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BARRIERS AND BREAKTHROUGHS

The Interplay of Organizational Structure and Sustainability Culture on Sustainable Innovative Work Behavior

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Colophon

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TenneT — Taking power further

ABSTRACT:

The Dutch government has made creating a functioning circular economy by 2050 an important goal to reach. In order to do so, many industries are being called to make improvements. However, in order to make such improvements, innovation is needed. So this requires, in theory, a decent level of sustainable innovative work behavior. In this study, the relationships between organizational structure, sustainability culture, and sustainable innovative work behavior are analyzed within the Dutch high-voltage energy company TenneT. Under a post-positivist paradigm, a qualitative research method, and some interviews, the influence of these variables was determined. The results show that sustainability culture and departmentalization have the largest effect on sustainable innovative work behavior. It is then argued that there are several opportunities for TenneT to further develop and foster their employees' sustainable innovative work behavior, which could have significant impact on the realization of a functioning circular economy by 2050.

Key words: Innovative Work Behavior, Sustainability, Organizational Structure, Culture, Absorptive Capacity, Social Ties

SUMMARY

Background: Due to the growing stringency of environmental policy, and the increasing awareness of environmental impact of corporations, it has become an important practice for companies to think of ways they can reduce (or even halt) the extent of their damage. In order to achieve this, there needs to be a significant level of innovation coming from an environmental perspective. This research seeks to understand what aspects of companies influence this type of innovation behavior by focusing specifically on organizational structure and sustainability culture. This thesis is helpful for any sector of business looking for ways to increase their sustainable innovative work behavior.

Purpose: To aid TenneT in further analyzing the variables affecting their ability to stimulate innovate within the context of environmental sustainability and provide recommendations for fostering a more effective, environmentally focused open innovation culture among their employees.

Method: This study utilized a mixed methods approach. First, there were exploratory interviews that aimed to investigate the integrity of the conceptual model, but also served to provide insights on relationships between other variables. Then, a qualitative questionnaire was utilized to generate an image of each variable's potency and their significance to each other.

Results: For innovation behavior, collaboration, knowledge transfer, and openness is key. This is no different for sustainable innovative work behavior. Results of the survey show that sustainability culture and departmentalization are the most significantly correlated, and therefore should have the most focus in terms of moving forward.

Recommendations: The results identified that sustainability culture and departmentalization had the most effect on innovative work behavior, therefore the recommendations center around these two factors. It is encouraged to practice more group work or to have people work with others that they do not normally so as to avoid cognitive lock-in. In addition, it is also suggested to hire more colleagues for the CSR department to proactively manage more holistic communication across the entirety of TenneT's offices, rather than the current heavy focus given to the headquarters.

PREFACE

The master thesis before you was written, first and foremost, to achieve a master's degree in Environmental and Society studies from Radboud Universiteit in Nijmegen, The Netherlands. My specialization within this study was Corporate Sustainability. This specialization combined two interests of mine: one being the state of the environment, and the second being the impact that businesses had on it. Being from the United States, I have experienced frustration with the lack of governmental action in limiting businesses practices that result in environmental damage. As a result, I felt the best way to make an impact would be to help bolster better practices within these corporations. While I have noticed the growing trend of businesses taking responsibility for these actions themselves, there is still more work to be done and I wanted to learn as much as possible to be a part of the solution.

While I had this drive from the beginning of my studies, I wasn't exactly sure how I was going to translate it into a master project. I had many ideas and directions I was willing to work in ranging from sustainable surgical practices to environmentally friendly construction. The project, therefore, took its final shape once employed at TenneT where I completed my internship requirement from May to September 2020. The position I took revolved around innovation, and as an employee it was my job to find ways to not only motivate but also facilitate the involvement of employees in idea gathering for increasing circularity within the company. From this, it became clear that innovation would play a large role in my research. In addition, because the company was undergoing a large shift in their organizational structure, I wanted to know how that would influence things. The addition of sustainability culture came from my own curiosity on the impact that the prioritization of sustainability would have.

I wish to thank my supervisor, Mark Wiering for his continued guidance, support, and flexibility throughout the writing process given that it extended further into the year than I would have liked. I would also like to thank my internship advisors, Bas Swinkels and Margriet Rouhof for always being of great assistance and allowing me the space to do the work I needed to do. If not for their suggestions, additional ideas, or contacts I am not sure how my navigation of this work would have gone on my own.

In addition, I would also like to extend gratitude to the participants of my study; without their cooperation my research would not have come to light. Last but not least, I would like to thank my friends and family for serving as my cheerleaders and sounding boards when I found myself stuck. Without their love and encouragement, I would have surely had a harder time.

I hope the reading is enjoyable,

Caroline Turner

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List of Abbreviations

General

CSR .... Corporate Social Responsibility

Departments

Am_G .... Asset Management Germany
AM_NL .... Asset Management Netherlands
AOC .... Asset Owner Corporate
AC .... Audit Corporate
BDC .... Business Development Corporate
CC .... Communications Corporate
CQ .... CertiQ
CR .... Corporate Regulation
CM_G .... Customers and Markets Germany
CM_NL .... Customers and Markets Netherlands
EB .... Executive Board
FM .... Facility Management
FCC .... Financial Control Corporate
GS_G .... Grid Service Germany
GS_NL .... Grid Service Netherlands
GS_Off .... Grid Service Offshore
HRC_G .... Human Resources Corporate Germany
HRC_NL .... Human Resources Corporate Netherlands
IMC .... Information Management Corporate
LAC .... Law Affairs Corporate
Off_NL .... Offshore Netherlands
PTP .... Power to Perform
P&L .... Procurement and Logistics
PC .... Procurement Corporate
PCC .... Project Control Corporate
PAC .... Public Affairs Corporate
SSC .... Safety and Security Corporate
SO_G .... Systems Operations Germany
SO_NL .... Systems Operations Netherlands
TREAS .... Treasury
CBC .... Corporate Business Corporate
AM_Off .... Asset Management Offshore

CHAPTER 1: INTRODUCTION

1.1 Background

1.1.1 The Growing Need for Sustainability:

As time goes on, the world continues to feel the ecological aftermath brought about by the frivolous carelessness of the second industrial revolution. Report after report only further confirm that the carbon dioxide emissions released during that time period have led to unprecedented levels of global warming (Abram et al, 2016; Baer, 2008; Mann et al, 2008). As a result, the world now finds itself in a period of transition. A transition in which the collective global society must separate themselves from their current environmentally destructive behavior and find ways to reduce their impact in order to slow the rate of global warming before it reaches a point of irreversible damage (Rifkin, 2012). Several initiatives have been put into motion, both on a local and global level. Perhaps one of the more well-known initiatives is between the member states of the United Nations. The Paris Climate Agreement, as it is known, serves to unite the nations of Europe under one common cause: to commit to a number of ambitious climate change mitigating goals (Davenport, 2015). The aim is to keep the global temperature rise below two degrees Celsius, a task more easily accomplished with a substantial number of other countries are on board (Davenport, 2015).

The pressure of climate change is not only felt by governing bodies, however. Businesses are affected as well, and from various angles. On the one hand, consumers are finding the state of the environment to be an increasingly urgent matter and therefore exert pressure on companies to adopt more environmentally sensitive approaches (Dembkowski and Hanmer-Lloyd, 1994). However, companies also recognize that responding to this demand is advantageous for longevity, growth, and brand loyalty (Crespo & del Bosque, 2005). Then, on the other hand, more and more government mandates are requiring businesses to adjust to meet more eco-friendly standards. But regardless of the catalyst for change, the general trend remains: businesses are being made aware of the magnitude of their impact and are being held more and more accountable.

The issue that I observe, then, is changing the way businesses examine their day to day operations. Up until this point, little consideration has been made to environmental impact. Rather, the main focus has revolved around profit and expansion. So what is needed, really, is a shift in mindsets so that businesses go from "how can we grow?" to "how can we grow in harmony with the planet?". This research tries to determine just how this kind of shift may be achieved. By focusing on organizational structure and sustainability culture, steps are made in discovering what influences these modes of thinking. What are the barriers, and what are the breakthroughs? Furthermore, by conducting this research within an actual company, valuable observations can be made, even though it is just one case study. The company in question is the high voltage energy company TenneT.

1.1.3 TenneT's Role:

TenneT is a transnational transmission systems operator. This means that their main function is receiving high voltage energy from various power plants which they then transform into a usable electrical current for the electrical grid's end-users. There are a number of emissions associated with electrical grid operation and losses are inherent to the work. This has not dissuaded TenneT from trying to reduce them, however. For example, as of late, they have been searching for ways they can make meaningful changes through their supply chain. One such example of this is vying for cradle-to-cradle tenders. Tendering is the process of choosing the best and cheapest company to supply goods or complete a job by asking several companies to make offers on them (Vanwelkenhuysen, 1998). The cradle-to-cradle aspect, then, refers to the use of "waste" as sources for new products or projects (McDonough & Braungart, 2010). This directly opposes the current linear system in which materials are gathered, made into a product, and then disposed of. By reusing the materials for another product or project, companies can reduce their waste production as well as their dependency on natural resources. TenneT does not stop there though, the company also hopes to inspire an environmentally innovative workforce through a company-wide initiative encouraging employees to submit their ideas for increasing circularity. However in order to do this, employees must be educated on what constitutes a present challenge for circularity as well as the desired outcomes.

So first, circularity must be explained. Circularity refers to the adoption of closed-loop product designs with built-in reusability, which is where the cradle-to-cradle concept comes from (Zhou, Smulders, & Gerlagh, 2018). The motivation for increasing these kinds of practices stems from the innovation and corporate social responsibility teams, but the information will need to be translated to the other aforementioned employees from varying teams and varying backgrounds. This necessitates a focus on organizational structure and networks as they relate to knowledge transfer. The goal, then, is twofold: (1) to explore the relationship between organizational structure and sustainable innovative work behavior and (2) to determine how this relationship can be improved through the continued fostering of sustainability culture.

The inspiration for this thesis was influenced by another student's work in Tilburg (see: van den Ouweland, 2017) who performed their research on the relationship between innovative work behavior and intra-organizational networks. As a result, I have created a modified version of their conceptual model and used their operationalization of innovative work behavior which I then expand upon through an environmental perspective. As previously mentioned, this will be achieved by analyzing the effects of organizational structure and sustainability culture on sustainable innovative work behavior.

TenneT was a good place to carry out this research for a number of reasons. For one, it is of considerable size, having slightly over 4,000 employees across its offices and substations in the Netherlands and Germany. This size and geographic spread is consistent with many transnational companies that, arguably, have the most impact on pollution in their respective areas. Secondly, TenneT was undergoing a change in their organizational structure as a result of a new CEO. This process led to a number of discussions on the efficiency of the current structure and how or where improvements could be made. As a result, organizational structure was more easy to observe and research since the company made weekly announcements and articles about the current structure and the changes that were to be made. Similarly, the new CEO was even more focused and encouraging of "green" office culture than the last and approved the construction of more bike racks, allowed the promotion of company electric bikes to be used instead of cars for transport to and from the office, and so on. As a result, sustainability culture appeared to be taking on more significance and was therefore even more interesting to investigate.

1.2 Research Aim and Objectives

The aim of this research can be summarized in the following sentence:

> *To aid TenneT in further analyzing the variables affecting their ability to stimulate innovate within the context of environmental sustainability and provide recommendations for fostering a more effective, environmentally focused open innovation culture among their employees.*

From this aim come the following objectives:

1. To identify potential barriers to (and/or catalysts for) the cultivation of sustainable innovative work behavior as they relate to organizational structure and sustainability culture.

2. To analyze the results of a company questionnaire to determine the relationships between structure, sustainability culture, and sustainable innovative work behavior.

3. To assess and provide a measure of TenneT's current level of sustainable innovative work behavior.

4. To provide the company with a comprehensive report on the effect of structure and sustainability culture on their employees' ability to be environmentally innovative.

These objectives also represent the final product of this research as well as the chronological order in which the research will be carried out.

1.3 Research Questions

In order to pursue this research further, the following research question has been formulated:

> *What effects do organizational structure and sustainability culture have on sustainable innovative work behavior within the transnational T.S.O. TenneT?*

Now, to answer this question both clearly and in its entirety, it has been broken down into the subsequent sub-questions:

1. What is the current level of sustainability culture within TenneT?

2. What is the effect of organizational structure on sustainable innovative work behavior?

3. What effect does a sustainability culture have on sustainable innovative work behavior?

4. Are there some departments that have more innovative members and if so, why?

1.4 Scientific and Societal Relevance

1.4.1 Scientific Relevance:

The main focus of this study revolves around a number of relationships involving organizational structure, a culture of sustainability, and sustainable innovative work behavior. More broadly, it aims to discover how the make-up of a company can affect an individual's ability to innovate with an environmental focus. The academic body of work available thus far has mainly focused on organizational structure and innovation as the outcome or process a company engages in, rather than an individual level phenomenon. So, a knowledge gap exists that this study hopes to aid in filling. Of the literature that is available on these topics, many approach from the "top down" which focuses on management (Scott and Carrington, 2011) rather than the "bottom up" with individuals and their networks as this study proposes to do. Additionally, there is insufficient data on the effect of sustainability culture on sustainable innovation. Overall, this research intends to add to the current body of literature on the proposed variables individually, in addition to advancing our understanding of the many overlapping relationships influencing sustainable innovative work behavior.

1.4.2 Societal Relevance:

As previously stated, this research will be carried out within the transnational T.S.O. TenneT. It is headquartered in Arnhem, where the research will be performed, and has around 4,000 employees in total between its regional offices and substation units. TenneT provides high-voltage electricity and services to both businesses and the public sector, with the aim to do so in the safest and most ecological way possible.

As previously mentioned, this research will serve as an empirical analysis on the effects of organizational structure and sustainability culture on sustainable innovative work behavior. TenneT will be able to use these findings to make more informed organizational redesign decisions and strengthen their organizational networks to allow for better knowledge transfer, resulting in more innovative work behavior. Recommendations will be given in respect to these goals, based on the findings specific to this organization. However, knowing the factors that lead to sustainable innovative behavior and being able to underpin its mechanism with scientific

research will provide TenneT with a way to encourage such behavior. Furthermore, it will also help to deliver a clear idea of what impact their decisions in regards to structure, culture, and human resource practices have on innovative success.

In another vein, this research has the potential to have significant implications for TenneT as a company as they move forward with the energy transition and require more creative ways of problem solving. For example, one employee I have been in contact with, Donald Kriekson, has indicated that one such issue is the "energy trilemma" arising from the renewable energy sector demands. Renewable energy producers want to be added on to the grid, a service TenneT would like to deliver, but their current method for doing so requires two sets of cables as a result of n-1 thinking. N-1 thinking is a way to ensure reliable energy by provided not one but two cables linking power suppliers to the grid. This is done to ensure that, in the event that one of the cables fails, there is another to guarantee energy flow is not interrupted. This is very costly, but provides TenneT and their consumers with a high level of energy security. The dilemma, then, is whether to deliver the service to the producers that want it and risk the reliability or to take on a smaller amount of producers, resulting in a bottleneck for the renewable energy transition. By understanding how innovation works and can be increased behaviorally within their company, TenneT can utilize this research to steer their company to better foster an environment in which solutions to these problems are more easily reached.

This research also has the potential to have impact outside of TenneT as well. For example, other energy companies may be able to use these findings to further advance their environmentalism in a real, impactful way. Especially if their concern is to increase or encourage an open innovation culture to reach sustainability goals, raising their employees' chances of participation and idea generation. This has the potential to lead to advances in a company's environmental approach and actions, which has positive outcomes for the world as a whole.

1.5 Research Framework

The research framework pictured below demonstrates the process taken to understand the variables within the context of the organization under study. A consultation of relevant scientific literature results in a conceptual model indicating the presumed relationships of the variables.

Following a series of exploratory interviews, this model is revised and either expanded or minimized. Data for the study is then gathered primarily through an internal survey. The internal survey will provide data on variables that are not able to be measured through interviews. Together, the information gathered results in an extensive study on the variables influencing sustainable innovative work behavior as well as practical recommendations on how to further cultivate, or provide the environment for, such kind of employee performance.
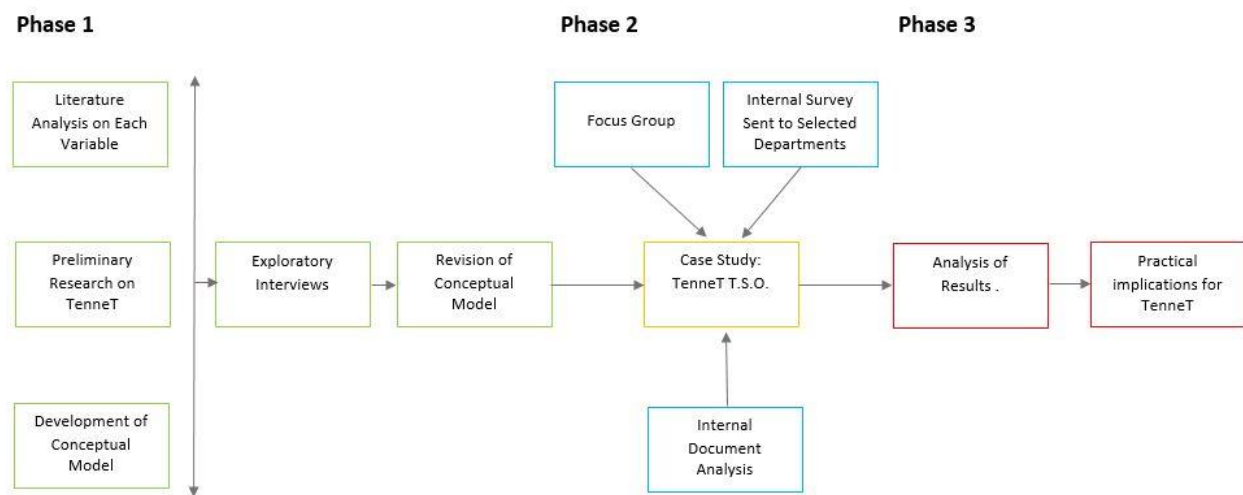
Phase 1　　　　　　　　　　　　　　　　**Phase 2**　　　　　　**Phase 3**

Literature Analysis on Each Variable

Preliminary Research on TenneT → Exploratory Interviews → Revision of Conceptual Model → Case Study: TenneT T.S.O. → Analysis of Results → Practical implications for TenneT

Focus Group　　Internal Survey Sent to Selected Departments

Development of Conceptual Model

Internal Document Analysis

Figure 1.1: *Thesis Research Framework*, by C. Turner, 2019

1.6 Reading Guide

In this introductory chapter, you have been made aware of the mounting pressures companies face to become more environmentally friendly and the variables that come into play when it comes to influencing employees to think creatively within such a context. Fostering sustainable innovative work behavior will be the fastest way to cultivate and implement meaningful change. In the following chapter, the variables of the study will be described in further detail along with their underlying theories. It will conclude with the conceptual framework of the study which serves to demonstrate the variables' assumed interrelationships. The third chapter delves into the methodology of the study, covering everything from the research design to data collection and analysis. The fourth chapter picks up where the previous chapter left off, presenting and going into detail on the results of the research. Chapter five then goes on to discuss the conclusions that can be drawn from these results, and, in addition, makes some recommendations on the basis of

them. The last and final chapter will be a critical reflection on not only the results but also the theories and methods used. It will conclude with recommendations for further research.

