findings, similar observations would be made or conclusions reached by other researchers or there is transparency in how sense was made from the raw data' (Saunders et al., 2011, 680). The most common reliability analysis is Cronbach's alpha (α). By means of the additional option 'scale if item deleted' the value of Cronbach's alpha is given for each item if that item would be deleted. Thus, if an item affects the overall reliability in a high manner then this specific item should be not further taken into account. Most research accept a value between 0.7 and 0.8 as an acceptable value for Cronbach's alpha, depending on the number of items (Field, 2012).

Correlation Analysis

Based on the assumption that a relationship between two variables exists, correlation analysis can be used (Huizingh, 2012). Correlation analysis measure the strength of the relationship between one dependent variable and one or more independent variables. Two types of correlation analysis can be distinguished, the bivariate correlation and the partial correlation. Both types measure the correlation between 2 variables but in addition the bivariate also controls the effect of one or more additional variables (Field, 2012). In addition Pearson's correlation coefficient or the Spearman correlation coefficient can be chosen. Whereas Pearson correlation is more appropriate for interval scale, the Spearman measurement is most appropriate for ordinal scale (Huizingh, 2012). For this research is the Spearman measurement chosen due to the ordinal scale.

Regression Analysis

Likewise the correlation analysis also the regression analysis is a technique to measure the relation between two variables. However, the regression analysis goes a step further by taking cause and effect into account (Huizingh, 2012). As there is a lack of interdependence, the participants are part of one of the seven selected teams, a multilevel regression analysis must be used (Field, 2012). Regression analysis is used to find significant evidence with respect to the first model that implicates a relationship between job-related diversity attributes and the two forms of innovation. In addition, the second model that implicates job-unrelated diversity attributes as moderator will also be assessed by means of a regression analysis.

4 ANALYSIS AND RESULTS

Before data was collected the questionnaire was tested by means of four interviews. In paragraph 4.1 the interviews are analyzed, leading to a revised questionnaire. The new questionnaire was tested by means of seven teams as described in paragraph 4.2. In addition, the way the data was analyzed by means of Statistical Package for the social Sciences (SPSS) is examined in detail and the results of the research are presented.

4.1 QUANTITATIVE RESEARCH - TSTI

The TSTI was executed with four participants which were non-probability sampled. As the aim of the research is to develop a questionnaire that is able to test work group diversity, it was necessary that the participants reflected the studied diversity attributes. That means that participants were chosen based on their diversity attributes: gender, age, nationality, educational and functional background. In addition, most researchers measure innovation outcomes especially within R&D teams but innovation can also appear in other departments within the organization. Furthermore, innovation can emerge in both types of industry: service and manufacturing industry. That is why participants were also chosen based on their industry in which their organization operates. All diversity attributes of the participants were listed in table 3 and show that the participants reflect a broad range of diversity attributes.

Table 3

Overview of Participant Characteristics

Participant	Gender	Age	Nationality	Educational background	Functional background	Department	Industry
Participant 1	Female	39	Dutch	MBO	Financial & administrative services	Office employee	Service
Participant 2	Male	32	Dutch-Ukraine	WO	Software development	Owner of the company	Manufacturing
Participant 3	Male	56	German	VWO	Marketing & Sales	Sales	Service / Manufacturing
Participant 4	Female	24	Dutch	WO	Project management	Civil servant	Service

It is first important to note that all participants were able to understand the questionnaire. The participant with low English skills was able to understand the questionnaire by means of a dictionary. Based on the interviews three points with respect to the content were revised. First, the question about functional diversity was changed because participants found it difficult to classify their functional background into the stated options. Secondly, the control variable 'belief in diversity' was not further taken into account as participants found it difficult to rate the statements. According to the respondents, belief in diversity is not black and white and quite complex because it depends on many factors. For example, the effect of diversity depends on diversity attributes and on the aim of the work group. Third, participants had troubles with questions about incremental and radical innovation. The question was perceived as too long and complicated. Therefore, the question was split up so that it would be easier to understand. Additionally to the 5-point Likert scale, the option "not applicable (N/A)" was added because not each organization is allowed to carry out every innovation activity. For example city governments are not allowed to develop a new product. Finally, the most important changes that will help to understand the questionnaire are three added definitions of the terms: work group, incremental and radical innovation.

Next to the changes regarding the content some changes with respect to the questionnaires structure and language were necessary. The part where participants are thanked for their participation is delayed to the end of the questionnaire. In addition, participants can see the progress with the questionnaire by numbers at the end of the page (eg. Page 4/7). Furthermore, questions about the personal background of the participants are now at the beginning of the questionnaire, followed by questions about work group characteristics. However, there are some suggestions and comments of the participants that were not implemented. For example, the German participant found it difficult to translate the German school system into the Dutch system and suggested to add other educational levels. However, after considering this possibility it was decided to arrange the variables in more logical order but to not to add other variables. As the questionnaire is developed for participants that all work in the Netherland, it can be assumed that participants know the Dutch school system.

The revised version of the questionnaire starts with a short text to introduce the research topic and the aim of the research. Furthermore, it is pointed out that there are no 'right' or 'wrong' answers and that is important that questions were answered as honest as possible. The questionnaire includes closed-ended questions and one open-ended question. The advantages of closed-ended questions are that respondents can be compared by means of statistically analysis (Taylor & Bogdan, 1984). In addition, these questions are easier to answer and in

particular require less time to answer. This is of high importance for this research as it is quite difficult to find whole teams that are willing to participate in the research. The questions and statements were formulated as short and clear as possible. To enhance clearness of the questions difficult terms were defined. In addition biased items were avoided that would guide the participants in a particular direction to answer the questions. To enhance participation, the questionnaire begins with easy questions about their demographic, educational and functional background, followed by questions about the work group and their innovative activities that were a bit more difficult. Finally, the questionnaire ends with thanking the participant to fill in the questionnaire and the email address of the interviewer is stated if participants have any questions.

4.2 QUALITATIVE RESEARCH - THE (REVISED) QUESTIONNAIRE

The purpose of this study is to get a better understanding how diversity attributes within a work group interact with innovation. To explore this relationship, the questionnaire was sent to twenty work groups representing different industries, work group characteristics and size of organizations. As this research is time limited it is important to study a target group that reflects a broad range of characteristics to be able to give first statistical insights into the studied variables. Teams participated occurred on voluntary basis and one-third of the work groups were willing to contribute. Two work groups were not taken into account as less than 30 % of the group filled in the questionnaire. This leads to a response rate of 35%, which are seven work groups including 43 work group members.

Table 4 gives an impression with respect to the differences between the work groups. The participating work groups are quite diverse. From the participating teams the work group size ranges from 3-11 members. One work group operated in a medium-sized business and the other six work groups were part of a small medium business or a small business. The average of work group innovation were quite diverse. The rating ranges from a work group that is not radical innovative (1.08) to work groups that are highly incremental innovative (5.0). Furthermore, the respondents were also diverse with respect to their job-related diversity index and job-unrelated diversity index. Hereby it is important to note, that none of the work groups were part of a large enterprise company and that all participants were Dutch.

Table 4

Characteristics of the work groups

Work group	Company size	Number of work group member	Job-related diversity index	Job-unrelated diversity index	Incremental innovation	Radical innovation
Work group A	medium-sized business	3	0	0.15	3.30	4.60
Work group B	small business	6	0.35	0.15	4.33	3.83
Work group C	small medium business	11	0.63	0.35	3.00	1.08
Work group D	small medium business	4	0.21	0.29	4.50	1.50
Work group E	small medium business	5	0.61	0.28	2.50	2.65
Work group F	small business	7	0.48	0.27	4.38	3.60
Work group G	small business	3	0.37	0	5.00	4.67

As this pilot research only included seven work groups it is interesting to take a closer look at the individual members of the work group. Table 8 (Appendix E) shows a complete overview of the tested population characteristics. Forty-three participants completed all questions of this study. Most of the participating employees were male (63.6%) and between 21-30 years (38.6%). All participating employees were Dutch. Most employees had completed higher education, as more than 45% had a WO degree and almost 35 % had a HBO degree. The work group tenure of employees can be seen as evenly distributed. However, more than half was 'less than 1 year' or 'between 1-2 years' part of their work group. There was only one employee (2.3%) that had product management as functional background, whereas most of the employees had financial and administrative services (31.8%) and development and project management (25%) as functional background. However, none of participating employees was under 20 years and had human resource as functional background.

4.3 DESCRIPTIVE STATISTICS & CORRELATION

The aim of the collected data was to get a first impression of the way participants would fill in the questionnaire and to show a first trend with respect to the propositions. Therefore, it is important to take a closer look to diversity characteristics within the seven work groups as well as to the differences between the forty-three participants. Diversity within the work group was calculated by means of the Blau index, whereas diversity of all participants is based on the subjective perception of each employee regarding the six diversity attributes.

To calculate the correlation between the variable the Spearman correlation coefficient is used because data is not normal distributed and thus data is nonparametric. In addition, the items were measured with a Likert-scale which means that the measurement is based on an ordinal scale that also refers to the Spearman rho (ρ) correlation coefficient. The correlation coefficient shows the strength of a relationship between two variables. Correlation is displayed as r and ranges from -1 to 1, whereby 0 indicates a weak linear relationship (Moore & McCabe, 2006). Table 5 shows the means (M), standard deviations (SD) and correlations among the control variable, independent and dependent variables for the work group, whereas Table 6 shows the same indicators for all participants. A correlation coefficient of zero indicates that no relationship between the measured variables exists. In addition, the correlation has to be significant ($p < 0.05$) to accept the relationship between two variables to be true (Field, 2012). A two-tailed significant value is used to give information about the cause and effects of a correlation. Both tables below show that only a few variables correlate significant with each other.

Work group

As already mentioned before, none of the work groups which have filled in the questionnaire had members who were not Dutch, thus it was not necessary to calculate the diversity index of nationality. The diversity index of the job-related and job-unrelated diversity attributes show that only the mean values of age diversity (0.41) and functional (0.50) is high, as can be seen in table 5. The other mean value of diversity attributes were around .030 that is quite low. Thus, regarding the other diversity attributes the work groups are less diverse. However, gender is dichotomous variables that means that gender diversity cannot score higher than 0.5. If a work group has 5 female and 5 male members the team would be highly diverse regarding gender, but calculating the Blau index the score for gender diversity would be 0.5 $(1 - ((5/10)^2 + (5/10)^2) = 0.5)$.