CHAPTER 2: THEORETICAL FRAMEWORK

As previously stated, this chapter will be centered around the theories leading to each variable's definition and operationalization. The sections are divided as follows: the main variable in focus, the variables it is dependent on, and the variables that mediate the relationship between them. That is, more scientifically, the dependent variable, the independent variables, and the mediating variables in that order. Finally, this chapter concludes on the study's conceptual model. In this section, assumptions about the model's variables, their operationalization and interrelationships, and the system as whole will be discussed.

2.1 What It's All About: The Dependent Variable

In this section there is a distinction between innovative work behavior and sustainable innovative work behavior. This distinction is made due to the fact that innovative work behavior, while relatively new and possibly under explored, is an already established concept within the academic community while sustainable innovative work behavior is not. The latter term was developed for the purpose of this study and demonstrates a more specific dimension of innovative work behavior by defining the exact kind of original thinking and problem solving context being looked at. So, to begin there will first be an overview of innovative work behavior in general, followed by a self-generated definition with the sustainability factor incorporated.

2.1.1 Innovative Work Behavior:

Innovation theory asserts that innovation is broader than just creativity. Innovative work behavior supports this claim as it not only encompasses the creation of new and useful ideas (i.e. creativity) but also the behaviors required for their implementation (van den Ouweland, 2017). This is largely explored on an individual level and includes micro-level innovation processes like opportunity exploration, idea generation, idea championing, and idea implementation (De Jong and Den Hartog, 2010). From these processes we can see a clear distinction between creativity (opportunity exploration and idea generation) and implementation behavior (idea championing and implementation) that defines innovative work behavior, making it a separate phenomenon from creativity related behavior alone (De Jong and Den Hartog, 2008). While the definition is clear, there are debates over the best mode of measurement.

As previously stated, De Jong and Den Hartog (2008, 2010) measure an individual's innovative work behavior through the four dimensions introduced in the preceding paragraph. These dimensions were measured through a series of surveys that determined an employee's perception of their superior engaging in participative leadership, external work contacts, and self-perception of their own suggestion and implementation efforts in relation to new products and services. What they found was that these factors all positively correlated with each of the innovative work behavior dimensions and thus served as sufficient indicators for the overall measure of innovative work behavior.

Theoretically, innovative work behavior appears multi-dimensional, however the empirical work does not distinguish between the different dimensions (De Jong and Den Hartog 2010). Both Janssen (2000) and Kleysen and Street (2001) attempted to address this and create a multi-dimensional measure, but came to the conclusion that their measures were best combined into one scale, thus not fulfilling their original goal. De Jong and Den Hartog, realizing this, wrote another paper in 2010 to confront this issue themselves. They employed a hierarchal multi-level regression analysis which allowed for them to look at the effects of both group and individual level variables on individual level outcomes. What they found is that their original four-factor model does hold up as being the best fit for innovative work behavior measures, and contributed to an overall construct of innovative work behavior (De Jong and Den Hartog, 2010). The distinctions between the dimensions, when tested, were weak. Suggesting that Janssen (2000) and Kleysen and Street (2001) may have been correct in their conclusion that innovative work behavior is one-dimensional after all.

2.1.2 Sustainable Innovative Work Behavior:

Now, as previously mentioned, because there is no predetermined definition of sustainable innovative work behavior, I had to determine one for myself. In doing this, I found that the definitions from the works of De Jong and Den Hartog (2010) and the European Commission (2008) were quite helpful. De Jong and Den Hartog (2010) were most influential defining innovative work behavior and the European Commission piece helped to establish the boundaries for the sustainability aspect. The final result is as follows: "Sustainable innovative work behavior

is any behavior that aims to achieve the initiation and intentional introduction of new and useful ideas, processes, products and or procedures that seek to, throughout their lifecycle, prevent or substantially reduce environmental risk, pollution, or other negative impacts of resource use (including energy)" (De Jong and Den Hartog, 2010; European Commission 2008).

2.2   The Independent Variables

2.2.1 Organizational Structure:

The effect of organizational structure on innovation has been a topic of interest since the 1960's. In the beginning, Sapolsky (1967) pointed out that those in charge of redesigning large-scale businesses are often in a difficult position. They were often asked to design organizations that were "creative and innovative, in preparation for a future that will be characterized by rapid social and technological changes" (Sapolsky, 2967). However, at the time, no such guide or wisdom existed on how to do so. Now, many studies have been conducted and some helpful findings have been revealed.

In 1977, for example, Pierce and Delbecq determined a number of organizational conditions facilitating innovation. These conditions were largely structural variables like differentiation (heterogeneity in occupational types), professionalism, decentralization, formalization, and stratification (Pierce and Delbecq, 1977). Differentiation, professionalism, and decentralization are all positively correlated with innovation initiation and implementation while formalization and stratification are negatively correlated (Pierce and Delbecq, 1977). These findings are meaningful in that they help to create more of a guideline for decision making that the earlier works lacked.

More recent studies not only look at what variables result in innovation, but also the influence other factors have on it. One such example is Damanpour and Gopalakrishnan's (1998) study on the role of environmental change on organizational structure and innovation adoption. To carry out their research, they created a framework that better reflected the complexity of real business environments by including and extending three theories of structure and innovation to address the multiple dimensions of innovations (i.e. type of innovation, radicalness of innovation, stage of innovation) (Damanpour and Gopalakrishnan, 1998). This framework allowed for them to

predict structural characteristics that would facilitate the adoption of innovations of different types at different stages, under four conditions of environmental change.

Meyer and Goes (1998) also studied innovation adoption in their multilevel analysis of organizational assimilation of technological innovations. Though it was focused on technological innovation, it is assumed that the findings can be applied to other forms of innovation as well. Their findings were that the assimilation of technological innovations is determined by contextual attributes, innovation attributes, and attributes arising from the interactions between the two (Meyer and Goes 1998). The contextual attributes are most compelling to this research as they represent the characteristics of environments, organizations, and leaders. It was discovered that innovations are most easily assimilated in organizations that not only serve urban environments but are also large in size and complex in structure with aggressive market strategies – which are very similar characteristics to the company in which this research was conducted.

2.2.2 Sustainability Culture:

Soini and Dessein (2016) argue that it is both important and necessary to integrate culture in sustainability discourse due to the fact that "achieving sustainability goals essentially depends on human accounts, actions, and behavior which are, in turn, culturally embedded". Because the research conducted is focused on behavior, I feel this has merit. For this reason I decided to include the variable sustainability culture. However, like sustainable innovative work behavior, sustainability culture is another term that does not have a well formed definition, if any at all, currently present in academic literature. So, for the purpose of this paper, I will be determining it's meaning by combining a series of definitions of sustainability and culture that I have found to be most pertinent and clear for the purpose of this research.

First, I looked at sustainability. Because the research focuses on innovation, I decided that the definition I was looking for would make a point to include an element of growth or change. I then found and favored one from the 1987 Brundtland report which states that sustainability is "…development that meets the needs of the present without compromising the ability of future generations to meet their[s]…" Now that the sustainability aspect had been narrowed down, the

focus was turned to culture. In this case culture reflects not only shared values and beliefs but also the behaviors that reflect them. With these framings in mind, my self-determined definition therefore became the following: sustainability culture encompasses the shared belief and understanding that environmental issues are important, as well as both individual and group behaviors that demonstrate support in that belief. However, because this research takes place within a company I came up with a more specific version – which will be the one in use – stating that a culture of sustainability is *a set of important assumptions that employees share about the company's goals, values, and beliefs regarding environmental issues which, in turn, influence behavior*.

2.3   The Mediating Variables

2.3.1 Cross-Unit Ties:

Several research findings have indicated that knowledge transfer acts as a supporting variable for innovation (Cohen, 1989, Tamer 2003). Knowledge sharing can occur either within a unit group or between them, and a diversity of ties (ties that span across unit-boundaries) is frequently linked to innovative capacity (Burt, 2003). Tortoriello and Krackhardt (2010) explore this relationship in detail in their paper on Simmelian ties. They define a Simmelian tie as "a tie embedded in a clique" (Tortoriello and Krackhardt, 2010). They argue that Simmelian ties are important for innovation because they facilitate shared interests and common goal pursuits by mitigating competition and self-interest (Tortoriello and Krackhardt, 2010). They point out that if individuals act out of opportunism and do not share sensitive knowledge with each other, informational advantages are restricted and innovation can be stifled.

Generally, cross boundary relationships benefit from Simmelian ties because these ties are more stable. This stability stems from the presence of a third party, which acts as a source of tension diffusion and conflict resolution (Tortoriello and Krackhardt, 2010). This means that cross-unit relationships are most successful at knowledge transfer when there is a mediator involved and related to the other interacting parties. In addition, this mediator creates a more open environment from which innovation can be fostered. Furthermore, it is not uncommon for knowledge within an organization to be fragmented as each individual has a different informational background. Sharing knowledge with colleagues in different units can remedy this,

however, by allowing pertinent information to be combined and internalized (van den Ouweland, 2017). The importance of ties is relevant in this process, and will be discussed in the following section.

2.3.2 Strength of Ties:

As suggested in the section above, the strength of social ties plays an integral role in the process of knowledge transfer, thus affecting the degree of innovative work behavior. The strength of a tie is a quantifiable property defining the relationship between two "nodes" (people). Granovetter (1973) defines the tie strength as a "combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and reciprocal services which characterize the tie". The literature shows that, with an increase in the strength of tie, we see a higher success rate in knowledge transfer. This may be because strong ties increase the amount of time and effort individuals are willing to invest into the success of the relationship (van den Ouweland, 2017). It is therefore not important to just have a large number of ties between intra-organizational units, rather, it is more crucial for these ties to be strong in nature. Furthermore, the social capital resulting from these ties is only valuable when there is mobilization, assimilation, and use of (knowledge) resources (Maurer, Bartsch, and Ebers, 2011). Then and only then can performance effects be seen and measured in association to ties and social capital as the mere presence of ties does not necessarily result in them on their own (Maurer, Bartsch, and Ebers, 2011).

Now that the relationships have been discussed, a focus can be taken on the individuals within them. The recipient of a knowledge transfer must value, acquire, and ultimately assimilate whatever external knowledge they have received in order to apply it in the context of their work (Tortoriello and McEvily, 2012). In these circumstances, strong ties increase the recipient's commitment to do so. There aren't always positive outcomes though. There is a potential for strong ties to lead to cognitive lock-in (Fritsch and Kauffeld-Monz, 2010). Cognitive lock-in can have damaging effects because it prevents individuals from accepting new information that challenges or requires alterations in their views or behavior. This is where weak ties have their advantages. According to Granovetter (1973), distant and infrequent relationships (i.e. weak ties) are better for knowledge transfer because they provide access to knowledge that was otherwise unattainable within an individual's own subunit. Furthermore, other research suggests their

benefits reside also in the fact that these relationships are less effort to maintain, and therefore information comes with less effort from both parties (Hansen, 1999).

<u>2.3.3 Absorptive Capacity:</u>

While social ties are important, it is also crucial that individuals possess adequate absorptive capacity. Cohen and Levinthal (1990) define absorptive capacity as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities". They found that the cognitive basis for an individual's absorptive capacity mainly stemmed from their prior related knowledge and diversity of knowledge. At an organizational level, however, absorptive capacity is the culmination of each individual's absorptive capacity. Both an individual and an organization's absorptive capacity builds cumulatively and it is warned that if there is a "lack of investment in an area of expertise early on [it] may foreclose the future development of a technical capability in that area" (Cohen and Levinthal, 1990).

While it is important to understand what absorptive capacity is, it is equally important to understand how individuals with absorptive capacity use external knowledge to generate innovations within organizations. Tortoriello (2015) explored this subject and found that the biggest factor in increasing the likelihood of generating innovations based on external knowledge was contingent upon the bridging opportunities available to individuals inside the organization. These bridging opportunities link two parties across networks and those who occupy positions rich in structural holes are significantly associated with a higher likelihood of generating innovation (Tortoriello, 2015). So, Tortoriello's work proves that "the ability to recombine successfully diverse sources of knowledge acquired outside of the organization critically depends on the position occupied by individuals in the internal knowledge sharing network" (Tortoriello, 2015).

While Tortoriello focused on individuals, Tsai (2001) paid more attention to organizational units. His hypothesis was that organizational units are more innovative and better in performance if they occupy central network positions. These positions, he asserts, provide access to new knowledge developed by other units. He did note, however, that this outcome was also largely

dependent on the unit's absorptive capacity. His findings supported his hypothesis as he discovered a strong interaction between absorptive capacity and network position on unit innovation and performance. So, in conclusion, the literature emphasizes the importance of network position for both an individual and an organizational unit in increasing absorptive capacity and thus innovative work behavior.

2.4 Putting It All Together: The Conceptual Model and Resulting Expectations

Up until this point, this chapter has elaborated on the variables of the study both in definition and relation to each other. Now the focus will be on examining the theoretical frameworks associated with them and determining how they are helpful in answering the proposed research questions. This exploration will then lead to the final conceptual model.

Perhaps the most appropriate theoretical basis for this research stems from theories on innovation. As Nelson and Winter (1997) point out, research on this subject has been approached from many different viewpoints: from economists to social scientists to historians of science and technology. Therefore, there is a wide range of information on the subject with no distinct or connected intellectual structure (Nelson and Winter 19987). However, there is a theoretical thread from which innovation studies can be traced back to which is known as the diffusion of innovations theory. This theory seeks to explain how, why, and at what rate new ideas and technology spread (Rogers, 1962). The original creator of this theory, Everett Rogers, tests his theory and finds that individuals adopt innovation in a predictable linear pattern. He also includes the strength of weak ties theory to explain the importance of social networks, as well as individuals' positions within those networks, in the diffusion of innovation within organizations (Carr et al, 1996). As Katz and Lazer (2003) point out "the key building block of network research is a tie". So the inclusion of sociological theory is necessary in order to understand the full complexity of the phenomenon. The combination of these two theories, therefore, provide the basis for which this research will be carried out. Furthermore, they provide a theoretical background in which the proposed research questions can be addressed. The strength of weak ties theory relates to networks, social ties, and as mentioned above also innovation. The diffusion of innovation theory then can be tied to cross-unit knowledge, absorptive capacity, and social ties as well. In conclusion, both can be used as a framework from which to base this research.

The original conceptual model was created by the aforementioned student whose research I am adding to and can be viewed below:

2.5. Conceptual model

Figure 2-3. Hypothesized model of relationships.
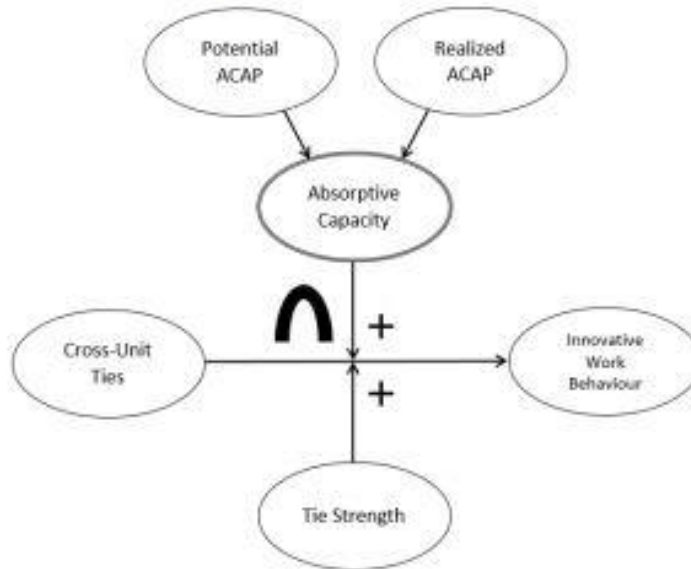
Table 2-2. Definitions and expected signs of variables.

Figure 2.1: *Conceptual model by K. van den Ouweland, 2017*

This conceptual model dictates a number of relationships. As indicated in the table, innovative work behavior is the independent variable and cross-unit ties are dependent variables. The moderators, then, are absorptive capacity and tie strength. So, this model indicates that an individual's innovative work behavior is dependent upon the number of cross-unit ties they have. Furthermore, this relationship is positively reinforced as tie strength and/or absorptive capacity increase. So, for example, someone that has more cross-unit ties with less tie strength could have the same level of innovative work behavior as someone with less cross-unit ties and more tie strength. The same could be true for absorptive capacity or both. Overall, absorptive capacity and tie strength, as they increase, strengthen the relationship between cross-unit ties and innovative work behavior.

Now for my modified version, accounting for organizational structure and sustainability culture:

Figure 2.2: *Modified and Expanded Conceptual model of K. van den Ouweland, 2017 by C. Turner, 2019*

From the theoretical framework, the following conceptual model has been formulated, including the main concepts and rela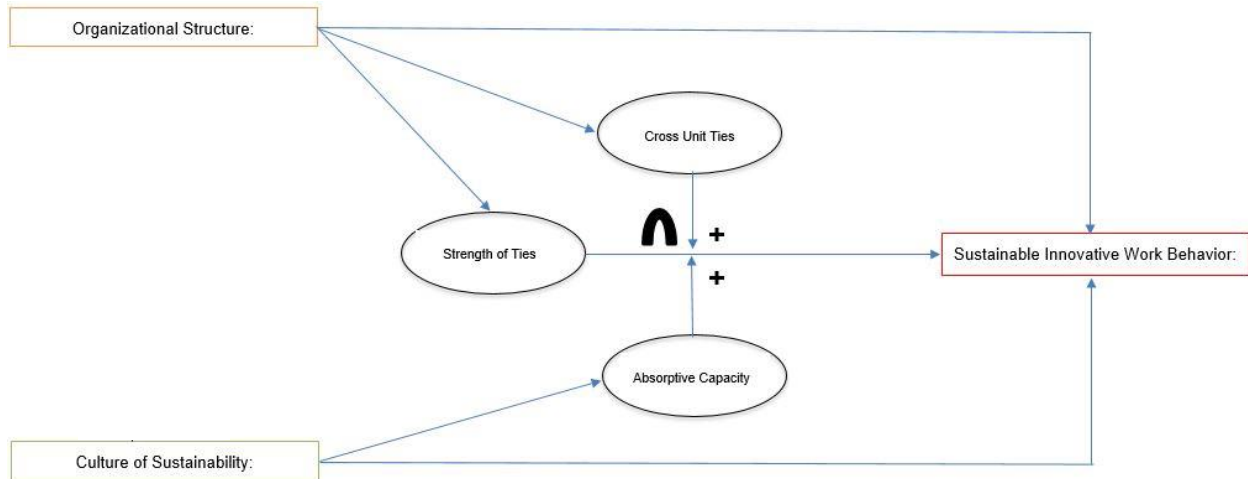tionships to be tested by the research. This model facilitates the answer to the main research question: *What effects do organizational structure and sustainability culture have on sustainable innovative work behavior?*

This modified version aims to express the effect structure has on the variables related to innovative work behavior. It is my assumption that structure affects both the independent variable and the moderators in the following ways. For one, structure affects cross-unit ties as an individual's place in a team affects which other employees or team's they interact with. Tie strength is also affected much in the same way, as structure would also determine how often interactions would occur. For example, someone in the IT department may see many employees from many different departments in one day, but their relationship with these outside employees is not strong because of the brief transactional exchange. Finally, structure can influence strength of ties in that it can either generate or hinder bridging opportunities which, as Tortorellio (2015) points out, are a crucial factor for increasing innovation generation based on external knowledge. As for a culture of sustainability, it is my assumption that only absorptive capacity and sustainable innovative work behavior are affected. It is important here to note that absorptive capacity is viewed from the standpoint of an individual, rather than a collective. Sustainability culture, therefore, would influence absorptive capacity by providing the environment with which

knowledge and ideas regarding sustainability would be exchanged more freely. As a result, sustainable innovative work behavior would increase.

CHAPTER 3: METHODOLOGY

This chapter outlines the main decisions related made for the methodology of the study. Because the research framework lays down the groundwork for the structure of the research, it will be covered first as well as the expectations that came with it. Section 3.2 then explains the research paradigm as well as the rationale behind choosing a mixed method approach. Finally, the closing sections are dedicated to each method individually detailing both the exploratory interviews and the internal survey. They will go more into depth on each of the methods themselves, covering not only the participants that were chosen (if applicable) but also the methods for data collection and analysis.

3.1 The Research Philosophy

A research paradigm is "the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed" (Kuhn, 1962). Generally research paradigms have three components in total: an ontology, an epistemology, and a methodology (Guba and Lincoln, 1994). Because the methodology is explained in detail in this chapter, the ontological and epistemological approach will be covered in the following paragraphs.

3.1.1 Ontology

An ontology is the way in which researchers define their reality. Is reality socially constructed, or rather, does it exist on its own without influence (Hudson and Ozanne, 1988)? This research consists of a single case study that tries to determine the influence of specific variables on sustainable innovative work behavior. Therefore, it is assumed that sustainable innovative work behavior and the surrounding variables are able to be studied. However, because sustainable innovative work behavior is a man-made construct, we do not assume that the reality observed is the only reality present. This assumption is made due to the fact that the research takes place within just one firm, and therefore does not necessarily reflect the reality of other firms. The result, then, is the truth of how these specific variables influence *TenneT's* sustainable innovative work behavior and no one else's. This form of critical realism aligns with a post-positivist paradigm (Guba and Lincoln, 1994). A post-positivist paradigm asserts that a form of reality

exists, but it is imperfectly apprehendable as a result of flawed forms of study and the slippery nature of phenomena (Guba and Lincoln, 1994).

3.1.2 Epistemology

An epistemology is the study of knowledge. It makes the researcher question and decide "What is truth?" and "How can we know it?". Basically, when conducting research, it defines the relationship between the researcher and reality – which is driven by a researcher's ontological beliefs (Creswell, 2013). Like positivism, post-positivist epistemology values objectivity. The main difference, however, is that post-positivists don't believe it's possible to maintain distance from the researched (Guba and Lincoln, 1994). Therefore, potential influences coming from background knowledge are acknowledged and attempted to be controlled. This technique falls in line with modified objectivism. Modified objectivism tries to determine whether or not we can grasp reality and comes to the conclusion that while it is possible to approximate reality we cannot ever fully know it (Guba and Lincoln, 1994).

This research is a case-study that tries to make insights on innovative work behavior within TenneT. My relationship to those being researched is transactional – meaning that both myself (the investigator) and my study subjects are interactively linked. More specifically, I will be conducting ethnographic field work as I will be working within an organizational unit in the company and actively involved in the process of cultivating sustainable innovation.

3.2 Research Setting and Design

3.2.1 The Research Setting

As previously stated in the introduction, this research takes place within the transnational energy company TenneT. The company spans over two countries: the Netherlands and Germany. Each country has their own headquarters: the one in the Netherlands is found in Arnhem and the one in Germany in Bayreuth. I conducted my research from the headquarters in Arnhem though there are other regional offices located around the Netherlands and Germany as well. From this sample population, a random group of departments were selected to take part in the survey, spanning from all office locations in both countries.

3.2.2 The Research Framework and Design
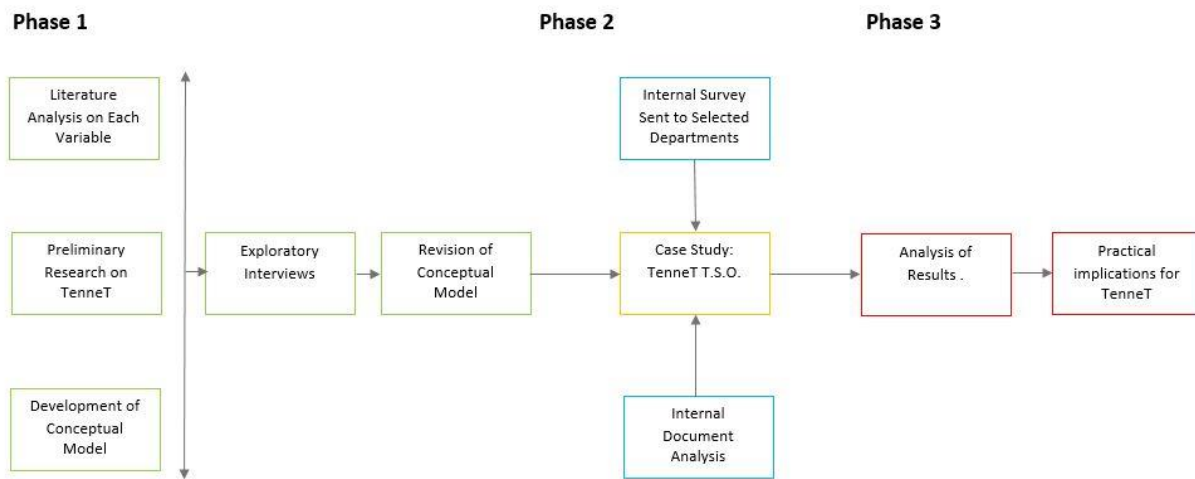
Figure 3.1: *Research framework*, by C. Turner, 2019

The research framework shown in Figure 3.1 demonstrates the steps in which the research was carried out. As depicted, it can be broken down into three main phases.

The first phase can be boiled down to one word: preliminary research. In this phase, there was an extensive literature analysis on each of the variables in the study, the results of which can be seen in the previous chapter. Research was also carried out on the company itself using the company's internal network – commonly referred to as their intranet. This intranet only accessible to TenneT's employees and requires the use of a secure VPN when working out of the office. It is a necessary precaution given that the information provided regards not only the internal workings of the company but also the high voltage electricity supply details of two different countries. From this resource I was able to get a grasp of not only the structure of the company, but also the previous and current CSR and innovation efforts. This, therefore, provided a bit of background for the company's organizational structure, innovative work behavior, and sustainability culture.

The next step was to develop a conceptual model and then carry out a preliminary round of exploratory interviews with employees of varying departments. The interviews therefore served a

dual-purpose. Firstly, they aided in the fine-tuning of the conceptual model and secondly, they served to discover the shape of the organizational structure within the company.

The last two phases are representative of the last chapters in the report. The second phase is the actual conducting of the research which will be detailed throughout this chapter while the third phase is the analysis of the data and the implications of the research for TenneT which will be detailed in the results and conclusions chapters.

3.3 Measures

3.3.1 Operationalization of Variables:

The process of operationalization involves developing measurable factors for ambiguous concepts. Because the study's variables are not inherently measurable like temperature or height, operationalization was a necessary process. The figure below illustrates the factors determined for each variable, creating an expanded version of the previous conceptual model.
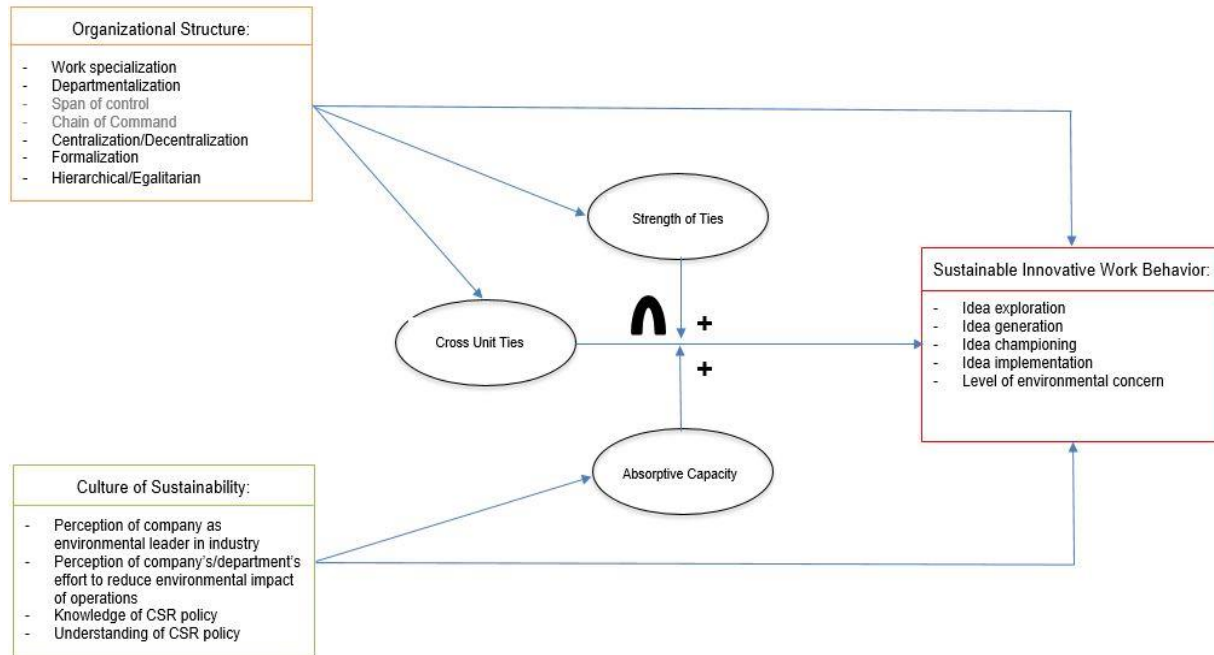

Figure 3.2: *Expanded Conceptual Model, by* C. Turner, 2019

As detailed in the conceptual model, organizational structure was broken down into seven factors. Work specialization refers to the way work is divided within departments, illustrating the degree to which jobs are subdivided into separate jobs (Cox & Finley, 1995). Departmentalization refers to whether work is done as a team, in small groups, or individually. Thus revealing the basis on which jobs are grouped together. Span of control refers to the amount of individuals a manager can efficiently and effectively direct while chain of command is the order of individuals and or groups that others report to (Bell, 1967). These factors are shown in grey as they were made clear and did not show any variances. Therefore, they were excluded from the exploratory interviews and the survey as they did not need further investigation. (De)Centralization follows these as it determines whether decision making authority lies horizontally with all members participating, or vertically with hierarchical positions being the only ones with the permission to do so. Finally, there is formalization. Formalization determines what degree rules and regulations direct employees and managers (Hall, Johnson, & Hass, 1967). That is, how much flexibility is inherent in the departments every day operations? Together, these factors create a clear picture of organizational structure within TenneT.

Sustainability Culture

As previously mentioned, sustainability culture lacks a clear definition in the academic world and therefore has not had proper operationalization yet. Using my own definition, the factors that I determined were most appropriate to use as measurement were as follows: perception of the company as an environmental leader in its industry, perception of the company's efforts to reduce environmental impact, knowledge of the company's CSR policy, and understanding of that CSR policy. Together these factors encompass the current level of sustainability culture in terms of its prevalence. The idea is that, should there be a strong sustainability culture, employees would be well versed and knowledgeable of their CSR policy in addition to the company's contribution and efforts for environmental protection in its industry. A weak sustainability culture, therefore, would be characterized by a lack of knowledge on these fronts. A gradient of this is shown in figure 3.3.
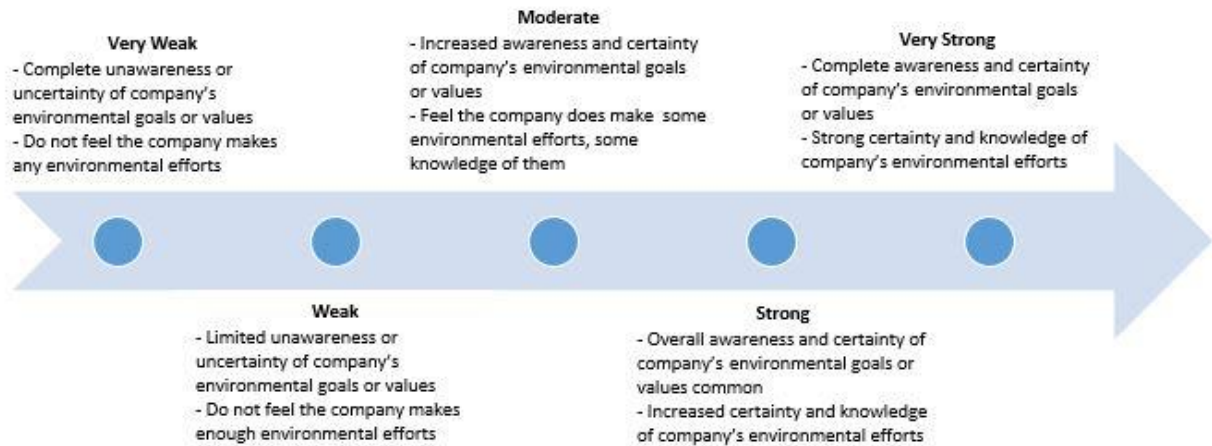
Very Weak
- Complete unawareness or uncertainty of company's environmental goals or values
- Do not feel the company makes any environmental efforts

Moderate
- Increased awareness and certainty of company's environmental goals or values
- Feel the company does make some environmental efforts, some knowledge of them

Very Strong
- Complete awareness and certainty of company's environmental goals or values
- Strong certainty and knowledge of company's environmental efforts

Weak
- Limited unawareness or uncertainty of company's environmental goals or values
- Do not feel the company makes enough environmental efforts

Strong
- Overall awareness and certainty of company's environmental goals or values common
- Increased certainty and knowledge of company's environmental efforts

Figure 3.3: *Sustainability Culture Gradient,* by C. Turner, 2019

Cross-Unit Ties

Cross-unit ties are the number of ties that span across unit-boundaries. This is a relatively simple concept itself, so there was no need for further operationalization. These ties are determined by the number of departments an individual interacts with (in this study, over the course of a year) outside of their own and will be presented visually in a network analysis.

Strength of Ties

Much like cross-unit ties, strength of ties is a variable that did not require further operationalization. The strength of a tie in this study is determined through self-reporting of the frequency in which an individual interacts with departments outside of their own and their level of intimacy or closeness with them. This, too, will be represented visually in a network analysis.