When looking at table 5, it can be first noted that there is no correlation that is highly significant $(p < .01)$. The correlation analysis reveals that all job-related diversity attributes correlated negative with the two forms of innovation. However, none of the correlations is significant. Only the control variable 'Work group size' correlates significant with 'Gender diversity' $(r = .78, p < .05)$ and 'Incremental innovation' $(r = .-.76, p < .05)$. In addition, 'Age diversity' correlates significant negative with 'Radical innovation' $(r = -.83, p < .05)$. Furthermore correlates 'Gender diversity' with 'Functional diversity' $(r = .78; p < .05)$. However, the relationship between the variables of the described propositions is utmost important and table 5 shows that there is no significant correlation $(p < .01)$ between one of the variables.

All participants

As the number of work groups is quite low it is also interesting and necessary to take a closer look at all participants (table 6). Regarding the propositions there is only correlation between the dependent and independent variable. 'Functional diversity' is positive related to 'Incremental innovation' $(r = .34, p < 0.01)$. The other relationships between innovation and the job-related and job-unrelated diversity attributes could not be supported by the data. However, some of the other variables have a significant relationship. There is one highly significant correlation between 'Functional diversity' and 'Educational diversity) $(r = .49, p < .01)$. In addition it is interesting to note that 'Work group size' is related to 'Gender diversity' $(r = .33, p < .05)$ and to 'Educational background' $(r = .38, p < .05)$. In contrast, the variable 'Company size' is negative related to 'Functional diversity' $(r = -.42, p < .05)$ and 'Incremental

innovation' (r = -.35, p < .05). Finally, 'Incremental innovation' is significant related to 'Radical innovation' (r = .32, p < .05).

All in all, with respect to the propositions only age diversity is related to radical innovation at the work group level. Furthermore, functional diversity is related to incremental innovation at the individual level. There was no significant relationship between one of the job-related diversity attributes and radical innovation, at both levels. It is interesting to note, that only the significant correlation between group size and gender are found at both levels.

Table 5

Descriptive Statistics & Correlation of the work groups

Variable	M	SD	1	2	3	4	5	6	7	8
1. Group Size	2.14	1.35								
2. Company Size	1.71	0.08	-0.04							
3. Age	0.41	0.29	0.07	0.39						
4. Gender	0.27	0.20	**0.78***	-0.02	0.43					
5. Function	0.50	0.35	0.75	-0.37	0.20	**0.76***				
6. Tenure	0.32	0.28	0.76*	-.020	0.44	0.50	**0.79***			
7. Education	0.32	0.31	0.28	-0.04	0.67	0.15	-0.26	0.08		
8. Incremental	3.86	0.92	**-0.76***	-0.54	-0.63	-0.61	-0.47	-0.45	-0.04	
9. Radical	3.13	1.43	-0.59	-0.31	**-0.83***	-0.60	-0.11	-0.29	-0.70	0.43

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 7 work groups

Table 6

Descriptive & Correlation of all employees

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Group size	2.14	1.35									
2. Company size	1.71	.08	.21								
3. Age	2.80	1.27	.09	.13							
4. Gender	2.59	1.36	**.33***	.02	-.18						
5. Nationality	1.14	.46	.039	.032	.21	.21					
6. Function	3.27	1.17	.24	**-.42***	-.08	.05	-.03				
7. Tenure	2.91	1.05	-.03	-.145	.20	-.01	.19	.03			
8. Education	2.75	1.47	**.38***	-.26	.23	**-.38***	.02	**.49****	.13		
9. Incremental	3.86	.92	-.23	**-.35***	-.11	-.13	-.23	**.34***	-.01	-.09	
10. Radical	3.13	1.43	-.09	-.22	-.10	-.26	.05	.24	-.02	-.09	**.32***

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 43 employees

4.4 REGRESSION & MODERATION

In order to test the propositions a regression analysis should be conducted (Field, 2012). Correlation does not distinguish between dependent and independent variable, whereas a regression analysis does (Moore & McCabe, 2006). Regression analysis shows how the dependent variables changed if the independent variable change. Thus, by means of regression it can be shown how job-related diversity attributes can forecast incremental and radical work group innovation. As the number of work groups is too low to conduct a regression analysis, the data of all employees is used to conduct a regression analysis. However, the correlation analysis already indicated that almost none of the independent variables correlate with the dependent variable. In line with these findings, the regression analysis shows that none of the relationships are significant (Appendix F, table 9). In addition, all F-ratios are also not significant. For many variables R^2 is almost zero, but this does not mean that there is no relationship, it only implies that the relationship is not linear. It is possible that a correlation analysis shows no significant result whereas the regression analysis can be significant. That is why it was important to conduct a regression analysis as well.

Despite the fact that there was no significant correlation between the dependent and independent variable, it is still necessary to conduct a moderating analysis (Taylor, 2011). It should be noted that incremental and radical innovation is seen as one construct, as well as the diversity attributes that are job-related, in contrast to the first model. Thus, the moderation effect of age, nationality and gender on the relationship between job-related diversity attributes and innovation is measured. To conduct a moderation analysis, first the independent and moderating variables must be centralized. In line with the previous analysis, the moderator analysis found no significant effect of age, nationality and gender, as can be seen in table 10 (Appendix F).

5 DISCUSSION & RECOMMENDATION

The research question *"How do employee diversity attributes within a workgroup impact, directly or indirectly, innovative output of work groups?* "guided this research. To find an answer to the research question it was necessary to develop an instrument that is able to measure the variables of the research in an appropriate way. By means of this measurement instrument, this (pilot) study was as far as known the first approach that empirically tests the relationship between six diversity attributes and innovation. Therefore, this study refers to the call of different scholars to distinguish between job-related and job-unrelated diversity attributes and it also contributes to the request to distinguish innovative performance into radical and incremental innovation. In this chapter the research findings in relation to the research propositions are discussed (paragraph 5.1). Next, in paragraph 5.2 the research findings are also discussed in relation to existing literature. Both discussions lead to limitations and recommendations for further research (paragraph 5.3).

5.1 EFFECT OF DIVERSITY ATTRIBUTES ON INNOVATION

By means of a literature study nine propositions were formulated. Six propositions assumed a direct relationship of job-related diversity attributes on radical as well as incremental innovation. The studied job-related diversity attributes were educational background, tenure and functional background. Three propositions assumed that job-unrelated diversity attributes (age, gender and nationality) have no direct impact on innovation but moderate the relationship between job-related diversity attributes and innovation. However, the conducted analysis indicates that none of the formulated propositions could be significantly supported. Only proposition 3a can be rejected as significant evidence is found that functional diversity is positive related to incremental innovation, instead of the assumed negative relationship. A possible explanation might be that the assumed negative impact of internal communication did not exist within the work groups, as the work groups were quite small. Then functional diversity could positively impact incremental innovation. Despite the fact that none of the propositions could be significant supported, there are some significant relationship that are of interest. It is found that within the seven work groups, group size is positively related to gender. Thus it can be assumed that the bigger the work group, the higher the chance that the work group consist of males and females. Further, it is found that work group size has a negative impact on incremental innovation. It can be argued that bigger groups inhibit the process of incremental innovation as too many individuals may have problems too agree on small improvements.

Another interesting relationship is that age correlates positive with radical innovation. It can be argued that start-up organizations that have radical innovative are mostly founded by a small group of people that is quite similar in age.

The data analysis shows only a few significant relationships that should be treated with caution because the correlations of the work group (table 5, chapter 4) almost completely differ from the correlations at the individual level (table 6, chapter 4). This abnormality and missing relationship can be explained by means of the low number of participants and the spreading in the results which is reflected by high standard deviations.

First, this research aimed to test the propositions with statistical analysis. Therefore the research was conducted with seven work groups and a total of 43 participants. There are a lot of role of thumbs how big a sample size should be. However, it is always better to have a larger sample size how (Field, 2012). But the size depends on the effect that a research is trying to find (Field, 2012). One rule of thumb is that 10-15 participants are necessary for each predictive variable. According to Green (1991, as cited by Field, 2012) the minimum of a sample size is based on the equation of 50+8k, whereby k is the number of predictors. Thus, this research should actually have a sample size of at least 74 participants. However, just because no statistical significant effect was found does not mean that there is no effect as the sample size could be just too small (Field, 2012). This is caused by the fact that the calculation of significance depends on the sample size [3].

Secondly, not only the low amount of participants impacts the significant of the results but also the high standard deviation that is an indication for an error in the model (Field, 2012). This can be best illustrated by considering the histograms and scatterplots (Appendix F). Work group members had already difficulties to agree on the question how many members their work group has. Figure 4 (Appendix G) shows that work group members of organization C do not agree how many members their work group has. It is interesting to note, that smaller teams have less problems to classify their teams than large teams, as can be seen in Figure 5 (Appendix G). However, small teams have also disagreements, especially about their functional background diversity. Figure 6 (Appendix G) shows the rating from organization A about the functional background diversity of the teams ranges from similar to neutral. More contradictorily is the rating of organization C where team members have indicated that their work group is strongly diverse but also strongly similar regarding the functional background of work group members.

---

[3] The standard error is calculated by means of the sample size. The formula is $S\bar{x} = \frac{S}{\sqrt{n}}$. Because n (sample population) is a square root it leads to: how larger n, how larger the standard error. Thus how smaller the sample thus how lager the standard error (Moore & McCabe, 2006)

Finally, to show how contradictory work group members ratings are, a closer look is taken to radical product innovation. It can be argued that radical product innovation is that kind of innovation that everybody in a work group would recognize as it is touchable and mostly lead to a change in the whole industry in which the organization is operating (Rajesh, Chandy and Tellis, 2000). However, this item was also rated very differently by members of the same work group, as can be seen in Figure 7 (Appendix G). All in one, the scatterplots reflect the outcomes of the statistical numbers, there is no significant correlation. The large standard deviations can be explained by the fact that work group members of same work group fill in the questionnaire from the perspective of different work groups. These different starting points become even clearer as two work groups disagree about the size of their organization (Figure 8, Appendix G).