Absorptive Capacity

A company's total level of absorptive capacity is determined by two main factors. One is the absorptive capacity of its individuals. The other, is the presences of knowledge sharing relationships among employees (Cohen and Levinthal, 1990). This is an important addition because while knowledge of external information is valuable, it does not do any good if it does not find direct use with the individual that has it. It may, however, be useful to someone else or the organization as a whole and should be shared where it is needed. For the purpose of this study, absorptive capacity was broken down into two categories: potential and realized. Potential

absorptive capacity is defined by acquisition and assimilation of knowledge (Zahra and George, 2002). That is, how often does an individual seek and/or attend new knowledge opportunities? The more often an individual engages in these activities, the higher their potential absorptive capacity as a result of their frequent exposure to knowledge outside of their focal organizational unit (Fosfuri and Tribó, 2008). This behavior also eludes to the presence, or lack of, knowledge sharing relationships. The second, then, is realized absorptive capacity. This is defined as the ability of an individual to transform and exploit new external knowledge. In this study this is determined by an individual's report of how often they suggest improvements or have changed their practices or behavior after the acquisition of new knowledge. The idea is that, the more often they engage in these behaviors, the more realized absorptive capacity they hold.
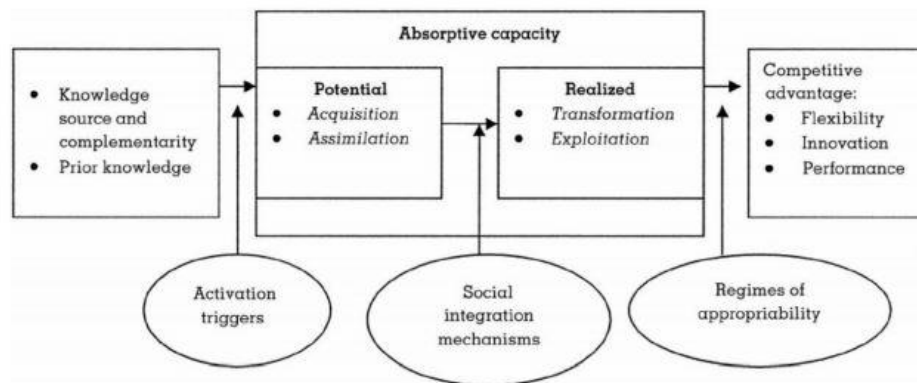
Figure 3.4: *The Adapted model of absorptive capacity,* by Zahra & George, 2002

Sustainable Innovative Work Behavior

Sustainable innovative work behavior is made up of two married concepts: sustainability and innovative work behavior. Innovative work behavior is determined by the exploration, generation, championing, and implementation of ideas. The sustainability aspect, then, is the level of environmental concern that motivates these behaviors.

3.4 Data Collection

3.4.1 Exploratory Interviews

Before making the survey I took the time to conduct a number of exploratory interviews. These interviews served the purpose of helping me understand TenneT's organizational structure more

clearly and to determine whether there were any other factors that influence sustainable innovative work behavior that I had not already included.

Participants

In total, there were six interviews that took place over the course of one week. Participants were selected in two ways: one through convenience, and the other, voluntarily. Three of the participants were members of the department in which I was placed (AOC) while the others varied. The participants I already knew were asked orally whether they would have time to be interviewed while the others were emailed based on their response to a post on the company's intranet asking for volunteers. The final list of volunteers, their respective departments, and the dates in which they were interviewed can be found below. The content of the interview was primarily focused on organizational structure due to the fact that the information available on the intranet was limited on it and it was the key independent variable in the original conceptual model (which was being investigated for integrity). Each interview lasted no more than 30 minutes total.

Table 3.1: *Interview Schedule*

#	Participant Name	Department	Interview Date
1	Henk Sanders	AOC	08/07/2019
2	Bas Swinkels	AOC	08/07/2019
3	Margriet Rouhof	AOC	10/07/2019
4	Bas Wismans	IMC	10/07/2019
5	Janine Spaan	HR	11/07/2019
6	Han Stegeman	Grid Service NL	12/07/2019

Table 3.2: *Interview Guide*

Q#	Question	Variable Observed
1	In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks are divided?	Work Specialization
2	In comparison to your previous department(s), are jobs together differently? As in, are there more group projects versus individual work?	Departmentalization
3	Who did individuals/groups report to? Is this different in your current department?	Chain of Command
4	Where does the decision-making authority lie in your current department? What about the previous ones?	Centralization/ Decentralization

5	To what degree did/do rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?	Formalization
6	Overall, would you agree that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated between your current department and the other(s) you have worked in? Do you feel this has this affected the level of innovation?	No specific variable / Open-ended – probing
7	To what degree does your department consider sustainability in its daily operations? Where does this motivation come from? The government? The CSR department?	Sustainability Culture

Following the interviews, it was concluded that there are indeed more factors at play than just organizational structure when it comes to sustainable innovative work behavior. Specifically, when question #6 was asked, some conversations eventually lead to whether or not organizational structure could be the variable to explain differences in innovative work behavior. Several participants ended up saying no, it was not just organizational structure that influences innovation but also other sources like sustainability culture. The notes and quotations gathered during these interviews can be found in the appendix.

3.4.2 The Internal Survey

Providing the quantitative data is an internal survey. The survey investigated all of the variables using a series of questions.

Participants

The participants for the survey were selected randomly. All of the departments within the company were listed alphabetically, as they appeared on the company's intranet database and then assigned a numerical value from 1 to 32. Then, using a random number generator online, 10 numbers were collected. If the same number repeated twice, it was skipped, until a new number appeared. The numbers collected were matched with their correlating departments, and emails including the survey and a short explanation of the research were sent to the resulting members. Because TenneT's departmental boundaries are not strict, respondents from outside the original list of departments responded as well. To provide an example for further clarification, I received an email from one respondent clarifying that, although they are technically a member of the HR department, their project takes place within another and they therefore answered as someone

coming from that department rather than as someone from HR. The resulting group of departments (left), as well as the originally intended (right), are pictured in table 3.3.

Table 3.3: *Resulting group of departments and the originally intended*

#	Department		#	Department
1	Asset Management Germany		1	Asset Management Germany
2	Asset Management NL		2	Asset Management NL
3	Asset Management Offshore		3	Asset Management Offshore
4	Asset Owners Corporate		4	Asset Owners Corporate
5	Audit Corporate		5	Audit Corporate
6	Business Development Corporate		6	Business Development Corporate
7	CertiQ		7	CertiQ
8	Corporate Business Control		8	Corporate Business Control
9	Communications Corporate		9	Communications Corporate
10	Corporate Regulation		10	Corporate Regulation
11	Customers and Markets Germany		11	Customers and Markets Germany
12	Customers and Markets NL		12	Customers and Markets NL
13	Executive Board		13	Executive Board
14	Facility Management		14	Facility Management
15	Financial Control Corporate		15	Financial Control Corporate
16	Grid Service Germany		16	Grid Service Germany
17	Grid Service NL		17	Grid Service NL
18	Grid Service Offshore		18	Grid Service Offshore
19	HR Germany Corporate		19	HR Germany Corporate
20	HR NL Corporate		20	HR NL Corporate
21	Information Management Corporate		21	Information Management Corporate
22	Legal Affairs Corporate		22	Legal Affairs Corporate
23	Offshore NL		23	Offshore NL
24	Power to Perform		24	Power to Perform
25	Procurement and Logistics		25	Procurement and Logistics
26	Procurement Corporate		26	Procurement Corporate
27	Project Control Corporate		27	Project Control Corporate
28	Public Affairs Corporate		28	Public Affairs Corporate
29	Safety and Security Corporate		29	Safety and Security Corporate
30	Systems Operations Germany		30	Systems Operations Germany
31	Systems Operations NL		31	Systems Operations NL
32	Treasury		32	Treasury

Method

To recap, the dependent variable being tested for is sustainable innovative work behavior, while the independent variables are organizational structure and sustainability culture. The moderators, then, are cross-unit ties, absorptive capacity, and tie strength.

The setup of the survey was comprised of a set of questions that aim to measure all variables, excluding cross-unit ties, to get an idea of overall innovative work behavior. Cross-unit ties will be analyzed through a network analysis. This means that, as a part of the survey, employees are asked to identify their department and mark which other departments they have interacted with over the past year. Once selected, there will be another question asking "How often do you talk to people in this department?" and "How close would you rate your relationship with this department?" which will be used to determine tie strength. The result, then, is a comprehensive overview of which departments are most in contact with who – successfully identifying cross-unit ties – and what effect this has (or not) on the other variables, namely, tie strength. As

previously mentioned, questions in regards to structure will be included as well. These will take the form of items like "With the current organizational structure, do you feel that you have adequate access to innovation opportunities?" and so on. A list of the resulting survey questions can be found in table 3.4 below.

Table 3.4: *Resulting survey questions and their measured variables*

Research Question/Sub-question	Resulting Survey Question	Variable Measured
A. *What is the current organizational structure in TenneT?*	Topic A Sub-questions: 1. To what degree are activities subdivided into separate jobs? 2. On what basis will jobs be grouped together? 3. Where does the decision-making authority lie? 4. To what degree do rules and regulations direct employees and managers?	
1a	The activities in my department are significantly subdivided into separate jobs	Work specialization
2a	My department mostly utilizes group projects over individual work	Departmentalization
3a	My department follows rules and regulations very closely	Formalization
B. *What effect does organizational structure have on sustainable innovative work behavior?*	Topic B Sub-Questions: 1. Are the paths for sharing information clear and open? 2. Is there freedom within an individual's position/department to incorporate new ideas? 3. Do other departments feel close to the innovation/CSR department?	
1b	I know where to take my new ideas or solutions when I think of them	Clarity of communication pathways
2b	My position/department is flexible enough to incorporate new ideas	Flexibility/openness
3b	My department works closely with the innovation and/or CSR department	Network position (in relation to innovation/CSR)
D. *What effect does sustainability culture have on sustainable innovative work behavior?*	Topic D Sub-Questions: 1. How much do employees feel that sustainability is a part of the company's values? 2. How much do employees feel the company does to achieve sustainability? 3. How knowledgeable are the employees on the company's environmental efforts? 4. How much do employees understand the company's environmental efforts?	
1d	I feel that TenneT is a strong leader in environmental efforts for the energy industry	Perception of company as environmental leader in industry
2d	I feel that TenneT does a great deal to reduce their environmental impact of operations.	Perception of company's/department's effort to reduce environmental impact of operations

3d	I know the TenneT CSR policy and ambition goals well	Knowledge of CSR policy
4d	I understand the TenneT CSR policy and ambition goals well	Understanding of CSR policy
E. *What is the level of absorptive capacity of the individuals in each department?*	Topic E Sub-Questions: 1. How receptive is the individual to acquiring and assimilating external knowledge? 2. How capable is the individual to transforming and exploiting absorbed knowledge?	
1e	I regularly visit or contact other departments to acquire new knowledge	Frequency in seeking new knowledge opportunities (Potential absorptive capacity)
2e	I regularly attend presentations of topics that are outside my department focus	Frequency in attending new knowledge opportunities (Potential absorptive capacity)
3e	I quickly recognize the usefulness of new external knowledge to existing knowledge	Realized absorptive capacity
4e	I often try to suggest ways to improve the company or its product(s) when I encounter knowledge that provides inspiration to do so	Frequency of applying new knowledge to their field/department (Realized absorptive capacity)
F. *What is the current level of an individual's sustainable innovative work behavior?*	Topic F Sub-Questions: 1. How often does an individual come up with ideas that have an environmental focus? 2. How often does an individual bring and push for the implementation of environmentally friendly ideas? 3. What is the individual/departments general level of concern for the environment?	
1f	I wonder how things can be improved to reduce environmental impact	Idea exploration
2f	I often try to come up with solutions to environmental issues at hand	Idea generation
3f	I attempt to convince people to support an environmentally innovative idea and bring them forth environmentally innovative ideas when I can	Idea championing
4f	I feel it is important to have new ideas regarding sustainability implemented and adapted to	Idea implementation
5f	I have made efforts to adapt and implement new ideas regarding sustainability within the last year, or so	Idea implementation
6f	I care deeply about my own/department/company's environmental impact	Level of environmental concern
7f	I make an active effort to reduce my environmental footprint	Level of environmental concern

3.3.3 Methods for Processing and Analyzing Data:

As previously stated, the exploratory interviews were partially transcribed, but not coded as they were not used for any other purpose than to uncover some aspects of the company's core organizational structure and test the integrity of the conceptual model. Coding would have been helpful if there were more variables of the study addressed. The information found in these interviews, therefore, will instead be referenced to in the form of relevant quotations when they provide helpful insights or have been mentioned repeatedly by more than one participant.

The survey results will be analyzed using two separate analytical tools. One was the statistical software program SPSS and the other utilized the programming language R. SPSS was used to generate a number of descriptive statistics such as a mean and standard deviation along with more complicated functions like cross-tabulations and regression analyses. R, on the other hand, was used to generate the social network analysis. The results of these will be expanded on in the following section.

Preliminary Data Analysis

In order to address the reliability of my research I will conduct a reliability analysis and test for common method bias. The reliability analysis I have chosen will measure the internal consistency of my data. Internal consistency refers to the correlation between different variables in the survey, which are intended to measure the same construct (sustainable innovative work behavior) (Henson, 2001). The higher the level of internal consistency, the more reliable the variables are. This test was chosen due to the fact that the questions of the survey are combined into an overall score of sustainable innovative work behavior, and therefore it is important that the items making it up reflect that.

The results of this test are represented by a reliability coefficient known as the Cronbach's alpha. This number normally ranges between 0 and 1, with 1 indicating the highest level of internal consistency (Henson, 2001). To interpret the numbers, I am using the rule of George and Mallery (2003) stating: below .5 is unacceptable, above .5 is poor, above .6 is questionable, above .7 is acceptable, above .8 is good, and above .9 is excellent.

Table 3.5: *Reliability Statistics*

Cronbach's Alpha	N of Items
.805	21

Using SPSS, the result was .805. Using the aforementioned scale, this can be interpreted as good. Considering that the coefficient increases as the number of items do, and there are 21 in this survey, this could be a reason for its adequate result. Therefore, it should be kept in mind that this may not completely confirm the variables reliability as it could just be a result of a large number of them.

Next, there is testing for common method bias. Common method bias occurs when there are variations in responses as a result of the instrument used, rather than the individuals using them (Conway, 2010; Siemsen, Roth, & Oliveira, 2010). This results in data that is contaminated by external noise, and can lead to skewed or unrealistic results. One way to test for this is using a Harman's single factor score. This score reflects all the items in the survey into one common factor (Eichhorn, 2014). If the total variance for the single factor is less than 50%, then common bias factor is not an issue for the data set. The results of this test were produced using SPSS, and can be viewed below.

Table 3.6: *Total Variance Explained*

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.841	23.051	23.051	4.172	19.865	19.865
2	2.588	12.322	35.373			
3	2.002	9.532	44.904			
4	1.446	6.887	51.792			
5	1.398	6.657	58.449			
6	1.071	5.101	63.550			
7	.995	4.738	68.288			
8	.905	4.311	72.600			
9	.726	3.455	76.055			
10	.705	3.357	79.412			
11	.667	3.175	82.587			
12	.615	2.927	85.513			

13	.570	2.716	88.229			
14	.523	2.492	90.721			
15	.453	2.156	92.877			
16	.351	1.672	94.549			
17	.334	1.590	96.139			
18	.288	1.372	97.511			
19	.230	1.097	98.607			
20	.152	.725	99.332			
21	.140	.668	100.000			

Extraction Method: Principal Axis Factoring.

As shown, the total variance came out to 19.8%. This is well below the 50% limit, and therefore it can be concluded that common method bias does not affect my data set.

CHAPTER 4: RESULTS

In this chapter the results of the survey will be presented. In some cases, additional information is also shared from the exploratory interviews. To begin, the descriptive statistics from the control variables are covered. Following this are the results for organizational structure, the network analysis, sustainability culture, and finally, sustainable innovative work behavior.

4.1 Control Variables

4.1.1 Overall View and Descriptive Statistics

As previously mentioned, TenneT consists of 31 departments of which 16 were selected to take part in the survey. Each of these departments varied in size, ranging anywhere from 10 to 500+ employees. In total, the survey was sent to over 500 employees and they were given a month to complete it. Reminder emails were sent after 2 weeks in hopes that response rate would increase. Of these employees, just 144 attempted the survey while only 111 actually completed it fully resulting in a total response rate of 22.2%. The majority of the respondents were between 20-39 years of age (62.2%, total range from 20-80+ years) and worked in Germany (60.4%). The highest amount of responses by department came from Asset Management Germany (26.1%) and the average size of departments was between 11-29 people.

Table 4.1: *Demographic characteristics of respondents*

Characteristics		Frequency	Ratio
Age	20-39 years	69	62.2
	40-59 years	39	35.1
	60-79 years	3	2.7
	>80 years	0	0
Country	Netherlands	44	39.6
	Germany	67	60.4
Department	AM_G	29	26.1
	AM_NL	1	.9
	AOC	9	8.1
	BDC	1	.9
	CQ	2	1.8
	CR	8	7.2

	CM_G	8	7.2
	FM	6	5.4
	FCC	12	10.8
	GS_G	9	8.1
	HRC_NL	7	6.3
	IMC	8	7.2
	PTP	4	3.6
	SSC	5	4.5
	SO_NL	1	.9
	AM_Off	1	.9
Department Size	0-10	5	4.5
	11-29	38	34.2
	30-49	26	23.4
	50-99	12	10.8
	100-499	27	24.3
	>500	3	2.7
Total		111	100

4.2 Organizational Structure

4.1.1 Overall View

Organizational structure was operationalized into 6 different variables. Those not investigated in the survey were left out intentionally due to the exploratory interviews providing enough information on them. These variables were TenneT's chain of command, it's centralization (or not), and it's span of control.

What was uncovered during these interviews regarding TenneT's chain of command is that, in general, there is a standard structure throughout the entirety of the company. This structure is one in which most employees report to a project or team lead who then reports to a senior manager who then reports to the executive board. As one participant (Henk) pointed out, there are some cases, when the size exceeds a certain number, that an extra layer of managers is added "because the span of control is too big". According to them, "a team of 15 people is manageable by one person" but any number above that requires another layer of managers. Therefore, TenneT has a

sort of pyramid structure in terms of the chain of command and their span of control tops at 15 employees.

As for TenneT's level of centralization or decentralization, the interviews revealed a similar trend in that decision making authority lies with the person that you report to, unless, of course, you are on the executive board. Therefore, it depends entirely on your position. So, what does that mean in terms of centralization and decentralization? Well, in a centralized company all decisions are concentrated into the hands of high-level management. In addition, communication is highly formalized and extends only in a top-down or bottom-up direction. In a decentralized company, however, decision making power is dispersed through all levels more evenly though mainly to another functional level of management. Furthermore, communication extends in all directions, not just up or down but also horizontally.

Given the respondent's responses, it would appear that the company is more decentralized. While those at the lowest level (not in a management position) do report and communicate mainly in a top-down or bottom-up manner, those in other levels of management are able to make decisions without having to consult the highest-level of management – given that these decisions do not impact the business in a profound way. One respondent echoes this stating "I feel, and that's how I act. In terms of the CSR ambition, I have the power to act. However, if it has impact on the business, then I ask for permission." Furthermore, in terms of communication, as an employee it was quite easy and simple for me to make contact and meet with other members of varying departments outside of formal meetings. Therefore, from my own personal experience I can attest to communication extending in all directions.

Table 4.2: *Organizational Structure Descriptive Statistics*

	N	Mean	Std. Deviation
Work_Spec	111	3.86	.879
Depmntalization	111	3.04	.962
Formalization	111	4.14	.780

All variables in the survey were rated using a 5-point Likert scale where the value 1 corresponded with "Strongly Disagree", 2 "Disagree", 3 "Neutral", 4 "Agree", and 5 "Strongly

Agree". As the results show, work specialization had a mean of 3.86 with a standard deviation of .88. Because the score leans closer to 4 corresponding with "Agree" it can be said with some confidence that the activities in departments are significantly subdivided into separate jobs. As for departmentalization, there appears to be more variation. The average score for this variable was a 3, meaning "Neutral", with a standard deviation of .96. The standard deviation is something of note because it shows how respondents would fluctuate between agreeing and disagreeing on whether or not their department utilized group projects over individual work more often. Therefore it can be assumed that this reality is different from one department to the next. Finally, there is formalization which averaged a 4.14 and had a standard deviation of .78. Because of this more solid position of agree, it can be deduced that most departments follow rules and regulations very closely resulting in a higher level of formalization.

4.1.2 Effects on Social Ties

There were no questions in the survey that directly pertained to the effects that organizational structure has on cross-unit ties or strength of ties, however, responses from the exploratory interviews did illuminate some connections. What was echoed on a number of occasions, for example, was the sequential nature of some departments. This, according to one respondent, means some departments are "…more specialized, like an assembly line". This affects communication because "everyone has their own thing" and once they're done they "throw it over the fence to their neighbor". So interactions exist merely to change one product or document piece from one hand to another, with little to no collaboration during the process. This affects cross-unit ties and strength of ties in that it creates a kind of "silo mentality". This mentality is characterized by psychological spaces of compartmentalization, segregation, and differentiation (Mohapeloa, 2017). This kind of thinking is known to have negative impacts on intra-group relations, which would weaken the strength of ties between colleagues within the department (Celliers and Greyveinstein, 2012). Furthermore, this can stifle cross-unit ties, as employees are limited to individual responsibilities within their department.

This is changing, however. According to one respondent, TenneT is now "doing some experiments to stop the sequential model, and want to go to a network model". They are executing these experiments by including all necessary persons in the assembly line in one

group. The take-away has been that there is "…more creativity and enthusiasm from our employees this way. They don't have blinders on, because they get to see and be a part of the whole process". It was also emphasized that in these projects there is a "tremendous growth in curiosity and creativity". Based on these observations, it would appear that a more radically horizontal organizational structure would help to increase cross-unit ties and therefore innovation. Furthermore it creates weak ties amongst a larger population of the company, which is better for knowledge transfer and innovation behavior (Granovetter, 1973).

4.1.3 Effects on Sustainable Innovative Work Behavior

In order to determine the effects organizational structure has on sustainable innovative work behavior, a bivariate correlation analysis was conducted. In a bivariate correlation analysis, the relationship between two variables is explored. In this case it is interesting to see whether these two variables have any associations to one another, as well as the strength of these associations should they exist. The results of this analysis are presented in table 4.3.

Table 4.3: *Bivariate correlation analysis of departmentalization and idea exploration*

		Work_Spec	Depmntalization	Formalization	Idea_Exp	Idea_Gen	Idea_Champ	Idea_Imp1	Idea_Imp2	Env_Conc1	Env_Conc2
Work_Spec	Pearson Correlation	1	-.145	.186	-.038	-.084	-.094	.084	-.058	-.045	.085
	Sig. (2-tailed)		.130	.051	.694	.379	.328	.380	.542	.642	.374
	N	111	111	111	111	111	111	111	111	111	111
Depmntalization	Pearson Correlation	-.145	1	.018	.187*	.154	.033	.105	-.001	.146	-.004
	Sig. (2-tailed)	.130		.854	.050	.107	.732	.275	.991	.126	.968
	N	111	111	111	111	111	111	111	111	111	111
Formalization	Pearson Correlation	.186	.018	1	.068	.156	.056	.144	.145	.129	.016
	Sig. (2-tailed)	.051	.854		.481	.101	.560	.132	.129	.178	.866
	N	111	111	111	111	111	111	111	111	111	111
Idea_Exp	Pearson Correlation	-.038	.187*	.068	1	.393**	.439**	.395**	.334**	.323**	.238*
	Sig. (2-tailed)	.694	.050	.481		.000	.000	.000	.000	.001	.012
	N	111	111	111	111	111	111	111	111	111	111
Idea_Gen	Pearson Correlation	-.084	.154	.156	.393**	1	.712**	.461**	.675**	.510**	.499**
	Sig. (2-tailed)	.379	.107	.101	.000		.000	.000	.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111
Idea_Champ	Pearson Correlation	-.094	.033	.056	.439**	.712**	1	.516**	.532**	.490**	.417**
	Sig. (2-tailed)	.328	.732	.560	.000	.000		.000	.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111
Idea_Imp1	Pearson Correlation	.084	.105	.144	.395**	.461**	.516**	1	.376**	.509**	.417**
	Sig. (2-tailed)	.380	.275	.132	.000	.000	.000		.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111
Idea_Imp2	Pearson Correlation	-.058	-.001	.145	.334**	.675**	.532**	.376**	1	.346**	.328**
	Sig. (2-tailed)	.542	.991	.129	.000	.000	.000	.000		.000	.000
	N	111	111	111	111	111	111	111	111	111	111
Env_Conc1	Pearson Correlation	-.045	.146	.129	.323**	.510**	.490**	.509**	.346**	1	.685**
	Sig. (2-tailed)	.642	.126	.178	.001	.000	.000	.000	.000		.000
	N	111	111	111	111	111	111	111	111	111	111
Env_Conc2	Pearson Correlation	.085	-.004	.016	.238*	.499**	.417**	.417**	.328**	.685**	1
	Sig. (2-tailed)	.374	.968	.866	.012	.000	.000	.000	.000	.000	
	N	111	111	111	111	111	111	111	111	111	111

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

From this table only one relationship has significance. This relationship is the one between departmentalization and idea exploration. The correlation coefficient between the two came out to be .187, illustrating a positive but weak association. What this means is that when employees agree that there is more group work over individual assignments, there is slightly more idea exploration. What is surprising about these results is that none of the other variables for organizational structure resulted in any significant relationships. What can be assumed from this outcome, then, is that organizational structure has very little influence on sustainable innovative work behavior on its own.

4.2 Network Analysis Results – Effects of Social Ties

As previously covered in chapter 3, the mediating variables (cross-unit ties and strength of ties respectively) were analyzed using a network analysis. Before moving forward it is important to state that all data from the social network analysis is to be interpreted with caution. Because the entire network was not complete, potential biases are expected to cause issues with accuracy and interpretation.

4.2.1 Cross-Unit Ties

As detailed in Chapter 3, cross-unit ties were recorded via the company survey. Respondents were asked to select whether or not they had had contact with each of the company's department's within the last year. The results of this data are shown in the network diagram below.
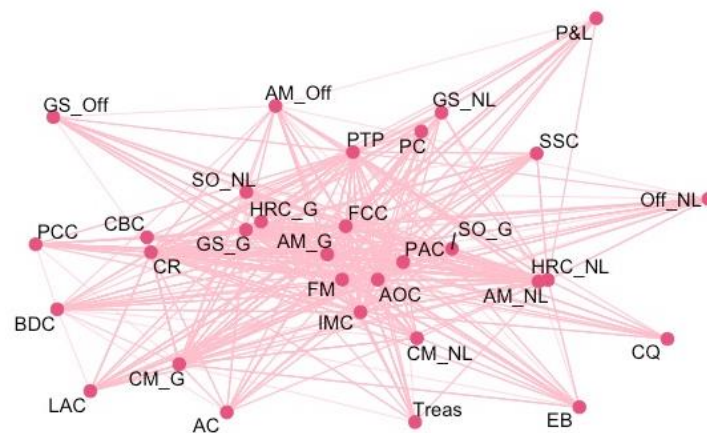

Figure 4.1: *TenneT's Cross-Unit Ties Network*

All of the dots (also known as nodes) on the graph represent a department, and the lines represent the number of ties each department has. The departments on the outside of the network are located around the periphery, while those more central are, naturally, more in the middle. The two main statistics that will be used in this analysis are focused around centrality. The first, mean degree, denotes the average number of links that pass through the nodes. The second is mean betweenness which measures the average number of unique paths that pass through the nodes. Both are crucial for determining the importance of a node within a network. There are three different roles that nodes can be grouped into based on their mean degree and mean betweenness illustrated by the table below. These roles provide the basis in which these results will be analyzed.

Table 4.4: *Roles of social network actors,* "Social Network Analysis: How To Guide"

Role	Betweeness (Unique links to others in the network)	Degree (Connected to many individuals)	Characteristics
Gatekeepers	↑ Higher	↓ Lower	• May play an important role in activity, but not much information is held on them • Removal may fragment networks
Highly visible figures	↓ Lower	↑ Higher	• May have information about many others in the network • May be involved in lots of activity in the network, but do not play a unique role
Central figures	↑ Higher	↑ Higher	• Very visible and central role • Key figures that may be focused on to fragment networks and to gather information

After looking at both sets of scores, Asset Management Germany scores highest, presenting itself as a key player within this network. However, this could be because the majority of the respondents were from this department, therefore skewing the data. Regardless, it interesting to see how these 16 departments interact with the others.

Table 4.5: *Cross unit ties: centrality scores*

Department	Mean Degree Score	Mean Betweenness Score
AM_G	1010	0.1378139851
AM_NL	142	0.0001638692
AOC	390	0.0132734040
AC	111	0
BDC	142	0.0001638692
CQ	173	0.0006554767
CR	359	0.0104876279

CM_G	359	0.0104876279
CM_NL	111	0
EB	111	0
FM	297	0.0058992907
FCC	483	0.0235971627
GS_G	390	0.0132734040
GS_NL	111	0
GS_Off	111	0
HRC_G	111	0
HRC_NL	328	0.0080295901
IMC	359	0.0104876279
LAC	111	0
Off_NL	111	0
PTP	235	0.0026219070
P&L	111	0
PC	111	0
PCC	111	0
PAC	266	0.0040967296
SSC	111	0
SO_G	111	0
SO_NL	142	0.0001638692
TREAS	111	0
CBC	111	0
AM_Off	142	0.0001638692

4.2.2 Strength of Ties

Like cross-unit ties, tie strength was also recorded via the company survey. Respondents were asked to self-report their level of intimacy with each department in the company whether it was in a professional working relationship capacity or even just a friendly one. The results of this data are shown in the network diagram below.
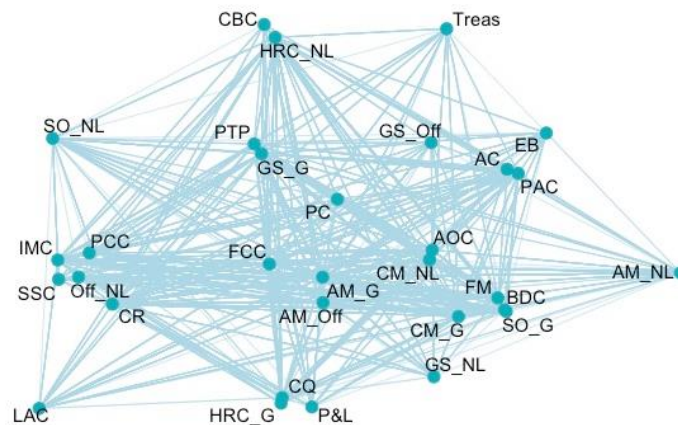

Figure 4.2: *TenneT's Strength of Ties Network*

What can be noticed right away is that nodes in this graph are different from those in the cross-unit ties graph. Most notably, there are actual groupings of departments on the periphery that did not exist in the other one. This provides some insights into which departments are most often in contact with one another. What is most helpful for understanding the results of this graph, perhaps, is to think of these groupings like cliques in a high school lunch room. Each department is distinct in their position and group, though they can and do interact with those around them. Though this graph can lead to insights on the intimacy and interactions between departments, it does not explicitly show which department is a crucial player in the network. For this we need to look back at departments' mean degree and mean betweenness scores.

Table 4.6: *Strength of ties: centrality scores*

Department	Mean Degree Score	Mean Betweenness Score
AM_G	526	1.610949e-01
AM_NL	76	5.267747e-05
AOC	246	2.466510e-02
AC	56	0
BDC	63	1.737684e-04
CQ	40	0
CR	240	1.724183e-02
CM_G	188	9.115724e-03
CM_NL	72	0
EB	55	1.365113e-05
FM	198	1.847191e-02
FCC	367	8.673062e-02
GS_G	201	1.638389e-02
GS_NL	69	2.730226e-06
GS_Off	44	0
HRC_G	81	0
HRC_NL	184	1.783101e-02
IMC	195	1.447871e-02
LAC	76	0
Off_NL	51	0
PTP	181	1.219802e-02
P&L	51	0
PC	63	0
PCC	58	0
PAC	155	4.773633e-03
SSC	72	0
SO_G	72	0
SO_NL	72	5.092384e-04
TREAS	42	0
CBC	59	0
AM_Off	77	1.705870e-04

Once again when looking at the results, Asset Management Germany comes out to be a crucial actor within the network. This means that not only do those who participated in the study interact with this department but they also feel closest to them. This again is likely due to the fact that the majority of respondents were from this department. What does this mean for sustainable innovative work behavior then? Well, their position in this network plays an important role in terms of cross-unit ties because they are the most in contact with the other departments in the company. This means that they have the most potential for learning and translating things learned from one department to others. Furthermore, their high level of intimacy increases the chances that knowledge is transferred successfully. So, based on these results Asset Management Germany is a crucial node in this network and likely contribute positively to sustainable innovative work behavior.

4.2.3 Effects on Sustainable Innovative Work Behavior

Given that there were no questions on the survey regarding the interaction between social ties and sustainable innovative work behavior, information was gathered from the exploratory interviews. What was uncovered was that managers played a role in innovation behavior. One respondent recounts "…I think the people that give you more of a feeling like you can share with them are less about the rules and regulations than the person and the situation" which, according to them gives the impression that they "want to fight for you" and "makes you want to work harder for TenneT". This more social and warm approach in managerial style, they added, "Makes me feel much more that I'm sharing much more with my manager" which has positive benefits. This kind of intimacy leads to stronger social ties, and allows employees to be more open. Which is important, as another respondent points out "You need to create an environment that's open. When I started AM made me afraid to say something because maybe I look stupid – but now I don't feel that way" which they attribute to increased collaborative work. So, it can be concluded that cross-unit ties and strong ties between managers and their workers positively impacts innovation.

4.2 Sustainability Culture

4.1.3 Effects on Absorptive Capacity

In order to begin understanding the effects sustainability culture has on absorptive capacity, it is beneficial to understand what level they are at within the company. That is, is there a high amount of sustainability culture or is it on the lower end? Furthermore, what is the overall level of absorptive capacity? The descriptive statistics below will offer the necessary insights before examining the significant correlations between one another.

Table 4.7: *Sustainability Culture Descriptive Statistics*

	Mean	Std. Deviation
Comp_Perc1	3.76	.823
Comp_Perc2	3.46	.892
CSR_Knwl	2.67	1.115
CSR_Und	2.68	1.097

Looking at the descriptive statistics it can be determined that the perception of the company's environmentalism is neither weak nor strong. For example, the mean response for whether or not employees felt that TenneT is a strong leader in environmental efforts for the energy industry was 3.76 with a standard deviation of .82. While this leans more towards an overall "Agree" sentiment, there is also a solid "Neutral" standing given that the lowest score was around 3. This leaves the impression that employees are somewhat positive TenneT is a strong leader in their environmental efforts, but not completely confident in this fact. A similar trend is shown in the second variable measuring whether or not employees felt that TenneT does a great deal to reduce their environmental impact. The difference, though, is that the results here were more neutral coming out to a mean of 3.46 and a standard deviation of .89. This shows that employees mostly felt that TenneT neither goes to great lengths nor makes no effort. However, another interpretation could be that neutral responses are a result of uncertainty on the participants side. It could have been that respondents chose "Neutral" as a result of lacking knowledge on the environmental efforts the company engages in. In this way the neither agree nor disagree, and essentially have no strong opinion.

Moving on to the variables focused on the knowledge and understanding of the company's CSR goals, the means are significantly lower. Both variables came out with a mean around 2.68 with a standard deviation around 1.1. This means that the highest score on average was a 3.6, and the lowest, a 1.6. So, very few employees felt that they knew and understood the CSR policy and ambition goals well. If this was the case there would have been more responses with a score of 5 ("Strongly Agree") and the mean would have been higher.