Furthermore, the correlations between the work group (table 5) and all participants (table 6) show that only group size and gender correlates in both analyses. This difference can be explained by the fact that the subjective perception of diversity does not match the actual diversity index of the work groups. For example this is the case for national diversity. The Blau index of nationality indicates that all respondents were Dutch. However, if participants were asked to rate their work group with respect to national diversity some work groups indicate that they were not highly similar regarding their national background but similar or neutral. There are two explanations for this phenomenon. On the one hand, participants may have completed the questionnaire from the perspective of another work group. On the other hand, not each member of the work group filled in the questionnaire whereby the subjective way of measuring diversity attributes is questionable. The reason for that is that work group diversity attributes are not always easy to recognize as educational background, tenure and functional background are not visible, such as gender.

Nonetheless, despite the fact that this research was not able to answer the research questions, this study is a first step to get deeper insight into how work groups should be studied. The research has pointed out weaknesses of a work group questionnaire. For example, this research shows that as work group increases in size, it also increases in disagreement among the work group members with respect to their diversity attributes and innovative performance.

5.2 RESEARCH FINDINGS IN RELATION TO EXISTING LITERATURE

This research shows how complex the black box between work group diversity and performance is. For example, the research shows that there is a difference between small and large work groups. Smaller work groups give a better estimate of their team diversity and

innovative output. This is in line with existing literature that shows that large groups have more communication problems (Taylor & Greve, 2006). In addition, Pearce and Ensley (2004) state that large teams are less satisfied, corporative and have more coordination problems. This may explain the fact that large teams had more problems to identify their work groups.

Participants of the interview notice that effect of diversity depends on the context in which the team is operating. For example one participant states*: 'In my opinion, teams that are quite similar may work very efficient but this would be very boring in the long term. I would prefer a diverse team if I have to be creative but a similar team in situation you have to work fast and efficient. I think, a team with different individuals can lead to discussions that are not always helpful.'* This quote shows that the relationship between work group diversity and performance is complex. This complexity is caused by different problems that will be described in the following section.

There is a nearly unlimited amount of literature available with respect to group effects on performance. Due to this enormous amount of literature a lot of different variables are identified which influence performance. That is why it can be argued that work group diversity is not the only factor which increases group performance. For example, different scholars argue that work group performance is determined by structure and design, including equipment, material, physical environment and pay systems (Goodman, Ravlin & Schminke, 1987; Cohen, Ledford & Spreitzer, 1996). In addition, it is argued that generating innovation depends on teamwork, shared vision, access to new knowledge, commitment and experience in knowledge domain, (Pearce & Ensley, 2004; Tyalor & Greve, 2006). Furthermore, Basadur and Head (2001) found significant evidence in their research that heterogeneous work groups perform better than homogenous work groups. In their discussion they asked in which way technology can affect the effect of work groups on performance, for example a group support system. Another external factor that may have impact on the effect (positive or negative) of heterogeneous teams are underlying psychological mechanism, such as ability to manage problems (Chatman & Flynn, 2001). It is argued that communication frequency and timing influence the work process of teams. This means that a heterogeneous team can only have a positive effect on performance if the team members have cooperative norms which implies the willingness to share information. Thus, not only the combination of work groups is important but also the willingness of members to work with each other to achieve together the same goal (Basadur & Head, 2001)

Despite the complexity of the studied relationship, there is a problem with the measured variables as well. This research measures work group outcomes in terms of innovation. Several

scholars agree that the measuring innovation is complicated. For example, not each innovation can be categorized into radical and incremental innovation but some innovation ranges from radical to incremental (Drewar & Dutton, 1986). In addition, it is argued that the effect of teams should not be measured in terms of outcome but in terms of work group process (Brannick, Salas & Prince, 1997). Looking at the process of teams may give a better picture of the functioning of a work group. A comprehensive measurement may be the best solution as both, process and outcome, are relevant elements. Furthermore, the measured variable work group diversity has its problems as it can be argued that the effect of work groups on performance differs between types of groups. According to Cohen and Bailey (1997) four types of teams can be distinguished: (1) work teams (2) parallel teams (3) project teams and (4) management teams. However, at this point of time there are much more types of teams, such as virtual teams. It can be assumed that the effect of diversity attributes would be different in virtual teams compared to project teams. For example, it can be assumed that prejudices that are caused by physical appearance are less present in virtual teams. Team members of virtual teams have mostly diverse national background and culture. The research of Staples and Zhao (2006) found that virtual heterogeneous teams outperform heterogeneous face-2-face teams.

Concluding, this research and existing literature show that studying the relationship between work group diversity and innovation is a very complex endeavor that asks for a broad model that takes all the variables into account that may have impact on the studied relationship.

5.3 LIMITATIONS AND FURTHER RESEARCH

It is expected that this pilot study gives a deeper understanding of the relationship between diversity attributes within teams and innovative outcomes. Yet, there are some things that would improve the study and should be taken into consideration for future research.

First of all, the quantitative data collection aimed to give more insights but the low responding rate makes it difficult to execute proper statistical analysis. Only one relationship was found to be significant. Seven work groups are definitely not sufficient to draw conclusion from correlation analysis. In turn, a larger sample is needed to allow for generalizations. Based on the simplest rule of thumb for sample size 'the bigger the sample the better' (Field, 2012), future research should collect much more data than we did. However, getting a large sample size of groups is very difficult, as discussed in the previous chapter. In addition, as this study was a pilot study, limitations on the study design could not be excluded. There were only a limited number of participants that were not randomly assigned, which leads to low internal and external reliability.

Secondly, the questionnaire had also some disadvantages. The main problem of the questionnaire was that people found it difficult to choose for one work group. In addition, the qualitative pretesting of the questionnaire also shows that participants switched between work groups during the completion of the questionnaire. Furthermore, participants found it difficult to distinguish the work group from their whole organization. Sometimes a work group does not implement innovation on its own and thus needs to work together with other work groups and departments. Furthermore, other parts of the questionnaire were not understood by participants. For example the work group size or size of the organizations differs within teams. Another disadvantage of the questionnaire was that mainly closed-ended questionnaires were used and it is possible that some respondents did not even have a clear opinion, for example about their innovation activities, but the type of questions gives them the opportunity to answer anyway. In addition questions can be easier misunderstood or misinterpreted and these mistakes cannot be corrected. In addition closed-ended questions limit the range of answers (Babbie, 2012; Taylor & Bogdan, 1984). For example, it is possible that the measurement did not include all innovation activities. Future research should be clearer how participants should answer the questions with respect to their work group. One way would be to define the work groups as a researcher and let the participants know.

Third, another limitation is the common method bias because these pilot studies make use of self-reported measurement that gathers data at a single moment in time. Participants were asked to rate diversity attributes within their work group based on their opinion. This leads to a subjective way to collect data that can lead to false data as it is not consistent with the reality. As already mentioned in the previous section, the subjective perception of work group diversity was not in agreement with the actual diversity index. In addition, the main weakness of innovation research is mostly the measurement (Koberg, Detienne, & Heppard, 2003), it is questionable if participants were competent enough to answer question regarding their innovation activity. Future research should also collect additional data on innovation performance within work groups, such as innovation rating of the work group by the supervisor. In addition longitudinal study is necessary but this was not possible because it was a graduation project that is timely limited.

Fourth, as this research was time limited and a first approach, future research should include other diversity attributes that were not taken into account. For example, culture diversity. In addition, literature indicates even more variables that impact the relationship between diversity and innovation, such as knowledge sharing. The question arises if there is anywhere a direct relationship between job-related diversity attributes and innovation. As explained in the

previous paragraph, future research should consider to develop a complex model that takes all possible moderators and mediators into account.

Summing up, this study is a pilot study just gives a first impression about the possible relationship between diversity attributes and innovation within work group. Thus, further research is needed to support the findings of the pilot study and expand this research to get a deeper insight into diversity attributes.

6 CONCLUSION

While the approach of RBV supports the assumption that diverse teams are a source for reaching competitive advantage, this research was not able to show this. However, even though this study was not able to show a significant relationship, this does not imply that the relationship does not exist.

Despite the limitations of this study and that the research questions: *"How do employee diversity attributes within a workgroup impact, directly or indirectly, innovative output of work groups?"* could not be answered, this research enables to draw some important conclusions. The questionnaire as well as the pilot study with seven work groups and forty-three participants show that research with work groups is much more difficult that it was expected. Work group members do not agree with each other regarding their diversity attributes and their innovative performance. Future research should take this into account by measuring work group diversity in an objective way. In addition, the research shows that more members in a work group make it more difficult to measure the variables. Furthermore, this research indicates that it is necessary to develop a complex model to fully understand the black box between diversity attributes and innovation. Thereby, it is important to take the different types of work teams into account because they may have difference effect on performance

REFERENCES

Alagna, S. W., Reddy, D. M., & Collins, D. (1982). Perceptions of functioning in mixed-sex and male medical training groups. *Academic Medicine*, *57*(10), 801-3.

Ancona, D. G., & Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. *Organization science*, *3*(3), 321-341.

Armstrong, C., Flood, P. C., Guthrie, J. P., Liu, W., MacCurtain, S., & Mkamwa, T. (2010). The impact of diversity and equality management on firm performance: beyond high performance work systems. *Human Resource Management*, *49*(6), 977-998.

Ashkanasy, N. M., Härtel, C. E., & Daus, C. S. (2002). Diversity and emotion: The new frontiers in organizational behavior research. *Journal of Management*,*28*(3), 307-338.

Babbie, E. (2012). The practice of social research. Cengage Learning.

Bantel, K. A., & Jackson, S. E. (1989). Top management and innovations in banking: does the composition of the top team make a difference? *Strategic Management Journal*, *10*(S1), 107-124.

Barak, M. E. M. (2013). Diversity Management. In Managing diversity: Toward a globally inclusive workplace. Sage.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*, 99-120.

Basadur, M., & Head, M. (2001). Team performance and satisfaction: A link to cognitive style within a process framework. *The Journal of Creative Behavior*,*35*(4), 227-248.

Bassett-Jones, N. (2005). The paradox of diversity management, creativity and innovation. *Creativity and innovation management*, *14*(2), 169-175.

Benschop, Y. (2001). Pride, prejudice and performance: relations between HRM, diversity and performance. *International Journal of Human Resource Management, 12*(7), 1166-1181.

Blaikie, N. (2010). Designing Social Research (2nd edn). Cambridge: Polity.

Bogaert, S. & Vloeberghs, D. (2005). Differentiated and individualized personnel management: Diversity management in Belgium. *European management journal, 23*(4), 483-493.

Boone, C. & Hendriks, W. (2009). Top management team diversity and firm performance: Moderators of functional-background and locus-of-control diversity. *Management Science, 55*(2), 165-180.