Taking each of these variables into consideration, it can be concluded that TenneT's sustainability culture is more weak than it is strong. Using the gradient from chapter 3 is perhaps an easier way to visualize it. Based off the data, it can be concluded that employees do feel that TenneT makes efforts for environmentalism to some extent, but when it comes to knowing and understanding the company's environmental goals and values they are more in the dark. So the combination of limited awareness and general feeling that the company does make some environmental efforts leaves the level of TenneT's sustainability culture somewhere between weak and moderate. This position has been denoted using a yellow star in figure 4.3
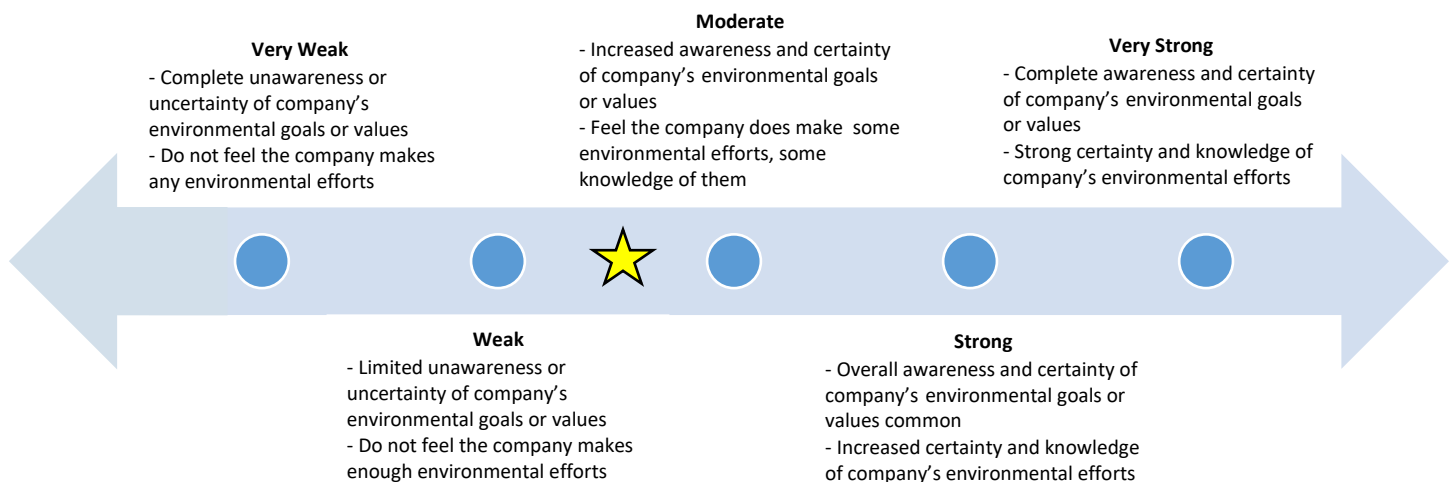

Figure 4.3: *Sustainability Culture Gradient*

Now that the level of sustainability culture has been determined, it is time to look at absorptive capacity. The results of the survey are shown below.

Table 4.7: *Absorptive Capacity Descriptive Statistics*

	Mean	Std. Deviation
P_ACP1	3.86	.977
P_ACP2	3.36	.980
R_ACP1	3.98	.774
R_ACP2	3.98	.809

In comparison to the sustainability culture variables, the absorptive capacity variables had a much higher average overall. Three out of the four variables were close to or very much at a score of 4 with standard deviations between .7 and .9. So, for these variables, the lowest score was a 3 and the highest, a 5. What does this say about absorptive capacity then? Well, looking at the first high scoring variable, it shows that many employees agree with the statement that they do regularly visit or contact other departments to acquire new knowledge. This is an aspect of potential absorptive capacity and increases the chances that an employee will have new knowledge to bring in and apply to their own work or problem solving. The other variable connected to this type of absorptive capacity was the one out of the group that was the least high scoring. This variable measured whether employees regularly attended presentations of topics that were outside of their department focus. It had a mean of 3.36 and a standard deviation of .98. Given the neutrality of the responses, it can be assumed that employees do not always engage in this type of behavior but rather just on some occasions if at all.

After potential absorptive capacity, there are two measures of realized absorptive capacity that both have a mean score of 3.98. The first corresponds to whether employees feel they quickly recognize the usefulness of new knowledge in line with what is existing or not while the second asks employees to answer whether they feel they often try to suggest improvements when new knowledge applies. These high scores show that most employees agree with both of these sentiments though it is important to note the potential for self-reporting bias here. Self-reporting bias is a phenomenon in which respondents under-report inappropriate or negative behaviors and over-report favorable ones (Donaldson & Grant, 2002). This is especially common within organizational behavior research due to some fear amongst workers that, in one way or another, their employer may gain access to their responses (Donaldson & Grant, 2002). For the purpose

of these results, however, the responses will be perceived as an accurate representation of actual behavior.

Looking at the results from both potential and realized absorptive capacity it can be concluded that the level of individual absorptive capacity is on the higher end. This, in theory, is influenced by the company's sustainability culture. Like organizational structure, a bivariate correlation analysis was conducted in order to get a better understanding of just how much and in what way. The results of this analysis are shown in the table below.

Table 4.8: *Correlations between sustainability culture and absorptive capacity*

Correlations

		P_ACP1	P_ACP2	R_ACP1	R_ACP2	Comp_Perc1	Comp_Perc2	CSR_Knwl	CSR_Und
P_ACP1	Pearson Correlation	1	.460**	.345**	.388**	-.007	.082	.058	.086
	Sig. (2-tailed)		.000	.000	.000	.939	.390	.542	.369
	N	111	111	111	111	111	111	111	111
P_ACP2	Pearson Correlation	.460**	1	.308**	.215*	-.026	-.025	.136	.093
	Sig. (2-tailed)	.000		.001	.024	.790	.797	.155	.333
	N	111	111	111	111	111	111	111	111
R_ACP1	Pearson Correlation	.345**	.308**	1	.507**	.079	.144	.056	.154
	Sig. (2-tailed)	.000	.001		.000	.412	.133	.558	.107
	N	111	111	111	111	111	111	111	111
R_ACP2	Pearson Correlation	.388**	.215*	.507**	1	-.020	.125	.084	.106
	Sig. (2-tailed)	.000	.024	.000		.832	.191	.381	.268
	N	111	111	111	111	111	111	111	111
Comp_Perc1	Pearson Correlation	-.007	-.026	.079	-.020	1	.488**	.119	.133
	Sig. (2-tailed)	.939	.790	.412	.832		.000	.214	.163
	N	111	111	111	111	111	111	111	111
Comp_Perc2	Pearson Correlation	.082	-.025	.144	.125	.488**	1	.201*	.228*
	Sig. (2-tailed)	.390	.797	.133	.191	.000		.034	.016
	N	111	111	111	111	111	111	111	111
CSR_Knwl	Pearson Correlation	.058	.136	.056	.084	.119	.201*	1	.833**
	Sig. (2-tailed)	.542	.155	.558	.381	.214	.034		.000
	N	111	111	111	111	111	111	111	111
CSR_Und	Pearson Correlation	.086	.093	.154	.106	.133	.228*	.833**	1
	Sig. (2-tailed)	.369	.333	.107	.268	.163	.016	.000	
	N	111	111	111	111	111	111	111	111

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

While there are many relationships represented, only those with significant correlations will be discussed. The assumption made in this study is that sustainability culture influences absorptive capacity in that it creates an environment in which knowledge and ideas regarding sustainability would be exchanged more freely, thereby increasing new knowledge to other employees who then use this knowledge to engage in some form of sustainable innovative work behavior.

However, when analyzing the correlations no such relationship between the variables is determined. So, the relationship between absorptive capacity and sustainability culture is now considered null.

4.1.3 Effects on Sustainable Innovative Work Behavior

Based on the theories covered in Chapter 2, it is hypothesized that sustainability culture influences sustainable innovative work behavior positively. It is assumed that when a work force shares a common set of beliefs about their company's environmental goals and or values this will affect their behavior. In this case, it affects their level of sustainable innovation. In order to investigate whether there is any relationship between sustainability culture and sustainable innovative work behavior, a bivariate analysis was done.

Table 4.9: *Bivariate Analysis of Sustainability Culture and Sustainable Innovative Work Behavior*

		Comp_Perc1	Comp_Perc2	CSR_Knwl	CSR_Und	Idea_Exp	Idea_Gen	Idea_Champ	Idea_Imp1	Idea_Imp2	Env_Conc1	Env_Conc2
Comp_Perc1	Pearson Correlation	1	.488**	.119	.133	-.080	-.092	-.063	-.192*	-.091	-.101	-.120
	Sig. (2-tailed)		.000	.214	.163	.405	.337	.514	.044	.343	.293	.211
	N	111	111	111	111	111	111	111	111	111	111	111
Comp_Perc2	Pearson Correlation	.488**	1	.201*	.228*	-.007	.045	.043	-.021	.047	.042	.096
	Sig. (2-tailed)	.000		.034	.016	.944	.638	.656	.828	.623	.663	.317
	N	111	111	111	111	111	111	111	111	111	111	111
CSR_Knwl	Pearson Correlation	.119	.201*	1	.833**	.102	.213*	.191*	.014	.153	.174	.151
	Sig. (2-tailed)	.214	.034		.000	.286	.025	.045	.885	.108	.067	.114
	N	111	111	111	111	111	111	111	111	111	111	111
CSR_Und	Pearson Correlation	.133	.228*	.833**	1	.143	.197*	.181	.087	.154	.179	.146
	Sig. (2-tailed)	.163	.016	.000		.136	.038	.057	.361	.108	.060	.126
	N	111	111	111	111	111	111	111	111	111	111	111
Idea_Exp	Pearson Correlation	-.080	-.007	.102	.143	1	.393**	.439**	.395**	.334**	.323**	.238*
	Sig. (2-tailed)	.405	.944	.286	.136		.000	.000	.000	.000	.001	.012
	N	111	111	111	111	111	111	111	111	111	111	111
Idea_Gen	Pearson Correlation	-.092	.045	.213*	.197*	.393**	1	.712**	.461**	.675**	.510**	.499**
	Sig. (2-tailed)	.337	.638	.025	.038	.000		.000	.000	.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111	111
Idea_Champ	Pearson Correlation	-.063	.043	.191*	.181	.439**	.712**	1	.516**	.532**	.490**	.417**
	Sig. (2-tailed)	.514	.656	.045	.057	.000	.000		.000	.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111	111
Idea_Imp1	Pearson Correlation	-.192*	-.021	.014	.087	.395**	.461**	.516**	1	.376**	.509**	.417**
	Sig. (2-tailed)	.044	.828	.885	.361	.000	.000	.000		.000	.000	.000
	N	111	111	111	111	111	111	111	111	111	111	111
Idea_Imp2	Pearson Correlation	-.091	.047	.153	.154	.334**	.675**	.532**	.376**	1	.346**	.328**
	Sig. (2-tailed)	.343	.623	.108	.108	.000	.000	.000	.000		.000	.000
	N	111	111	111	111	111	111	111	111	111	111	111
Env_Conc1	Pearson Correlation	-.101	.042	.174	.179	.323**	.510**	.490**	.509**	.346**	1	.685**
	Sig. (2-tailed)	.293	.663	.067	.060	.001	.000	.000	.000	.000		.000
	N	111	111	111	111	111	111	111	111	111	111	111
Env_Conc2	Pearson Correlation	-.120	.096	.151	.146	.238*	.499**	.417**	.417**	.328**	.685**	1
	Sig. (2-tailed)	.211	.317	.114	.126	.012	.000	.000	.000	.000	.000	

The table shows four interesting results. The first two have to do with idea generation. Of all of the variables associated with sustainability culture, knowledge and understanding of the company's CSR goals and ambitions were both positively correlated with idea generation at a .05 significance level. Knowledge of the company's CSR goals resulted in a correlation coefficient of .213 which is positive and represents a weak and or moderate correlation. The understanding of the company's CSR goals was similar, though it's correlation coefficient was somewhat lower (.197) so it has a somewhat weaker association. So, from this data it can be said with some confidence that idea generation increases somewhat when there is better knowledge and understanding of the company's CSR goals and ambitions.

Also interesting was the correlation between idea championing and CSR knowledge. Between these two there was a correlation coefficient of .191, illustrating a positive but relatively weak association. What this finding shows is that as CSR knowledge increases, employees are slightly more likely to bring forth environmentally innovative ideas.

Finally there is the correlation between employees' perception of TenneT as a leader for environmental efforts in the energy industry and idea implementation. The correlation coefficient came out to -.192 which demonstrates a negative and weak association. So, as the belief that TenneT is a leader in environmental efforts increases, the less employees feel it is important for new environmental ideas to be implemented and adapted to. Because this is a weak association, the relationship could exist due to the logic that if TenneT is a leader in environmental efforts, then new ideas regarding sustainability are already being implemented and employees then don't feel as strongly because it is already being done.

When looking at the overall effects of these results, it can be determined that sustainability culture does increase sustainable innovative work behavior, though maybe in more subtle ways.

4.3 Sustainable Innovative Work Behavior

Sustainable innovative work behavior was operationalized into 7 variables, each corresponding with their own question within the survey. Given the responses, the current level of employees'

sustainable innovative work behavior will be determined. Like sustainability culture, sustainable innovative work behavior will be visualized on a spectrum.

Table 4.10: *Sustainable Innovative Work Behavior Descriptive Statistics*

	Mean	Std. Deviation
Idea_Exp	3.64	.932
Idea_Gen	3.15	.946
Idea_Champ	3.43	.940
Idea_Imp1	4.09	.781
Idea_Imp2	3.28	1.028
Env_Conc1	3.81	.889
Env_Conc2	3.85	.936

Looking at the weaker elements, we see that idea generation and one aspect of idea implementation scored just slightly above a "neutral" 3 and had standard deviations of about 1. This illustrates that employees do not feel strongly that they often try to come up with solutions to environmental issues nor have made efforts to adopt new ideas regarding sustainability in the past year. Those scoring somewhat higher are idea exploration (3.64) and idea championing (3.43). These higher mean scores indicate a higher frequency in "strongly agree" responses, making the behaviors associated with these variables more practiced. So, it is more common for employees to wonder how things can be improved to reduce environmental impact (exploration) and attempt to convince people to support ideas that do (championing). Scoring even higher were the questions measuring employees' level of environmental concern. Both had a mean score of around 3.8 and a standard deviation of .9. So it can be assumed that employees at TenneT do care somewhat significantly about their company's impact and make efforts to reduce their own environmental footprint. Finally, the highest mean score, a solid 4.09, corresponded with the other aspect of idea implementation. This measured whether or not employees felt it was important to have new ideas regarding sustainability implemented and adapted to. So, it can be concluded that employees do, on average, indeed feel this is case.

With these results, it is possible to determine TenneT's current level of sustainable innovative work behavior. For the purpose of this study, sustainable innovative work behavior is looked at as ranging from low to high. A low level corresponds with little to no curiosity, effort, or concern from employees on the environmental issues of the company nor any personal practices to reduce

their own impact. A high level, on the other hand coincides with a deep curiosity, effort, and concern from employees on the environmental issues of the company, as well an active attempt to reduce their own impact. A visual representation of this is found in figure ? and TenneT's position is denoted with a yellow star.
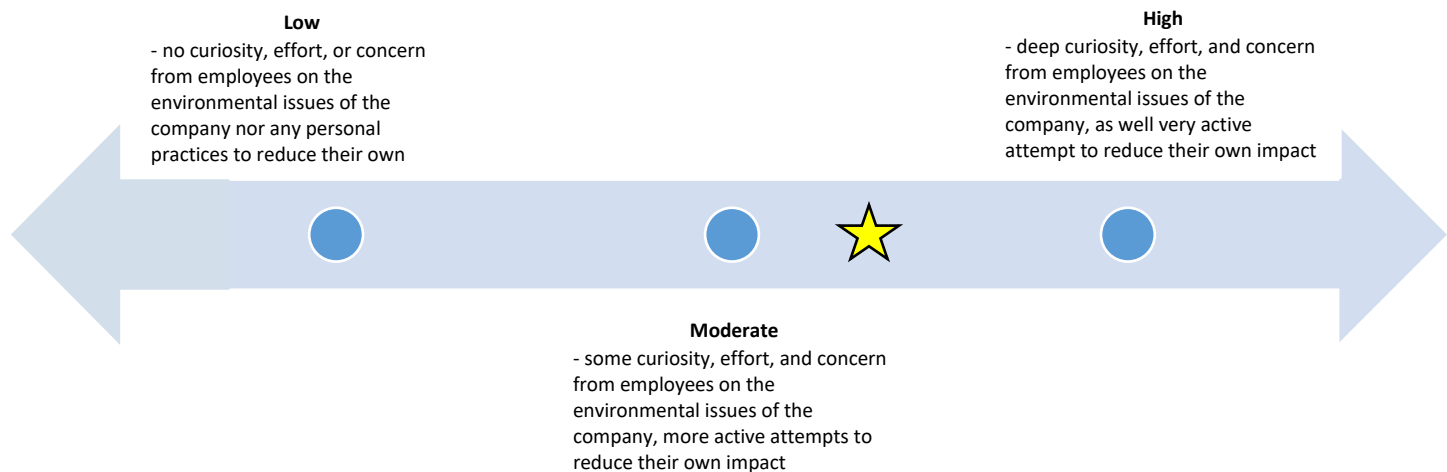

Low
- no curiosity, effort, or concern from employees on the environmental issues of the company nor any personal practices to reduce their own

High
- deep curiosity, effort, and concern from employees on the environmental issues of the company, as well very active attempt to reduce their own impact

Moderate
- some curiosity, effort, and concern from employees on the environmental issues of the company, more active attempts to reduce their own impact

Figure 4.3: *Sustainable Innovative Work Behavior Spectrum*

TenneT's overall level of sustainable innovative work behavior is deemed as slightly above moderate for a number of reasons. For one, curiosity and effort is present among employees as they do often wonder how things can be improved and try to convince other to support environmentally advantageous ideas, though this is not strong enough to move them past a moderate placement. In addition, the neutral standing employees have on their own attempts to come up with solutions to environmental issues or adopt new ideas regarding sustainability in the past year further solidify this position. What pushes TenneT past the moderate level, is the concern employees have for the impact the company makes on the environment, their attempts to reduce their own impact, and the importance they place on the adoption of sustainable ideas. All of which had mean scores close to, if not exactly, 4 corresponding with "agree", which was above the other averages. This more certain, solid opinion echoes assurance of these environmental values and practices which places TenneT more towards a higher level of sustainable innovative work behavior.

CHAPTER 5: DISCUSSIONAND CONCLUSION

In this chapter the results and their subsequent conclusions are made and discussed. First, the study's most significant findings are summarized and restated. From this point, reflections on the study's outcome and methods used will be made. Limitations and recommendations for further research are then explored. Finally, managerial implications will be considered and recommendations for TenneT (and other companies) will be made.

5.1 Points of Discussion

As with all theses, specific objectives were made during the research process that ultimate lead to the structure of this research. To refresh, the objectives of this thesis were as follows:

1. To identify potential barriers to (and/or catalysts for) the cultivation of sustainable innovative work behavior as they relate to organizational structure and sustainability culture.

2. To analyze the results of a company questionnaire to determine the relationships between organizational structure, sustainability culture, and sustainable innovative work behavior.

3. To assess and provide a measure of TenneT's current level of sustainable innovative work behavior.

4. To provide the company with a comprehensive report on the effect of structure and sustainability culture on their employees' ability to be environmentally innovative.

It can be noted that, each of these objectives were met within the study and have led to answers of the research questions, which will be restated for clarity now.

1. What is the current level of sustainability culture within TenneT?

The current level of sustainability within TenneT has been determined to be somewhere between weak and moderate. This position was determined by the combination of limited awareness and general feeling that the company does make some environmental efforts.

2. What is the effect of organizational structure on sustainable innovative work behavior?

Organizational structure did not appear to have much of an effect overall. Only one aspect of its operationalization actually correlated with the factors associated with sustainable innovative work behavior which was departmentalization. This factor measured whether departments

utilized more group work over individual work. It is explained in more detail later on why this affects innovation behavior.

3. What effect does a sustainability culture have on sustainable innovative work behavior?

Sustainability culture appeared to have the strongest effect on sustainable innovative work behavior due to the fact that each of the variables associated with its operationalization correlated in some way to it – even if the correlation was weak it still had statistical significance. The findings show that as sustainability culture increases, so does sustainable innovative work behavior.

4. Are there some departments that are more innovative than others? If so, why?

There was not a heavy focus on separating innovative behavior between departments as much as determining the level overall. There was, however, results showing that Asset Management Germany was the most central actor in the social network analysis for both cross-unit ties and strength of ties which has positive correlations theoretically with innovative behavior. So an assumption could be made that, out of the population sampled, Asset Management Germany is potentially the most innovative as a result of their network position.

While the research has lead to these answers, it could still use some improvement. In the following sections, reflections and limitations of this research will be discussed.

5.1 Limitations of Research

While this research has shed more light on the influences that sustainability culture and organizational structure have on innovative work behavior, it was not without fault. In the following section the methodological limitations of this study will be explored.

5.2.1 Data Collection

Data collection was made under the assumption that all employees, regardless of position, were the most important sources of knowledge. This was done with the intent to get a holistic view of sustainable innovative work behavior within the company. However, in the future, it could be done with only those in management positions, as they are the main points of contact for many

within the organization. It is possible that my research has encountered a "boundary specification problem" in that I may not have determined the appropriate set of actors (Laumann et al., 1983). As a result, there may have been a measurement error by oversaturating the sample with actors or connections that were erroneous. It should also be noted that respondents were asked only to indicate which departments they interacted with within the company, with no option to include external contacts. This would have had effects on several aspects of the data, namely the network analysis and overall absorptive capacity.

5.2.1 Research Sample

Once the data collection method was decided, there was the matter of selecting the research population. The original intention was to send the survey out to the entire organization, in order to get the highest response rate and accuracy. However, as previously mentioned, this was against company policy so half of the total number of departments were randomly selected to participate. The issues that arose with this method lie in the fact that each department has a varying size. So, while it was possible for everyone in a department of 8 to fill out the survey, their answers would be dwarfed by those from larger departments. This may have significantly skewed the data. It would have been helpful, therefore, to have weighted these different group sizes. This would have made the survey more equally representative of each group.

In a similar vein, even with over 500 emails sent, the response rate was much lower than needed for a survey, as well as for a social network analysis. The potential reason for this, according to my colleagues, could have been due to the length of the survey. In total there were 7 pages of questions, with each page having anywhere from 4-7 statements to respond to. That is, until the final page, where the information for the social network analysis was requested. This final page asked respondents to note frequency of contact *and* intimacy level to each of the 32 departments. According to the questionnaire platform Lamapoll, there were 182 participants that attempted the survey while only 111 completed it in its entirety. Had the final section not been as long, it is possible that there would have been more respondents.

5.2.3 Self-Reporting Bias

As previously mentioned in Chapter 4, self-reporting bias is a concern within this study. Because respondents under-report behaviors that would reflect poorly and over-report those that are appropriate or expected, inaccuracies are introduced into the data. This tendency lies in the belief that there is a remote possibility management could gain access or be able to identify responses. Measures were taken to ensure anonymity though, including consorting with an information and security officer to make sure the survey met the company's private information compliance standards. For this reason, education level and position were not included in the control variables. The fear of possible identification could have pursued, however, despite relaying the efforts to keep them safe. A solution for this, however, has suggested by Den Jong and Den Hartog (2010). They advocate for the inclusion of the managers perception. So, future research could benefit from a combination of self-rated measurement and supervisor rated measurement to achieve a more accurate and valid measurement of sustainable innovative work behavior.

5.2.3 Cross-Sectional Design

Cross sectional studies are a type of observational study that analyze data from a population at a specific point in time (Solem, 2015). Considering this study was only performed once over the period of a 6 month internship, it falls within this category. While these studies can be thorough and detailed in their own right, they do have predicative limitations. As pointed out by Carlson and Morrison (2009) the "primary limitation of the [cross-sectional] design is that because the exposure and the outcome are simultaneously assessed, there is generally no evidence of a temporal relationship between exposure and outcome". Therefore, it is impossible to determine a true causal relationship between the variables without a longitudinal study.

6.2 Recommendations for Further Research

Several recommendations can be made for further research. First, one of the relationships this research sought to examine was the effect of organizational structure on social ties. Because no questions were asked directly in the survey, it was difficult to quantify the relationship in the same way that was done with other variables or make concrete conclusions. Originally, the reason for omitting these kinds of questions was to avoid respondent fatigue. In retrospect, the

social network analysis could have either been done another time to circumvent this. Furthermore, it would be interesting to investigate how the nature of employees' function in their departments influences their social ties. For example, managers interact with the workers they oversee as well as their superiors. This could put them in a position in the network to have more cross-unit ties, which would increase their exposure to new knowledge and potentially lead to more sustainable innovative work behavior.

Another potentially interesting route for exploration would be to look at the total number of environmental innovations of a company over the years. This could be an added measure for determining the level of sustainable innovative work behavior. If there is information regarding which department the idea came from, insights could be made about the different levels of sustainable innovative work behavior from one department to another. Other methodological improvements, as mentioned in the earlier chapter, would be to include the entire population of a company and or weight the differences in department size in order to get more accurate results.

When looking over the exploratory interviews, some theoretical improvements came light. For example, some participants emphasized that it was not only the rules but also the managers enforcing the rules and the behavior of the other colleagues within the department that made a difference on innovative work behavior. This suggests that the inclusion of the strategic HR management would be valuable to include in the conceptual framework of future research. Due to the complex nature of human resource management, and the scope of this research, it was not included in this work.

 Overall, doing a single case study was also a limitation of this research. However, studying more companies or continuing the study at TenneT for a longer period of time was not a possibility due to the time restrictions of the program and my own personal timeline limits. That being said it would be interesting if another study would try and do this. In this research the focus was on a broad understanding of sustainable innovative work behavior as I defined it. While this allows for a more open discourse it might be a limitation for measurement purposes. It would be helpful if sustainable innovative work behavior was explored more deeply so that it could be more formally, and fully defined.

Finally, it would have been helpful to have included more in the exploratory interviews. Their original intent focused on just one aspect of the conceptual model: organizational structure. While conclusions were able to have been made using the information gathered in them, it would have been beneficial if more information was covered. While surveys aid in quantifying and backing up hypothesis via statistical significance, interviews provide context on the variables in reality and can lead to other realizations numbers would not have provided. Which is what happened over the course of this study for me. Still, it would have been advantageous to have included questions related to the other variables. Another alternative would have been to execute a different set of interviews covering the other variable items, however restrictions on time prevented this.

7.3 Managerial Implications and Recommendations for TenneT

This thesis examined the idea of sustainable innovative work behavior by considering the organizational structure and culture in which it operates. These findings, therefore, are not only interesting for the organization it took place in, but also for other knowledge-intensive organizations (or industries) where innovation is key for solving environmental issues of production and or operation. These results can be used to highlight the influences associated with increasing innovation behavior, namely in this case, sustainability culture.

What is suggested for TenneT, then is to work on increasing sustainability culture. This is not something new, however. In fact, it was an ongoing practice for the CSR team during my time of employment. The CSR team worked to achieve this in a number of ways. In order to increase awareness and understanding of the CSR goals and ambitions, they are outlined and posted on the TenneT website. Furthermore, there is a page within the employees' intraweb specifically for CSR within TenneT and provides a space where employees receive updates, posts, and or articles detailing TenneT's efforts past and present. It is also a space where questions can be asked and suggestions made. In addition, there have also been a number of lunch-time presentations. One presentation series, for example, was titled "broodje duurzam" where the goals for TenneT's sustainability program was discussed and ideas were crowd-sourced from the attendees. This was conducted only within the headquarters in Arnhem, though.

During my internship I suggested that presentations be extended to all offices, not only headquarters, so that the different backgrounds and pools of knowledge could be taken advantage of. This, I think, is where more improvement could be made. Most of the focus falls on the headquarters in the Netherlands and in Germany, but the regional offices and substation employees are not as well informed as they are not as often visited. There are open invitations for lectures, but when some offices are up to 2 hours away it seems unreasonable for the effort to be made to show for them. The solution up until this point has been to share things online, via the aforementioned articles and the occasional video.

The CSR group on the intra-net is voluntary to join, but some employees do not even utilize the intra-web on a day to day basis. Therefore, the information is only relayed to those with heightened interest or involvement. My prediction would be that, if more efforts were made to include those in the regional offices, there would be more investment and better general knowledge of the CSR goals and ambitions. In order to do this, it would be advantageous to have more employees in the CSR team. Currently there is only one person in charge of the CSR operations, although she does work with a colleague from the innovation team and employ one or two interns from time to time. Travelling is part of the job, but going to all of the regional offices and substations on even a semi-regular basis would detract from moving the CSR goals forward. Instead, I propose there are others included in the CSR team to communicate and market what is happening within the company, making a point to do so in person on a regular basis. This could open up a new perspective for employees, and with this new knowledge, new ideas could come forward thereby increasing innovation.

In a similar vein, sustainable innovative work behavior depends on employees' abilities to maximize the benefits of knowledge transfer for the formation of new ideas, therefore it would be beneficial for managers to take their department's absorptive capacity into account. Intentional attempts to increase this take the form of bridging opportunities. These bridging opportunities connect people across different networks, like the example mentioned in Chapter 4 with the network model style of project management. This also falls in line with departmentalization, which as revealed, positively correlates sustainable innovative work behavior. So, making group work more common practice is also a suggestion worth noting.

8.4 Conclusion

The main research question of this research was: *What effects do organizational structure and sustainability culture have on sustainable innovative work behavior within the transnational T.S.O. TenneT?* In the previous chapters, the theories behind these variables were explained and operationalized. The results, gathered through exploratory interviews and a questionnaire, have been presented together with the current measures and suggestions for improvement. The assumption was that each aspect of the conceptual model were connected and had a positive relationship. What was uncovered, however, is that organizational structure does not have as much of an influence as expected. Though the assumption did come through for sustainability culture.

What was also interesting was the above average level of sustainable innovative work behavior currently in place within TenneT. While this may be a positive revelation for the company, there is always room for improvement. I suspect also that this study will become more important as the environmental laws become more stringent and circular economy efforts are pressured. In conclusion, the findings indicate that if the goal is to promote sustainable innovative work behavior, increasing group work and sustainability culture is the key. Some barriers to sustainable innovative work behavior, therefore, would be a more formalized organizational structure and limited communication or transparency of environmental efforts.

WORKS CITED

Abram, N. J., McGregor, H. V., Tierney, J. E., Evans, M. N., McKay, N. P., Kaufman, D. S., ... & Steig, E. J. (2016). Early onset of industrial-era warming across the oceans and continents. Nature, 536(7617), 411.

Argote, L., McEvily, B., & Reagans, R. (2003). Managing knowledge in organizations: An integrative framework and review of emerging themes. *Management science*, 49(4), 571-582.

Baer, H. (2008). Global warming as a by-product of the capitalist treadmill of production and consumption-The need for an alternative global system. The Australian Journal of Anthropology, 19(1), 58.

Bell, G. D. (1967). Determinants of span of control. American Journal of Sociology, 73(1), 100-109.

Burt, R. S. (2003). Social origins of good ideas. *Unpublished manuscript. Available at http://gsbwww. uchicago. edu/fac/ronald. burt/research*.

Bryman, A. (2015) Social Research Methods. 5thedition. Oxford University Press. ISBN: 9780199689453

Carr, A., Dunham, C., Gieseke, J., Imerman, E., Kroma, M., Link, J., . . . Szymanski, M. (1996). Rogers: Diffusion of innovations, (4th edition). Rural Sociology, 61(2), 381-382.

Carlson, M. D., & Morrison, R. S. (2009). Study design, precision, and validity in observational studies. Journal of palliative medicine, 12(1), 77-82.

Cilliers, F., & Greyvenstein, H. (2012). The impact of silo mentality on team identity: An organisational case study. SA Journal of Industrial Psychology, 38(2), 75-84.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 35(1), 128-152.

Cohen, W. M., & Levinthal, D. A. (1989). Innovation and learning: the two faces of R & D. *The economic journal*, *99*(397), 569-596.

Crespo, A. H., & del Bosque, I. R. (2005). Influence of corporate social responsibility on loyalty and valuation of services. Journal of business ethics, 61(4), 369-385.

Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. Journal of Business and Psychology, 25(3), 325-334.

Cox Jr, T. H., & Finley, J. A. (1995). An analysis of work specialization and organization level as dimensions of workforce diversity.

Damanpour, F., & Gopalakrishnan, S. (1998). Theories of organizational structure and innovation adoption: the role of environmental change. *Journal of Engineering and technology management*, *15*(1), 1-24.

Davenport, C. (2015). Nations approve landmark climate accord in Paris. New York Times, 12.

Dembkowski, S., & Hanmer-Lloyd, S. (1994). The environmental value-attitude-system model: A framework to guide the understanding of environmentally-conscious consumer behaviour. Journal of marketing management, 10(7), 593-603.

De Jong, J. P., & Den Hartog, D. N. (2008). Innovative work behavior: Measurement and validation. *EIM Business and Policy Research*, *8*(1), 1-27.

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

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. Journal of business and Psychology, 17(2), 245-260.

Eichhorn, B. R. (2014). Common method variance techniques. Cleveland State University, Department of Operations & Supply Chain Management. Cleveland, OH: SAS Institute Inc.

Fosfuri, A., & Tribó, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. Omega, 36(2), 173-187.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, *12*(2), 219-245.

Fritsch, M., & Kauffeld-Monz, M. (2010). The impact of network structure on knowledge transfer: an application of social network analysis in the context of regional innovation networks. *The Annals of Regional Science*, 44(1), 21.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360-1380.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*(163-194), 105.

Hansen, M. T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. Administrative science quarterly, 44(1), 82-111.Yli-Renko H, Autio E, Sapienza HJ. Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. Strateg Manage J 2001 22(6/7):587–613.

Hall, R. (2012). Mixed methods: In search of a paradigm. Vortrag. Download (am 10.01. 2013) unter: http://www. auamii. com/proceedings_Phuket_2012/Hall. pdf.

Hall, R. H., Johnson, N. J., & Haas, J. E. (1967). Organizational size, complexity, and formalization. American Sociological Review, 903-912.

Henson, R. K. (2001). Understanding internal consistency reliability estimates: A conceptual primer on coefficient alpha. Measurement and evaluation in counseling and development, 34(3), 177-189.

Janssen, O. (2000) Job Demands, Perceptions of Effort-Reward Fairness, and Innovative Work Behavior. *Journal of Occupational and Organizational Psychology*, **73**, 287–302.

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

Lazer, D., & Katz, N. (2003). Building effective intra-organizational networks: The role of teams.

Mann, M. E., Zhang, Z., Hughes, M. K., Bradley, R. S., Miller, S. K., Rutherford, S., & Ni, F. (2008). Proxy-based reconstructions of hemispheric and global surface temperature variations over the past two millennia. Proceedings of the National Academy of Sciences, 105(36), 13252-13257.

Maurer, I., Bartsch, V., & Ebers, M. (2011). The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. *Organization Studies*, 32(2), 157-185.

McDonough, W., & Braungart, M. (2010). Cradle to cradle: Remaking the way we make things. North point press.

Meyer, A. D., & Goes, J. B. (1988). Organizational assimilation of innovations: A multilevel contextual analysis. *Academy of management journal*, *31*(4), 897-923.

Mohapeloa, T. (2017, July). Effects of silo mentality on corporate ITC's business model. In *Proceedings of the International Conference on Business Excellence* (Vol. 11, No. 1, pp. 1009-1019). De Gruyter Open.

Nelson, R. R., & Winter, S. G. (1977). In search of a useful theory of innovation. In *Innovation, economic change and technology policies* (pp. 215-245). Birkhäuser, Basel.

Pierce, J. L., & Delbecq, A. L. (1977). Organization structure, individual attitudes and innovation. *Academy of management review*, *2*(1), 27-37.

Rifkin, J. (2012). The third industrial revolution: How the internet, green electricity, and 3-d printing are ushering in a sustainable era of distributed capitalism. *World Financial Review*, *1*(1), 4052-4057.

Rogers, E. M. (1962). *Diffusion of innovations*. New York: Free Press of Glencoe.

Saunders, M.N.K., Lewins, P. & Thornhill, A. (2015). Research methods for business students. 7th edition. Pearson. ISBN: 97812920166

Sapolsky, H. M. (1967). Organizational structure and innovation. *The Journal of Business*, *40*(4), 497-510.

Scott, J., & Carrington, P. J. (2011). *The SAGE handbook of social network analysis*. SAGE publications.

Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. Organizational research methods, 13(3), 456-476.

Solem, R. C. (2015). Limitation of a cross-sectional study. American Journal of Orthodontics and Dentofacial Orthopedics, 148(2), 205.