Boselie, P. (2010). *Strategic human resource management: a balanced approach*: McGraw-Hill Higher Education.

Brannick, M. T., Salas, E., & Prince, C. W. (Eds.). (1997). *Team performance assessment and measurement: Theory, methods, and applications*. Psychology Press.

Brewer, M. B., & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of personality and social psychology, 50*(3), 543.

Butler, M. J. (2008). Strategic human resource management: building research-based practice.

Cady, S. H, & Valentine, J. (1999). Team Innovation and Perceptions of Consideration What Difference Does Diversity Make? *Small group research, 30*(6), 730-750.

Chambers, E. G., Foulon, M., Handfield-Jones, H., Hankin, S. M., & Michaels, E. G. (1998). The war for talent. *McKinsey Quarterly*, 44-57.

Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of marketing*, *64*(3), 1-17.

Chen, G., Tjosvold, D., & Liu, C. (2006). Cooperative Goals, Leader People and Productivity Values: Their Contribution to Top Management Teams in China. *Journal of Management Studies, 43*(5), 1177-1200.

Chi, N., Huang, Y., & Lin, S. (2009). A double-edged sword? Exploring the curvilinear relationship between organizational tenure diversity and team innovation: The moderating role of team-oriented HR practices. *Group & Organization Management, 34*(6), 698-726.

Choi, J. N. (2007). Group composition and employee creative behaviour in a Korean electronics company: Distinct effects of relational demography and group diversity. *Journal of Occupational and Organizational Psychology, 80*(2), 213-234.

Cohen, S. G., Ledford, G. E., & Spreitzer, G. M. (1996). A predictive model of self-managing work team effectiveness. *Human relations*, *49*(5), 643-676.

Cohen, S. G. and Bailey, B. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of managemen*t 23(3): 239-290.

Colquitt, J. A., Noe, R. A., & Jackson, C. L. (2002). Justice in teams: Antecedents and consequences of procedural justice climate. *Personnel Psychology*, *55*(1), 83-109.

Cox, T. & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. *The Executive*, 45-56.

Cox, T., Lobel, S., & McLeod, P. (1991). Effects of ethnic group cultural differences on cooperative and competitive behavior on a group task. *Academy of management journal, 34*(4), 827-847.

Crossan, M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies, 47*(6), 1154-1191.

Curral, L. A., Forrester, R. H., Dawson, J. F, & West, M. A. (2001). It's what you do and the way that you do it: Team task, team size, and innovation-related group processes. *European Journal of Work and Organizational Psychology, 10*(2), 187-204.

Czarnitzki, D., & Kraft, K. (2004). Firm leadership and innovative performance: Evidence from seven EU countries. *Small Business Economics, 22*(5), 325-332.

Dahlin, K. B., Weingart, L. R., & Hinds, P. J. (2005). Team diversity and information use. *Academy of Management Journal, 48*(6), 1107-1123.

Damanpour, F., Szabat, K. A., & Evan, W. M. (1989). The relationship between types of innovation and organizational performance. *Journal of Management Studies*, *26*(6), 587-602.

De Clercq, D., Thongpapanl, N., & Dimov, D. (2009). When good conflict gets better and bad conflict becomes worse: the role of social capital in the conflict–innovation relationship. *Journal of the Academy of Marketing Science, 37*(3), 283-297.

De Dreu, C., & Weingart, L. (2003). Task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis. *Journal of Applied psychology, 88*(4), 741.

De Dreu, C., & West, M. (2001). Minority dissent and team innovation: the importance of participation in decision making. *Journal of applied psychology, 86*(6), 1191.

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management, 19*(1), 23-36.

Delery, J., & Doty, D. (1996). Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistis, Contingengcy and Configurationas: Performace Predictions. *Academy of management Journal, 39*(4), 802-835.

Dewar, R., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: an empirical analysis. *Management science, 32*(11), 1422-1433.

Drach-Zahavy, A., & Somech, A. (2001). Understanding team innovation: The role of team processes and structures. *Group Dynamics: Theory, Research, and Practice, 5*(2), 111.

Elenkov, D. S., & Manev, I. M. (2009). Senior expatriate leadership's effects on innovation and the role of cultural intelligence. *Journal of World Business, 44*(4), 357-369.

Ely, R. J. (2004). A field study of group diversity, participation in diversity education programs, and performance. *Journal of Organizational Behavior, 25*(6), 755-780.

Ettlie, J. E. (1983). Organizational policy and innovation among suppliers to the food processing sector. *Academy of Management Journal*, *26*(1), 27-44.

Field, A. (2012*). Discovering statistics using IBM SPSS Statistics: And sex and drugs and rock'n'roll. (*4th ed.). London*:* Sage Publications.

Gibson, C. B. (2001). From knowledge accumulation to accommodation: cycles of collective cognition in work groups. *Journal of Organizational Behavior, 22*(2), 121-134.

Glick, W. H., Miller, C., & Huber, G. P. (1993). The impact of upper-echelon diversity on organizational performance. *Organizational change and redesign: Ideas and insights for improving performance, 176*, 214.

Goodman, P. S., Ravlin, E. C., & Schminke, M. (1987). Understanding groups in organizations.

Greve, H. R. (2007). Exploration and exploitation in product innovation. *Industrial and Corporate Change, 16*(5), 945-975.

Guillaume, Y. R., Dawson, J. F., Priola, V., Sacramento, C. A., Woods, S. A., Higson, H. E., & West, M. A. (2013). Managing diversity in organizations: An integrative model and agenda for future research. *European Journal of Work and Organizational Psychology*, (ahead-of-print), 1-20.

Gupta, A. K., & Singhal, A. (1993). Managing human resources for innovation and creativity. *Research Technology Management, 36*(3), 41-48.

Guzzo, R. A., & Dickson, M. W. (1996). Teams in organizations: Recent research on performance and effectiveness. *Annual review of psychology*, *47*(1), 307-338.

Hak, T., Van der Veer, K., & Jansen, H. (2004). The Three-Step Test-Interview (TSTI): An observational instrument for pretesting self-completion questionnaires.

Harrison, D. A., Price, K. H., & Bell, M. P. (1998). Beyond relational demography: Time and the effects of surface-and deep-level diversity on work group cohesion. *Academy of management journal, 41*(1), 96-107.

Harrison, D. A., Price, K. H., Gavin, J. H., & Florey, A. T. (2002). Time, teams, and task performance: Changing effects of surface-and deep-level diversity on group functioning. *Academy of management journal, 45*(5), 1029-1045.

Hayton, J. C., & Kelley, D. J. (2006). A competency-based framework for promoting corporate entrepreneurship. *Human Resource Management, 45*(3), 407-427.

He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization science*, *15*(4), 481-494.

Hicks, D. A. (2002). Spiritual and religious diversity in the workplace: Implications for leadership. *The Leadership Quarterly, 13*(4), 379-396.

Hillman, A. J., Cannella, A. A., & Harris, I. C. (2002). Women and racial minorities in the boardroom: how do directors differ?. *Journal of Management*,*28*(6), 747-763.

Hoffman, L., & Maier, N.. (1961). Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups. *The Journal of Abnormal and Social Psychology, 62*(2), 401.

Horwitz, S., & Horwitz, I. (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of management, 33*(6), 987-1015.

Huizingh, E. (2012). Inleiding SPSS 20. Voor IBM SPSS Statistics.

Hülsheger, U., Anderson, N., & Salgado, J. (2009). Team-level predictors of innovation at work: a comprehensive meta-analysis spanning three decades of research. *Journal of Applied psychology, 94*(5), 1128.

Jackson, S. (1992). Consequences of group composition for the interpersonal dynamics of strategic issue processing. *Advances in strategic management, 8*(3), 345-382.

Jackson, S., & Joshi, A. (2004). Diversity in social context: a multi-attribute, multilevel analysis of team diversity and sales performance. *Journal of Organizational Behavior, 25*(6), 675-702.

Jackson, S., Joshi, A., & Erhardt, N. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of management, 29*(6), 801-830.

Jansen, H., & Hak, T. (2005). The productivity of the three-step test-interview (TSTI) compared to an expert review of a self-administered questionnaire on alcohol consumption. *Journal of Official Statistics: an international quarterly*,*21*(1), 103-120.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and organizational psychology, 73*(3), 287-302.

Jayne, M., & Dipboye, R. (2004). Leveraging diversity to improve business performance: Research findings and recommendations for organizations. *Human Resource Management, 43*(4), 409-424.

Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative science quarterly, 44*(4), 741-763.

Jiménez-Jiménez, D., & Sanz-Valle, R. (2008). Could HRM support organizational innovation? *The International Journal of Human Resource Management, 19*(7), 1208-1221.

Johannessen, J., Olsen, B., & Lumpkin, G. (2001). Innovation as newness: what is new, how new, and new to whom? *European Journal of innovation management, 4*(1), 20-31.

Jung, D. D., Wu, A., & Chow, C. W. (2008). Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, *19*(5), 582-594.

Kahn, K. B., Barczak, G., & Moss, R. (2006). Perspective: establishing an NPD best practices framework. *Journal of Product Innovation Management, 23*(2), 106-116.

Kanter, R. M. (1983). *The change masters.* New York [etc.]: Simon & Schuster Moss.

Kassin, S., Fein, S., & Markus, H. (2008). *Social psychology*. 7th ed: New York: Houghton Mifflin.

Kearney, E., & Gebert, D. (2009). Managing diversity and enhancing team outcomes: the promise of transformational leadership. *Journal of Applied psychology, 94*(1), 77.

Keller, R. T. (2001). Cross-functional project groups in research and new product development: Diversity, communications, job stress, and outcomes. *Academy of management journal, 44*(3), 547-555.

Kelly, E., & Dobbin, F. (1998). How Affirmative Action Became Diversity Management Employer Response to Antidiscrimination Law, 1961 to 1996.*American Behavioral Scientist*, *41*(7), 960-984.

Kent, R.N., & McGrath, J. E. (1969). Task and group characteristics as factors influencing group performance. *Journal of Experimental Social Psychology, 5*(4), 429-440.

Kleysen, R. F., & Street, C. T. (2001). Toward a multi-dimensional measure of individual innovative behavior. *Journal of intellectual Capital, 2*(3), 284-296.

Klomp, L., & Van Leeuwen, G. (1999). The importance of innovation for company performance. *Netherlands Official Statistics*, *14*(2), 26-35.

Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D, Sims, H. P., Smith, K. A., & Flood, P. (1999). Top management team diversity, group process, and strategic consensus. *Strategic Management Journal, 20*(5), 445-465.

Koberg, C. S., Detienne, D. R., & Heppard, K. A. (2003). An empirical test of environmental, organizational, and process factors affecting incremental and radical innovation. *The Journal of High Technology Management Research, 14*(1), 21-45.

Kochan, T., Bezrukova, K., Ely, R., Jackson, S., Joshi, A., Jehn, K., Thomas, D. (2003). The effects of diversity on business performance: Report of the diversity research network. *Human resource management, 42*(1), 3-21.

Kostopoulos, K. C., Spanos, Y. E., & Prastacos, G. P. (2002, May). The resource-based view of the firm and innovation: identification of critical linkages. In *European Academy of Management Conference, Stockholm, Sweden*.

Kreitz, P. A. (2008). Best practices for managing organizational diversity. *The Journal of Academic Librarianship, 34*(2), 101-120.

Leifer, R. (2000). *Radical innovation: How mature companies can outsmart upstarts*: Harvard Business Press.

Litvin, D. R. (2000). Defamiliarizing diversity.

Martín-Alcázar, F., Romero-Fernández, P. M., & Sánchez-Gardey, G. (2012). Transforming human resource management systems to cope with diversity. *Journal of business ethics*, *107*(4), 511-531.

McGrath, J., Berdahl, J., & Arrow, H. (1995). Traits, expectations, culture, and clout: The dynamics of diversity in work groups.

McLeod, P., & Lobel, S. (1992). The effects of ethnic diversity on idea generation in small groups. *Paper presented at the Academy of Management Proceedings*.

Milliken, F., & Martins, L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of management review, 21*(2), 402-433.

Moore, D. S., & McCabe, G. P. (2006). *Statistiek in de praktijk*. Academic service.

Morgan, G. (1989). Endangered species: New ideas. *Business Month, 133*(4), 75-77.

O'Reilly, C., Williams, K., & Barsade, S. (1998). Group demography and innovation: Does diversity help?

Ollapally, A., & Bhatnagar, J. (2009). The holistic approach to diversity management: HR implications. *Indian Journal of Industrial Relations*, 454-472.

Opdenakker, R. (2006). Advantages and Disadvantages of Four Interview Techniques in Qualitative Research. *Forum: Qualitative Social Research, 7*(4), Art. 11.

Østergaard, C., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy, 40*(3), 500-509.

Paulus, P.B,. Nakui, T., Parthasarathy, N., & Baruah, J. (2004). *Preference for diverse workgroups and its relationship to perceptions and performance in diverse groups*. Paper presented at the 19th SIOP Annual Meeting, Chicago, IL.

Pearce, C. L., & Ensley, M. D. (2004). A reciprocal and longitudinal investigation of the innovation process: The central role of shared vision in product and process innovation teams (PPITs). *Journal of Organizational Behavior*, *25*(2), 259-278.

Pelled, L. H. (1996). Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization Science, 7*(6), 615-631.

Pelled, L.H, Eisenhardt, Kathleen M, & Xin, Katherine R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative science quarterly, 44*(1), 1-28.

Prester, J., & Bozac, M. G. (2012). Are innovative organizational concepts enough for fostering innovation? *International Journal of Innovation Management, 16*(01).

Price, K., Harrison, D., & Gavin, J. (2006). Withholding inputs in team contexts: member composition, interaction processes, evaluation structure, and social loafing. *Journal of Applied Psychology, 91*(6), 1375.

Reagans, R., & Zuckerman, E. (2001). Networks, diversity, and productivity: The social capital of corporate R&D teams. *Organization science, 12*(4), 502-517.

Richard, O. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of management journal, 43*(2), 164-177.

Rink, F., & Ellemers, N. (2007). Diversity as a basis for shared organizational identity: The norm congruity principle. *British Journal of Management, 18*(s1), S17-S27.

Rogelberg, S., & Rumery, S. (1996). Gender diversity, team decision quality, time on task, and interpersonal cohesion. *Small Group Research, 27*(1), 79-90.

Saunders, M., Lewis, P., & Thornhill, A. (2011). *Research methods for business students, 5/e*. Pearson Education India.

Schlender, B. & Kirkpatrick, D. (1998). And Now, For My Next Trick… He brought Apple back from the dead. Here's how he dit it - and what he plans for tomorrow. *Fortune*

Schuh & Barab (2007). Philosophical Perspectives. In *Handbook of research on educational communications and technology* (p. 69-80). Taylor & Francis

Schuler, R. S., & Jackson, S. E. (1987). Linking competitive strategies with human resource management practices. *The Academy of Management Executive*, *1*(3), 207-219.

Schumpeter, J. A. (1935). The analysis of economic change. *The Review of Economics and Statistics, 17*(4), 2-10.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of management Journal*, *37*(3), 580-607.

Shaw, M. E. (1981). Group dynamics: The psychology of small group behavior.

Shen, J., Chanda, A., D'Netto, B., & Monga, M. (2009). Managing diversity through human resource management: an international perspective and conceptual framework. *The International Journal of Human Resource Management, 20*(2), 235-251.

Shipton, H., Fay, D., West, M., Patterson, M., & Birdi, K. (2005). Managing people to promote innovation. *Creativity and innovation management, 14*(2), 118-128.

Shipton, H., West, M., Dawson, J., Birdi, K., & Patterson, M. (2006). HRM as a predictor of innovation. *Human Resource Management Journal, 16*(1), 3-27.

Simons, T. (1995). Top management team consensus, heterogeneity, and debate as contingent predictors of company performance: The complimentarity of group structure and process. Paper presented at the Academy of Management Proceedings.

Simons, T., Pelled, L, & Smith, K. (1999). Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of management journal, 42*(6), 662-673.

South, E. B. (1927). Some psychological aspects of committee work. *Journal of Applied psychology, 11*(6), 437.

Staples, D. S., & Zhao, L. (2006). The effects of cultural diversity in virtual teams versus face-to-face teams. *Group Decision and Negotiation*, *15*(4), 389-406.

Talke, K., Salomo, S., & Rost, K. (2010). How top management team diversity affects innovativeness and performance via the strategic choice to focus on innovation fields. *Research Policy, 39*(7), 907-918.

Taylor, J.J. (2011). Moderating Effects with Seemingly Uncorrelated Variable. Retrieved from: http://www.statsmakemecry.com/smmctheblog/moderating-effects-with-seemingly-uncorrelated-variables.html

Taylor, A., & Greve, H. (2006). Superman or the fantastic four? Knowledge combination and experience in innovative teams. *Academy of Management Journal, 49*(4), 723-740.

Taylor, S., & Bogdan, R. (1984). Introduction to research methods. New York: Wiley.Thomas. (1992). *Beyond race and gender: Unleashing the power of your total workforce by managing diversity*: AMACOM Div American Mgmt Assn.

Thomas, R. R. T. R. R. (1991). *Beyond race and gender*. AMACOM Div American Mgmt Assn.

Thomas, D.A & Ely, R. J. (1996). Making differences matter. *Harvard business review, 74*(5), 79-90.

Tidd, J., & Bessant, J. (2011). *Managing innovation: integrating technological, market and organizational change*: Wiley. com.

Tidd, J., Bessant, J., & Pavitt, K. (1997). Managing Innovation: Integrating Technological, Market and Organizational Change: Wiley, Chichester.

Torrington, D., & Hall, L. T. S.(2008). *Human Resource Management, Seventh Edition, FT Prentice Hall, London*, *259*.

Trott, P. (2008). *Innovation management and new product development*: Pearson education.

Tsui, A., Egan, T., & O'Reilly, C. (1991). Being different: Relational demography and organizational attachment. Paper presented at the Academy of Management Proceedings.

Tyran, K.L., & Gibson, C. B. (2008). Is what you see, what you get? The relationship among surface-and deep-level heterogeneity characteristics, group efficacy, and team reputation. *Group & Organization Management, 33*(1), 46-76.

Van de Ven, A. (1986). Central problems in the management of innovation. *Management science, 32*(5), 590-607.

Van der Vegt, G. S, & Janssen, O. (2003). Joint impact of interdependence and group diversity on innovation. *Journal of Management, 29*(5), 729-751.

Van Dick, R., Van Knippenberg, D., Hägele, S., Guillaume, Y., & Brodbeck, F. (2008). Group diversity and group identification: The moderating role of diversity beliefs. *Human Relations, 61*(10), 1463-1492.

van Dijk, H., van Engen, M., & van Knippenberg, D. (2012). Defying conventional wisdom: A meta-analytical examination of the differences between demographic and job-related diversity relationships with performance. *Organizational Behavior and Human Decision Processes, 119*(1), 38-53.

Van Knippenberg, D., De Dreu, C., & Homan, A. (2004). Work group diversity and group performance: an integrative model and research agenda. *Journal of Applied psychology, 89*(6), 1008.

Van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annu. Rev. Psychol., 58*, 515-541.

Veenendaal, A., Van Velzen, M., & Looise, J. K. (2009). *Seeing is believing: Visualising the relationship between forms of capital and innovation.* Paper presented at the Presented at the 5th EIASM Workshop on Visualising, Measuring and Managing Intangibles and Intellectual Capital. Dresden (Germany).

Watson, W. E, Kumar, K., & Michaelsen, L. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. *Academy of management journal, 36*(3), 590-602.

Webber, S. S., & Donahue, L. M. (2001). Impact of highly and less job-related diversity on work group cohesion and performance: A meta-analysis. *Journal of management, 27*(2), 141-162.

West, M. A., & Anderson, N. R. (1996). Innovation in top management teams. *Journal of Applied psychology, 81*(6), 680.

West, M. A., & Farr, J. L. (1989). Innovation at work: Psychological perspectives. *Social Behaviour*.

Wiersema, M. F., & Bantel, K. A. (1992). Top management team demography and corporate strategic change. *Academy of Management Journal, 35*(1), 91-121.

Wiersema, M. F, & Bird, A. (1993). Organizational demography in Japanese firms: Group heterogeneity, individual dissimilarity, and top management team turnover. *Academy of Management Journal, 36*(5), 996-1025.

Williams, K. Y, & O'Reilly, C. (1998). Demography and diversity in organizations: A review of 40 years of research. Research in organizational behavior, *, VOL 20, 1998, 20*, 77-140.