Tamer Cavusgil, S., Calantone, R. J., & Zhao, Y. (2003). Tacit knowledge transfer and firm innovation capability. *Journal of business & industrial marketing*, *18*(1), 6-21.

Tortoriello, M., & Krackhardt, D. (2010). Activating cross-boundary knowledge: The role of Simmelian ties in the generation of innovations. *Academy of Management Journal*, *53*(1), 167-181.

Tortoriello, M., Reagans, R., & McEvily, B. (2012). Bridging the knowledge gap: The influence of strong ties, network cohesion, and network range on the transfer of knowledge between organizational units. *Organization Science*, 23(4), 1024-1039.

Tortoriello, M. (2015). The social underpinnings of absorptive capacity: The moderating effects of structural holes on innovation generation based on external knowledge. *Strategic Management Journal*, 36(4), 586-597.

Tsai, W. (2001). Knowledge transfer in intra-organizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of management journal*, 44(5), 996-1004.

Van den Ouweland, K. (2017). Intra-organizational networks for innovation: the effects of strong ties, absorptive capacity, and cross-unit knowledge transfer between individuals on innovative work behavior. *University of Tilburg thesis repository*.

Vanwelkenhuysen, J. (1998). The tender support system. Knowledge-based systems, 11(5-6), 363-372.

Van Wijk, R., Jansen, J. J., & Lyles, M. A. (2008). Inter-and intra-organizational knowledge transfer: a meta-analytic review and assessment of its antecedents and consequences. *Journal of management studies*, *45*(4), 830-853.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. Academy of management review, 27(2), 185-203.

Zhou, S. L., Smulders, S., & Gerlagh, R. (2018, January). Closing the loop in a circular economy: Saving resources or suffocating innovations. In 6th International Symposium on Environment Energy & Finance Issues, ISEFI 2018, Paris, France (pp. 24-25).

APPENDIX A: Complete List of Survey Questions

Research Question/Sub-question	Resulting Survey Question	Variable Measured
A. *What is the current organizational structure in TenneT?*	Topic A Sub-questions: 5. To what degree are activities subdivided into separate jobs? 6. On what basis will jobs be grouped together? 7. Where does the decision-making authority lie? 8. To what degree do rules and regulations direct employees and managers?	
1a	The activities in my department are significantly subdivided into separate jobs	Work specialization
2a	My department mostly utilizes group projects over individual work	Departmentalization
3a	My department follows rules and regulations very closely	Formalization
B. *What effect does organizational structure have on sustainable innovative work behavior?*	Topic B Sub-Questions: 4. Are the paths for sharing information clear and open? 5. Is there freedom within an individual's position/department to incorporate new ideas? 6. Do other departments feel close to the innovation/CSR department?	
1b	I know where to take my new ideas or solutions when I think of them	Clarity of communication pathways
2b	My position/department is flexible enough to incorporate new ideas	Flexibility/openness
3b	My department works closely with the innovation and/or CSR department	Network position (in relation to innovation/CSR)
D. *What effect does sustainability culture have on sustainable innovative work behavior?*	Topic D Sub-Questions: 5. How much do employees feel that sustainability is a part of the company's values? 6. How much do employees feel the company does to achieve sustainability? 7. How knowledgeable are the employees on the company's environmental efforts? 8. How much do employees understand the company's environmental efforts?	
1d	I feel that TenneT is a strong leader in environmental efforts for the energy industry	Perception of company as environmental leader in industry
2d	I feel that TenneT does a great deal to reduce their environmental impact of operations.	Perception of company's/department's effort to reduce environmental impact of operations
3d	I know the TenneT CSR policy and ambition goals well	Knowledge of CSR policy
4d	I understand the TenneT CSR policy and ambition goals well	Understanding of CSR policy

E. *What is the level of absorptive capacity of the individuals in each department?*	Topic E Sub-Questions: 3. How receptive is the individual to acquiring and assimilating external knowledge? 4. How capable is the individual to transforming and exploiting absorbed knowledge?	
1e	I regularly visit or contact other departments to acquire new knowledge	Frequency in seeking new knowledge opportunities (Potential absorptive capacity)
2e	I regularly attend presentations of topics that are outside my department focus	Frequency in attending new knowledge opportunities (Potential absorptive capacity)
3e	I quickly recognize the usefulness of new external knowledge to existing knowledge	Realized absorptive capacity
4e	I often try to suggest ways to improve the company or its product(s) when I encounter knowledge that provides inspiration to do so	Frequency of applying new knowledge to their field/department (Realized absorptive capacity)
F. *What is the current level of an individual's sustainable innovative work behavior?*	Topic F Sub-Questions: 4. How often does an individual come up with ideas that have an environmental focus? 5. How often does an individual bring and push for the implementation of environmentally friendly ideas? 6. What is the individual/departments general level of concern for the environment?	
1f	I wonder how things can be improved to reduce environmental impact	Idea exploration
2f	I often try to come up with solutions to environmental issues at hand	Idea generation
3f	I attempt to convince people to support an environmentally innovative idea and bring them forth environmentally innovative ideas when I can	Idea championing
4f	I feel it is important to have new ideas regarding sustainability implemented and adapted to	Idea implementation
5f	I have made efforts to adapt and implement new ideas regarding sustainability within the last year, or so	Idea implementation
6f	I care deeply about my own/department/company's environmental impact	Level of environmental concern
7f	I make an active effort to reduce my environmental footprint	Level of environmental concern

APPENDIX B. Exploratory Interview Questions + Response Notes

INTERVIEW QUESTIONS:

1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks are divided?
2. Do they group jobs together differently? As in, are there more projects versus individual work?
3. Who did/do individuals/groups report to? Is this different in your new department?
4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?

Added in later interviews:

7. How do you think sustainability culture affects employees ability to innovate?

INTERVIEW # 1

Individual Info:

1. Current Department: AOC
2. Previous department(s): Asset management NL
3. Length of time in the company: 16 or 17 years
   a. Asset management NL – 14 ½ - 15 ½
   b. AOC – 1 ½

Interview:

1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks are divided?
   - No, there is a difference. "What difference?" Harder to explain. This department is much smaller and these people in this department are here because of their knowledge and usually the only ones with this knowledge. I used to be in a group of 6 which used to require/allow for the division of labor into regions/etc. I do a

lot more here now, but less specifics. I work as a generalist, not as a specialist anymore. I work with a lot of topics, but not in a lot of detail.

- And do you think this is only because of the size?
  - No, it's also the division of the departments within AOC – the company chose to work according to this asset management system. Working according to that meant they launched several departments at different levels; you have AOC at the top, then asset management, then the lowest level is grid services. AOC is the in between national gov't and asset management – making translations from governing policy to the policy of TenneT
- My main focus right now is the differences between internal structure between departments. Do they do things the same in asset management still? Would you say it's still about size?
  - Not only size but also position – if you draw a line there is only the government above us. We have other tasks to do. We are bringing long term issues.

2. Do they group jobs together differently? As in, are there more projects versus individual work?
   - Yes and no, depends on how you look at it. In the end, you could say we all do the same thing – making the lights go on. But AM and Service providers, they do the same work but the difference may be region, etc. AM has groups, but they're smaller than, say, Service providers. And AOC is even smaller, with just 2 people.

3. Who did/do individuals/groups report to? Is this different in your new department?
   - Different. Has to do with size again. AOC has max, 15 people. Alan is our senior manager, and Alan is directly under the board. AM has an extra layer because they have many more people. They have to add these extra layers because the span of control is too big. A team of 15 people is manageable by one person – which is how the company is organized.

4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
   - Depends on your structure/size. In AM it could be a team lead, a manager, a senior manager, or an EB member. It depends on your position. The people lowest are usually the specialists. The others are facilitating them, but they are not handling the content.

5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
   - Depends on your boss. We don't have guidelines or rules within the department, but there are procedures for how to do our work from the company. Not really differences between the departments.

6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?
   - Yes.

- And you think size is the biggest factor?
    - Not only size but also position in the company. I have contact with departments outside of our core chain (AM chain) but most of my answers have been about this one. If you ask someone somewhere else you will of course get different answers.

INTERVIEW # 2

Individual Info:

1. Current Department: AOC
2. Previous department(s): Finance 3 yrs, then IT Department 9 yrs, then AOC 6 years
3. Length of time in the company: 18 years

Structure:

1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks were divided?
    - It's difficult, because we were also growing. Go from a lot of tasks, to a few tasks because there are more people. Because it's a smaller team, it depends also on the job you do, but because it's a small team you have more general tasks.
2. Do they group jobs together differently? As in, are there more projects versus individual work?
    - Group together with the same discipline/topic. Grouped by the task you have to do. Not formal, but coordinated activities.
3. Who did/do individuals/groups report to? Is this different in your new department?
    - Now, I report to only one person, but before not so much. I was always right under the senior manager, so in every department I facilitated information from one person to the senior manager. The hierarchy has been the same from department to department.
4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
    - My direct reporters have always been the senior managers.
5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
    - Finance department had more rules and regulations, and was more rigid in general. There were separate functions, like you what you can and cannot do. Within IT, I have always a bit of a strange role. I always had some freedom, or didn't follow up everything. During the time I was in IT there were more rules and regulations but that was also because we became a bigger company. When you're growing you need more procedures. For innovation, it's a bit contradicting. If I stick to the rules though there won't be innovation. From finance there were already a lot of rules but for AOC, per say, it's gotten probably more regulated.

- When have you broken a rule or regulation to achieve innovation?
  - We went to another company to see a new drilling method, and you can contact other companies but it was a little bit – we thought we really wanted this concept- so we invited them here to start it together. It wasn't the way we should do it though, we should have invited more than one supplier.
6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?
   - Structure is similar, but the way of working is sometimes different
   - What do you mean by that?
   - Within finance you get a sudden task that was well described and very fixed and within IT and later here within AOC it was more, uh, not the process that was important but the results. Not the way we achieved the goal but the fact that we achieved it. But I'm also only speaking from my experience, so I am not sure how it is exactly now.

INTERVIEW # 3

Individual Info:

1. Current Department: AOC department
2. Previous department(s): FCC (Financial Control Corporate)
3. Length of time in the company: 4 ½ years, November it will be 5
   - March last year to Asset Owner, a little over a year

Structure:

1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks were divided?
   - Yes, and the reason for that is because the department I'm coming from the tasks are much more clear. They know what to report, there is no grey area. Based on external rules we have to commit to, and the AO has to do this as well but it's to a lesser extent.
2. Do they group jobs together differently? As in, are there more projects versus individual work?
   - On team level it might be quite similar. TenneT processes however, FCC is external reporting (sent to shareholder) not as much connected to the whole organization
   - AOC is connected to all the departments in the whole organization
3. Who did/do individuals/groups report to? Is this different in your new department?
   - There is a standard structure at TenneT TSO B.V.

- Will be different with new transition
- Small departments are more even, more hierarchy and less communication in bigger departments
4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
    - I'm not standard within TenneT TSO B.V.
    - I feel, and that's how I act, in terms of the CSR ambition I have the power to act
    - If it has impact on the business, then I ask for permission
5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
    - FCC was a lot
6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?
    - Yes
7. Culture
    - Depends on the role of the team, are there external rules you need to obey
    - Or is it driving from internal TenneT rules, they also have clear structures (those are own rules)
    - Depends on the context of the department and the people in the team – i.e. the way the manager is leading the team and how individuals just doing their job or are they doing more

INTERVIEW # 4

Individual Info:

1. Current Department: IMC information management
2. Previous department(s): System operations (manager)
3. Length of time in the company: 16 years

Structure:
1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks were divided?
    - Cross-geographical
    - Same amount of layers but less managers
    - SO is quite similar, operational people and policy making people
    - SO in general was more business in operations and IT is more supportive
2. Do they group jobs together differently? As in, are there more projects versus individual work?
    - No, I don't believe in that
    - I create teams, so its either fully operational or

- There has to be an operational team, as long as there no shifts
- Put people from both maintenance together
    i. Warm exchange between project and maintenance phase
- Also in IMC
3. Who did/do individuals/groups report to? Is this different in your new department?
    - In general they report to a project lead or team leader, and those report to a senior manager
4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
    - That's changed
    - SO mainly in management team
        i. Senior manager and the managers
    - In IMC we try to dedicate it as much as possible to the team manager
5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
    - Nature of the work, they are controlling the grid
        i. Really procedural
        ii. SO
        iii. Can make it over-bureaucratic
6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?
7. Culture Comments
    - Thinks they are the backbone
    - Target focus for innovation/sustainability
    - Is there a specific team that is devoted to innovation/sustainability like R&D
        i. OR IS EVERYONES RESPONSIBILITY
    - Is your team manager demanding it from you or not?

INTERVIEW # 5

Individual Info:

1. Current Department: HR department
2. Previous department(s): Asset Management then IT/IMC and now HR
3. Length of time in the company: 9 years

Structure:
1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks are divided?
    - Yeah because when I worked at IT, of course it is a bigger department, but that also means they are more technical focused. The way things are placed is based of

peoples knowledge. In tHR of course everyone has their role but what we see is when people are leaving we try to take over what the others do. But this is harder in IT because they have specific knowledge. So we are working more general in HR rather than IT. For example, when my colleague left for maternity leave I took over her role.

2. Do they group jobs together differently? As in, are there more projects versus individual work?
   - The IMC department is more individualistic. What they're doing at IT, everyone has their thing. We throw it over the fence of the neighbors. In HR we don't do that because I think we are more communicative people, so we try to work more together. In IMC it's more specialized, like an assembly line.
3. Who did/do individuals/groups report to? Is this different in your new department?
   - General TenneT structure
4. Where did/does the decision-making authority lie in your current department? What about the prior one(s)?
   - Project manager in IT and Team manager now in HR but it's not that different
5. To what degree did rules and regulations direct fellow employees/managers? Was it more laid back or rigid, for example, in procedural protocol?
   - It also depends on the person, the personalities of the senior managers – I think the people that give you more of a feeling like you can share with them are less about the rules and regulations than the person and the situation. They want to fight for you – it's not that they're not following as closely but rather they make an exception when they feel like its necessary but also make sure it's okay to do so.
   - The rules are different, but each have things that we do and we don't do
6. Overall, would you say that there are structural differences, such as how job tasks are formally divided, grouped, and coordinated, between your current department and the other(s) you have worked in?
   - *Question was skipped*
7. How do you think sustainability culture affects employees ability to innovate?
   - A change in senior manager in both departments from cold to warm. Makes me feel much more that I'm sharing much more with my manager. It makes you want to work harder for TenneT.
   - Sustainability is not a topic we discuss, could be because we are far from CSR in what we do and the people we interact with, we are bothered by systems
   - I once did a research what we could do online, but I got stopped bc they said it wasn't going to be easier than sending it out/signing by hand (culture)
     i. Combo of our old director wanting to sign everything himself and we couldn't do everything digital – then there would be two work flows
   - Also deal with mobility → working together with facility management

INTERVIEW # 6

Individual Info:

1. Current Department: Grid Service NL , New Assets
2. Previous department(s): Asset Management as a program manager
3. Length of time in the company: both functions 5 years, almost 11 years

Structure:
1. In comparison to your previous department(s), does the one you are in now do things differently in terms of how tasks are divided?
   - Yes, they are split up in a lot of small tasks and those tasks are with a lot of people in a cascade of process steps and that also has – I also think that my previous department AM the process steps are increased
     - But I started with TenneT when it was small with hardly any structure
     - When it went from 900 people to 4k people that it has now, despite of the PTP program – the aim was to make things more lean but it did the opposite
     - What I see, the difference between my two jobs is that there is a lot of division
2. Do they group jobs together differently? As in, are there more projects versus individual work?
   - There's a guy for the nuts, bolts, and a guy for the engine. Beginning from the beginning to the end of the process, there's one person. And because they are working more on policy or looking at a constraint, maybe there's one other person that will review that report but there's one person that is working on that policy/constraint. But then he stops, his end product is a document – for Asset Management
   - Grid Services = there is a longer process to build actually the assets, so there is a project team and a project team with several functions and areas where to look at. And then we put a lot of control and go/no-go and hold them witness points in the process?? Are you doing the right things to solve our constraints?
   - We make a, for instance, a detailed design and then we first have to send it to the AM department, then they have a hold and witness points, and then we can go to the next step and then we can go through the tendering process
   - We are doing some experiments to stop the sequential model, and want to go to a network model – we start with someone from AM from GS and the contractor and work them all together instead of going from person to person to person
   - And in this way the silo mentality we don't see anymore – which is more efficient. And we see more creativity and enthusiasm from our employees this way. They don't have blinders on, because they get to see and be a part of the whole process
   - Pre-pilots and pilots of this (about 6)

Questions 3-6 were omitted as a result of repetitive answers from previous participants

3. How do you think sustainability culture affects employees ability to innovate?
   - Last 1 and ½ year we are, yeah, that's one of our focuses (sustainability). It started as a requirement but now we see it as more of a solution
   - Where did it come from as a requirement? From Margriet Rouhof and it started with some other pilots
   - Because it's a development project then there is room for sustainability bc we are making next generation substations then it is a requirement to think about sustainability
   - Then for AM – not thinking about sustainability at all
   - The big difference between the two - AM is knowledge based – there are only high educated people (a know-it-all) while GS has to adopt to the environment it's in (AM is in a bubble) so they make things too knowledge based but we have a better outside-in and they do it inside-in
     - Grid Services is more practical while AM is more theoretical almost
       - On a higher thinking level
   - Innovation has been very low the last 10 years, but the ones we do now in the North we have seen a tremendous growth in curiosity and creativity because I think if you are at the assembly line and you don't talk to the others along the line you aren't able to think outside your bubble
     - You need to create an environment that's open – when I started AM made me afraid to say something bc maybe I look stupid – but now I don't feel that way and I think we are working on an environment that changes this
   - Why do you think AM doesn't or didn't think about sustainability?
     - I think that has to do with the culture – there are the academic people most of the time and you see when they hire people or recruit people then they are looking for the same people. So there's a connection. They are usually so focused on one thing that it's almost like they have blinders on. Basically, a more narrow view on things because they are more specialists.