Wilson, E. M., & Iles, P. A. (1999). Managing diversity–an employment and service delivery challenge. *International Journal of Public Sector Management*,*12*(1), 27-49.

Witmer, D. F. Colman, R. and Katzman, S. L. (1999) From paper-and-pencil to screen-and-keyboard: Towards a methodology for survey research on the Internet, in Jones, S. (Ed.) *Doing Internet Research: Critical Issues and Methods for Examining the Net*. London. Sage. pp. 145-161

Wright, P., McMahon, G., & McWilliams, A. (1994). Human reousrces and sustained competitive advantage a resource-based perspective. *International Journal of Human Resource Management*. Vol. 5, No.2

Yang, Y., & Konrad, A. (2011). Understanding diversity management practices: Implications of institutional theory and resource-based theory. *Group & Organization Management, 36*(1), 6-38.

Yeh, Y.-J., & Chou, H. (2005). Team composition and learning behaviors in cross-functional teams. *Social Behavior & Personality: An International Journal, 33*(4).

Zajac, E. J., Golden, B. R., & Shortell, S. M. (1991). New organizational forms for enhancing innovation: The case of internal corporate joint ventures. *Management Science*, *37*(2), 170-184.

APPENDICES

APPENDIX A - INTERVIEW PROTOCOL

1. Introducing to the participant
2. Explaining the Topic:

   'Measure the impact of diversity attributes on innovation by means of the Three-Step Test-Interview'

3. Aim of the research:

   The aim of the research is to test the quality of the questionnaire with regard to comprehensibility and clarity.'

4. Questionnaire:
   - 16 items

5. Explaining the Three-Step Test Interview:
   a. Step 1: 'Think aloud' method. You do not have to explain or justify your answers. You only have to think aloud during answering the questions. There are no wrong or right answers.
   b. Step 2: During this step the interviewer will asked questions about his/her observations during step 1. For example I could ask why you stopped thinking aloud and if you can remember what you have thought.
   c. Step 3: This step gives you the possibility to comment the questionnaire and give suggestions.

6. Asking the respondent for approval to record the interview
7. Exercise think aloud
8. The interview
9. Closure, thanking participant

APPENDIX B – QUESTIONNAIRE (1. VERSION)

Page: 1

Dear respondent,

Welcome to the study of diversity attributes and work group innovation. This study consists of a questionnaire that will take approximately 5-10 minutes to complete. Please try to answer every question as honest as possible because it is important for the success of the study. There are no right or wrong answers.

The questionnaire includes two parts. The first part asks about your personal background (e.g. age, gender, educational background) and the second part asks about innovation within your workgroup. To take part in this study, it is necessary that also your team members fill in the questionnaire.

Thank you very much for your interest in participating in this questionnaire. All information will be treated anonymous. No data will be passed on to third parties. The data will only be used to contribute to this study.

If there are any uncertainties or questions, please feel free to contact me (i.hamel@student.utwente.nl)
Please click 'Start' if you agree to these conditions and to begin with the questionnaire.

Start

1.

Where do you work (name of the organization)? *

2.

Can you please describe the task of your work group? *

3.

What is your gender? *

- ○ Male
- ○ Female

4.

How old are you? *

- ○ < 20 years
- ○ 21-30 years
- ○ 31-40 years
- ○ 41-50 years
- ○ > 51 years

5.

What is your nationality? *

- ○ Dutch
- ○ Belgian
- ○ German
- ○ Other European country
- ○ Not from Europe

6.

What is your highest educational level (which you have completed by now)? *

- ○ VMBO
- ○ BBL
- ○ MBO
- ○ HBO
- ○ WO
- ○ Other [   ]

7.

What is your functional background? *

- ○ Software development & project management
- ○ Software operation & maintenance
- ○ Financial and administrative services
- ○ Marketing & Sales
- ○ Human resources
- ○ Software product management
- ○ Legal services, Logistics, purchasing & others [   ]

Next

Page: 3

8.

How long do you work at your current organization? *

- ○ < 1 year
- ○ 1-2 years
- ○ 2-5 years
- ○ 6-10 years
- ○ > 11 years

9.

How long are you a member of your current work group? *

○ < 1 year

○ 1-2 years

○ 2-5 years

○ 6-10 years

○ > 11 years

10.

How many members do your work group have? *

○ <5 members

○ 6-10 members

○ 10-15 members

○ >15 members

[Next]

Page: 4

11.

How similar or different are the members of your work group with respect to their ...

	Highly diverse			**Highly similar**	
... age?	○	○	○	○	○
... gender?	○	○	○	○	○
... national background?	○	○	○	○	○
... educational background?	○	○	○	○	○
... tenure (duration of membership within the work group)?	○	○	○	○	○
functional background?	○	○	○	○	○

12.

	Highly diverse			**Highly similar**	
How diverse do you think your work group is in general?	○	○	○	○	○

[Next]

13.

Belief in Diversity

	Strongly Agree			Strongly Disagree	
I think that work groups benefit from the involvement of people from different backgrounds.	○	○	○	○	○
I think work groups should contain people with similar background.	○	○	○	○	○
Creating work groups that contain people from different background can be recipe for trouble.	○	○	○	○	○
I think that work groups are more harmonious if the members in them are similar.	○	○	○	○	○

Next

14.

Radical innovation

	Strongly Agree			Strongly Disagree	
Our work group implemented new methods of production during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○
Our work group implemented new ways of organizing during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○
Our work group found new sources of supply during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○
Our work group entered new markets during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○
Our work group introduced new services during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○
Our work group introduced new products during the last three years that were perceived to be new to the industry in which our company operates.	○	○	○	○	○

Our work group introduced breakthrough innovation to the market during the last three years that were perceived to be new to the industry in which our company operates.

Next

Page: 7

15.

Incremental Innovation

	Strongly Agree			Strongly Disagree
Our work group entered new markets during the last three years that were perceived to be new for the company, but which have previously been entered by other companies.	○	○	○	○	○
Our work group found new sources of supply during the last three years that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○
Our work group implemented new methods of production during the last three years that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○
Our work group implemented new ways of organizing during the last three years that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○
Our work group introduced new products to the market during the last three years that were perceived to be new for the company, but which have previously been introduced to the market by other companies.	○	○	○	○	○
Our work group introduced new services to the market during the last three years that were perceived to be new for the company, but which have previously been introduced to the market by other companies.	○	○	○	○	○
Our work group introduced existing innovation during the last three years that were perceived to be new for the company, but which have previously been introduced to the market by other companies.	○	○	○	○	○

The End :)

APPENDIX C - OVERVIEW INTERVIEW RESULTS

Table 7

Summary observation, comments and problems per item

Item	Number of comments	Observations, comments and problems
Introduc-tion	2	o Participant would like the gratitude at the end, only aim at the beginning so that participants can direct start o The time was right o Email address better at the end
2	3	o Participants think some time about the term work group, the term work group is not clear o A definition of work group would help to answer the question o Participant notice that this question is a quit difficult question at the beginning of a questionnaire because the question is very broad o Participants asked if work group is the same as team or colleagues
3	1	o Participant would prefer the question about his personal background at the beginning
6	3	o This question is perceived as pity because it does not include workshops, advanced training or further education because there is more o Participant suggest to asked about level of work experience o Two participants notice that it is difficult to translate the (German) school system to the Dutch system
7	3	o More respond options are desired o Participant notice that there are also multifunctional backgrounds, whereby question is difficult to answer
9	1	o Participant hesitate because work groups can varied and change over time
10	2	o Participant found it still difficult to decide for one work group o Item is fault because it is not possible to choose an option if your work group consist of five employees
11	4	o Participant would prefer if the scale 'disagree and agree' is the other way around o Participant suggest to use only for scales so that participants have to decide o Participants notice that it is sometimes difficult to know the background of colleagues
12	4	o Question is not clear, for example one participant asked what exactly diverse means? o Question at the begin o Participants based their answer on intuition and did not further think about it

		o	Participant notice that there are many different diversity attributes that also may have impact on performance, for example the way individual prefer to work
13	4	o	Participants notice that the added value of diversity within workgroups depends also on other variables, as the aim of the group, the size of the company, personality attributes
		o	The efficiency of diverse teams also depends on the degree of social level of each group member and if group members have the same mental models
		o	Participant notice that more harmonious is not always better and similar work groups would be boring
14	4	o	All four participants do not exactly know what is meant by the term radical innovation and one participant did not read the term at all
		o	Therefore all participants found a definition helpful
		o	The propositions were perceived as too long and could be shorter if the differences were highlighted
		o	Two participants would like to add another option 'do not know' or ' not applicable'
		o	Difference between radical and incremental is not clear
		o	Proposition were perceived as to difficult
		o	Participant would find a examples helpful to answer the questions
15	2	o	The term incremental is not clear
		o	Participant admit that he did not fully read propositions
		o	Two participants found the questions too long

APPENDIX D – QUESTIONNAIRE (2. VERSION)

Page: 1

Dear respondent,

Welcome to the study of diversity attributes and work group innovation. This study consists of a questionnaire that will take approximately 3-5 minutes to complete. Please try to answer every question as honest as possible because it is important for the success of the study. There are no right or wrong answers.

The questionnaire includes two parts. The first part asks about your personal background (e.g. age, gender, educational background) and the second part asks about innovation within your work group. To take part in this study, it is necessary that also your team members fill in the questionnaire.

All information will be treated anonymously. No data will be passed on to third parties. The data will only be used to contribute to this study.

Please click 'Start' if you agree to these conditions and to begin with the questionnaire.

Start

Page: 2

1.

What is your gender? *

○ Male
○ Female

2.

How old are you? *

○ < 20 years
○ 21-30 years
○ 31-40 years
○ 41-50 years
○ > 51 years

3.

What is your nationality? *

- ○ Dutch
- ○ Belgian
- ○ German
- ○ Other European country [   ]
- ○ Not from Europe [   ]

4.

What is your highest educational level (which you have completed by now)? *

- ○ BBL
- ○ VMBO
- ○ MBO
- ○ HAVO
- ○ HBO
- ○ VWO
- ○ WO
- ○ Other [   ]

5.

What is your functional background? *

- ○ Development & project management
- ○ Operation & maintenance
- ○ Financial and administrative services
- ○ Marketing & Sales
- ○ Human resources
- ○ Product management
- ○ Legal services, Logistics & Purchasing
- ○ Other [   ]

Page 2 / 7

Page: 3

6.

Where do you work (name of the organization)? *

[   ]

7.

How many employees does your company have? *

○ less than 100 employees
○ 100 - 999 employees
○ 1.000 - 10.000 employees
○ More than 10.000 employees

8.

How long do you work at your current organization? *

○ < 1 year
○ 1-2 years
○ 2-5 years
○ 6-10 years
○ > 11 years

In the following section you have to answer questions about your work group. In this context a work group is understood as a collection of individuals who are interdependent in achievement of a common goal and share responsibility for outcomes.

9.

How many members does your work group have? *

○ <5 members
○ 5-10 members
○ 10-15 members
○ >15 members

10.

How long are you a member of your current work group? *

○   < 1 year

○   1-2 years

○   2-5 years

○   6-10 years

○   > 11 years

11.

Can you please describe the task of your work group? *

[text box]

Page 3 / 7

Page: 4

12.

How similar or different are the members of your work group with respect to their ...

	Highly similar			Highly diverse	
... age?	○	○	○	○	○
... gender?	○	○	○	○	○
... national background?	○	○	○	○	○
... educational background?	○	○	○	○	○
... tenure (duration of membership within the work group)?	○	○	○	○	○
... functional background?	○	○	○	○	○

13.

How diverse do you think your work group is in general?	**Highly similar**			**Highly diverse**	
	○	○	○	○	○

Page: 5

Incremental Innovation
In the following section you have to answer questions about incremental innovation within your work group. Innovation is incremental if it is perceived to be new for your company, but it has been introduced to the market by other companies. For example, an incremental innovation is the MacBook Pro because it is an improvement of an already existing product, the MacBook.

15.

During the last three years our work group …

	Strongly Disagree			**Strongly Agree**		**N/A**
… implemented new methods of production that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld31 is
… implemented new ways of organizing that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld32 is
… found new sources of supply that were perceived to be new for the company, but which have previously been used by other companies.	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld33 is
… entered new markets that were perceived to be new for the company, but which have previously been entered by other companies.	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld34 is
… introduced new services that were perceived to be new for the company, but which have previously been introduced to the market by other companies.	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld35 is
… introduced new products that were perceived to be new for the company, but	○	○	○	○	○	☒ Het afbeeldingo nderdeel met relatie-id rld36 is

which have previously been introduced to the market by other companies.

... introduced existing innovation.	○	○	○	○	○	

Page: 6

Radical innovation

In the following section you have to answer questions about radical innovation within your work group. Innovation is radical if it is perceived to be new to the whole industry in which your company operates. For example, the telephone or the digital camera.

16.

During the last three years our work group ...

	Strongly Disagree			Strongly Agree		N/A
... implemented new methods of production that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... implemented new ways of organizing that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... found new sources of supply that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... entered new markets that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... introduced new services that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... introduced new products that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	
... introduced breakthrough innovation that were perceived to be new to the industry in which our company operates.	○	○	○	○	○	

The End :)

Thank you very much for your interest in participating in this questionnaire. If there are any uncertainties or questions, please feel free to contact me (i.hamel@student.utwente.nl)

Table 8

Characteristics of Respondents

Variable	Respondents	Percentage
Gender		
Male	28	63.6
Female	16	36.4
Age		
21 - 30 years	17	38.6
31 - 40 years	12	27.3
41 – 50 years	10	22.7
> 51 years	5	11.4
Nationality		
Dutch	44	100
Educational Background		
VMBO	2	4.5
MBO	4	9.1
HAVO	2	4.5
HBO	13	29.5
VWO	2	4.5
WO	21	47.7
Tenure		
< 1 year	15	34.1
1 -2 years	13	29.5
2-5 years	6	13.6
6-10 years	5	11.4
> 11 years	5	11.4
Functional background		
Development & project management	11	25.0
Operation & maintenance	3	6.8
Financial & administrative services	14	31.8
Marketing & Sales	5	11.4
Product management	1	2.3
Legal services. logistics & Purchasing	3	6.8
Others	7	15.9

APPENDIX F – REGRESSION & MODERATOR ANALYSIS

Table 9

Regression analysis

	Incremental innovation	Radical innovation
Educational diversity	**H1a**	**H1a**
β	0.11	.109
R² / Adjusted R²	0 / -.024	.012 / -0.12
F-ratio	0.005	.503
Tenure diversity	**H2a**	**H2b**
β	-.037	.022
R² / Adjusted R²	.001 / -.022	0 / -.023
F-ratio	.058	.021
Functional diversity	**H3a**	**H3b**
β	.215	.255
R² / Adjusted R²	.84 / .063	.065 / .43
F-ratio	3.867	2.912

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

N = 43 employees

Table 10

Moderator Analysis

| Dependent variable: Innovation				
Moderator Variable: Age	Model 1	Model 2	Tolerance	VIF
Job-related diversity centered	.222	.261	.911	1.097
Age centered	-.177	-.178	.965	1.036
Job-related diversity x Age		-.164	.943	1.061
R²	.066	.091		
Adjusted R²	.020	.023		
F-Ratio	1.450	1.339		
Moderator Variable: Nationality	Model 1	Model 2	Tolerance	VIF
Job-related diversity centered	.191	.297	.231	4.329
Nationality centered	-.048	-.083	.737	1.357
Job-related diversity x Nationality		.124	.218	4.580
R²	0.38	.041		
Adjusted R²	-.009	-.030		
F-Ratio	.811	.579		
Moderator Variable: Gender	Model 1	Model 2	Tolerance	VIF
Job-related diversity centered	1.64	.156	.878	1.140
Gender centered	-.134	-.134	.964	1.037
Job-related diversity x Gender		-.025	.906	1.104
R²	.053	.054		
Adjusted R²	.007	-.017		
F-Ratio	1.147	.755		

* $p < .05$ (2-tailed)
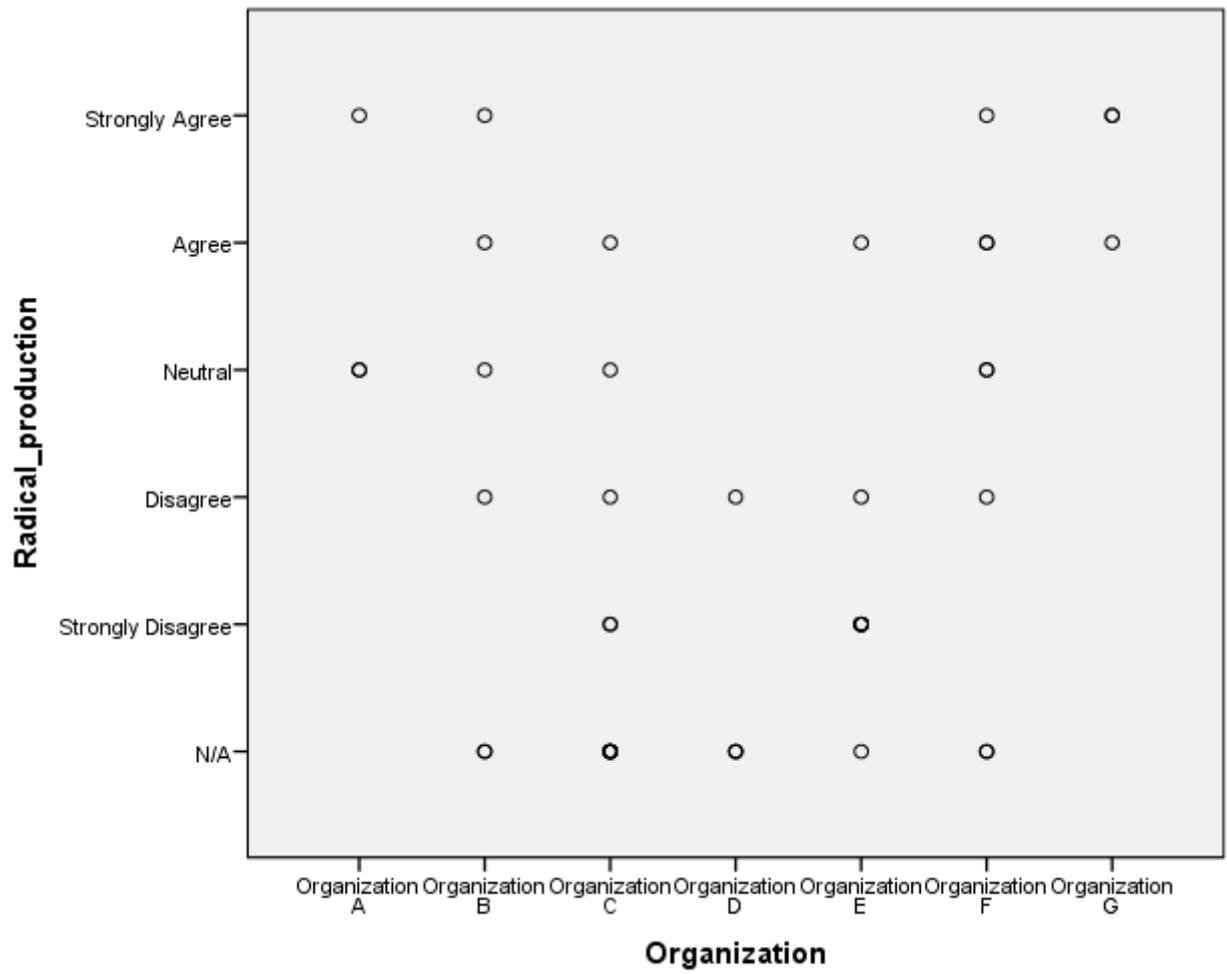
** $p < .01$ (2-tailed)

N = 43 employees

Figure 4

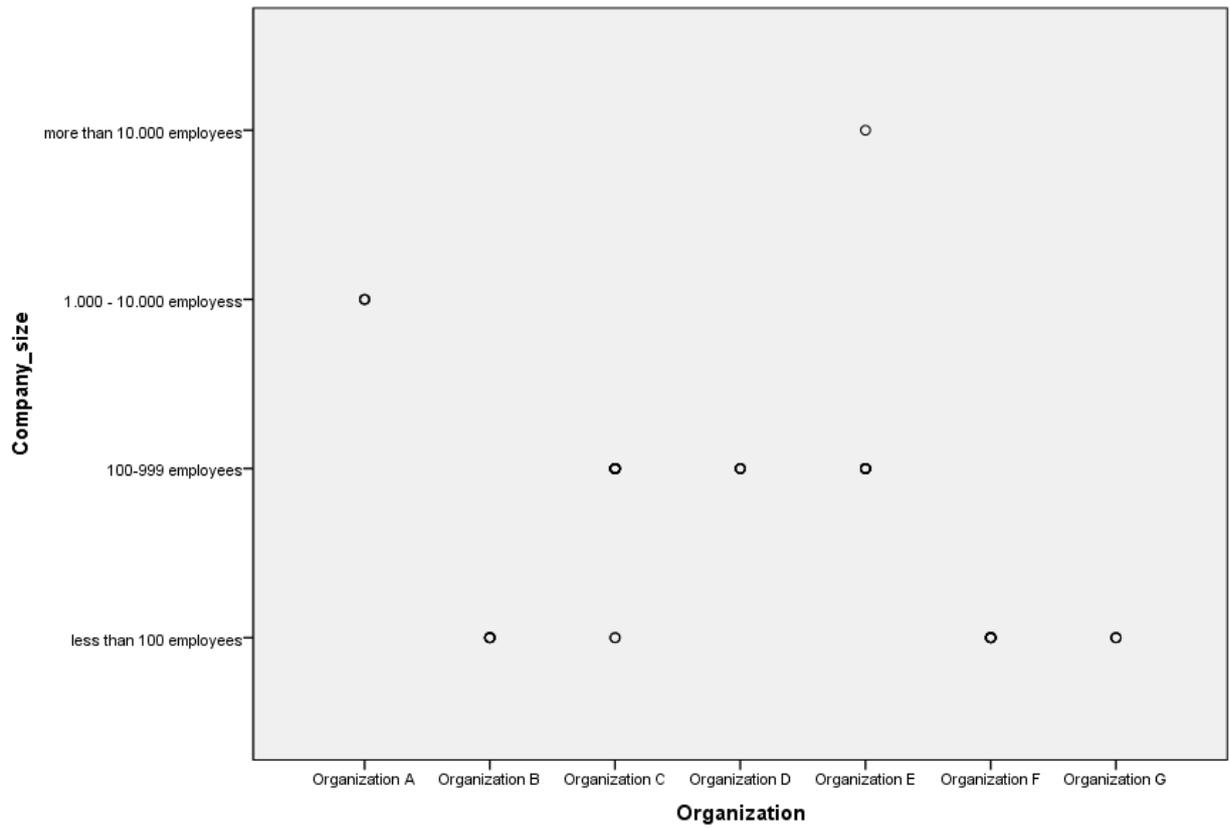Histogram of rating of work group size in organization C
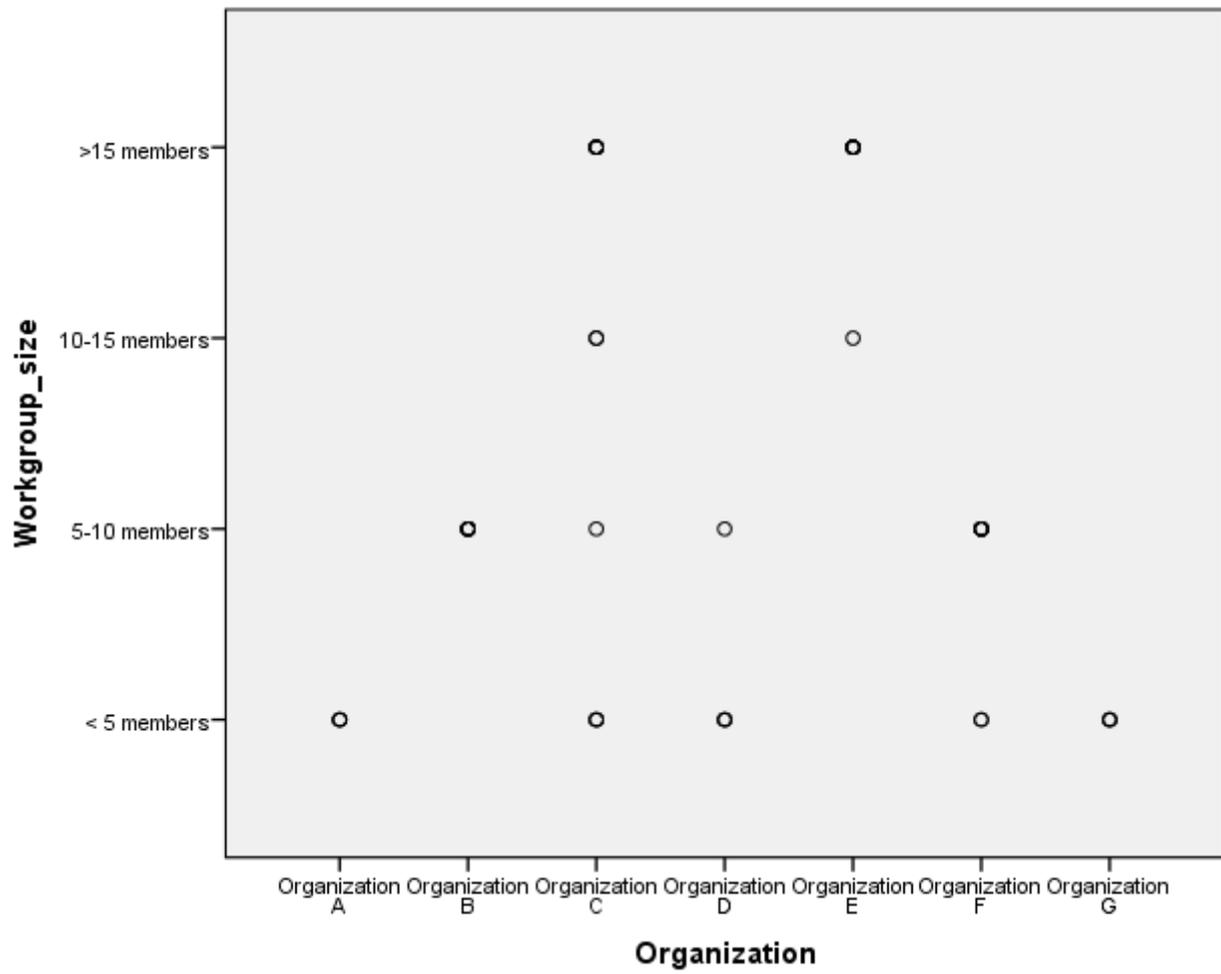
Figure 5

Scatter between organizations and work group size
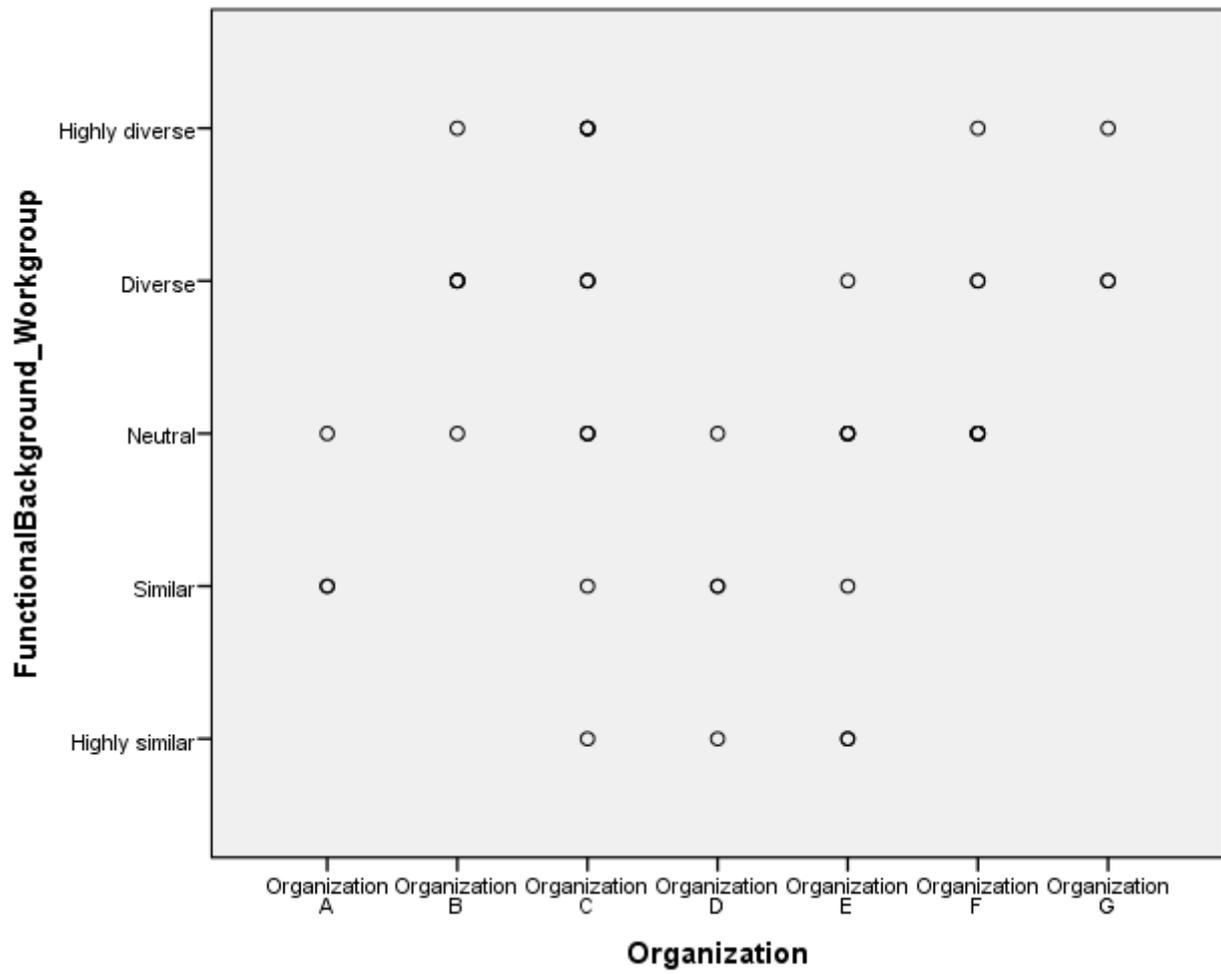
Figure 6

Scatter between organizations and functional background

Figure 7

Scatter between organizations and radical product innovation

Figure 8

Scatter between organization and company Size