ORGANIZATIONS AS THE CHANGE AGENTS IN SOCIETY

A research to the micro mechanisms for organizational ambidexterity as a dynamic capability for the contribution to strategic goals

Radboud Universiteit

‘Organizations as the change agents in society’

A research to the micro mechanisms for organizational ambidexterity as a dynamic capability for the contribution to strategic goals.

Radboud University Nijmegen - School of Management

A THESIS SUBMITTED FOR THE DEGREE MASTER OF SCIENCE IN STRATEGIC MANAGEMENT OF BUSINESS ADMINISTRATION AT RADBOUD UNIVERSITY NIJMEGEN

Author:	Lisanne Dogterom
Primarly supervisor:	dr. C. Hendriks
Secondary supervisor:	dr. ir. S. Witjes
Second examiner:	dr. H.L. Aalbers

Information

Author	Lisanne Dogterom
Address	
Email	Lisanne.Dogterom@student.ru.nl
University Student number Study	Radboud University Nijmegen S1045931 Business Administration Strategic Management
Organization	Radboud University
Primarly supervisor	Radboud Centre for Sustainability Challenges
Secondary supervisor Second examiner	dr. G. Hendriks dr. ir. S. Witjes dr. H.L. Aalbers

Abstract

Purpose: This study aims to contribute to the knowledge of micro mechanisms for organizational ambidexterity. This organizational ambidexterity is analyzed by using the dynamic capability theory. Since there is no explicit business strategy, small case studies can help to gain knowledge about understanding the capabilities of practice and reflect this in the theory. **Methodology:** A contribution is made to the demand for smaller N case studies to better understand practice. This case study took place at a Higher Education Institution where the decision was made to investigate sustainability goals. An exploratory approach to the research was chosen, because this Higher Education Institution still has a lot of flexibility in terms of sustainability. Furthermore, because of the societal implications of sustainability goals, the study takes a transdisciplinary approach. **Scientific relevance:** This research contributes to the organizational academic ambidexterity literature. First, it uncovers aspects of the micro mechanisms that enable organizational ambidexterity and how this leads to the achievement of strategic goals. It provides insight into how ambidexterity can be a dynamic capability for an organization. The study was designed based on a recommendation by Turner et al. (2012) to conduct further research to understand the micro mechanisms for an ambidextrous organization. There are numerous collective and structural studies, using the Turner et al. (2012) model allows for a better understanding of theory and practice at various levels. **Practical relevance:** The findings of this research can serve as information for Radboud University, Higher Education Institutions and organizations. When considerations are made about exploration or exploitation, this research can be used as a guide. There is specific information about Radboud University in this case study, particularly about the coordinators of the Radboud Centre for Sustainability Challenges and Radboud Sustainable.

Key words: Dynamic capability theory, organizational ambidexterity, integration mechanisms, organizational capital, sustainability, corporate sustainability, Higher Education Institution (HEI), transdisciplinary approach.

Preface

As a business administration student, my interest has been sparked in strategic position of companies. A specific theme that draws me is the energy transition. This is partly due to the experience I have gained in my internships and consultancy work. During this job, I have seen that the energy transition is a hot topic. The future-proof positioning and design of organizations in this area is something I would like to contribute to ensure that organizations remain valuable. Due to this interest and the issues of Radboud University, this research was established. My strategic management knowledge, research skills and writing style have grown during this process. Moreover, I have learnt a lot about one of the themes in which I would like to be active in the near future.

I would like to thank my supervisors, dr. C. Hendriks, dr. ir. S. Witjes and the second examiner dr. H.L. Aalbers for their constructive criticism. In addition, I would like to specially thank all respondents and everyone who assisted in the data collection process for their effort and time.

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CHAPTER 1: Introduction

Higher Education Institutions (HEIs) have played a significant role in society (Rüegg, 2004). In recent years, universities have adapted their working methods and the development of their capacities to the developments in society (Moscardini, Strachan, & Vlasova, 2020, p. 15). Expectations from society towards HEIs are changing (Geryk, 2018). These changing expectations, which are also supported by students, require HEIs to be more attuned to developments in society (Geryk, 2018). Additionally, the HEIs play a key role in shaping future generations (Roos, Heinicke, & Guenther, 2020). Their main tasks are knowledge creation, promoting ideas and research for society (Roos et al., 2020).

In recent decades, attention has been paid to the role of HEIs in promoting sustainability and sustainable development. Several programmes and initiatives have emphasized this role. One of the programmes is: 'Education for Sustainable Development (ESD)' which is emphasized by the UNESCO report and describes the key principles of ESD as the importance of reoriented education and points out the actions (UNESCO, 1997). Another more recently programme is the Sustainable Development Goals (SDGs) presented by the United Nations as part of the agenda of 2030 (United Nations, 2015). Different universities have integrated sustainable development in their education and research programmes to develop competences for sustainable development, as this topic is becoming increasingly important (Barth & Michelsen, 2012; Lambrechts et al., 2013; Tilbury & Mulà, 2011). The literature argument about the importance of design and implementation, but also about the competencies needed to develop sustainability as HEIs (De Haan, 2006; Roorda, 2010; Sleurs, 2008).

This growing focus on social change is causing companies to take an increasingly active attitude towards sustainability issues. This sustainable development in organizations is called corporate sustainability (Hahn et al., 2014; Lindgreen & Swaen, 2010). This corporate sustainability derives from internal drivers such as: leadership, issues in the organization, culture of the company, reputation, and sustainability reports (Lozano et al., 2015). Furthermore, it derives from external drivers such as: customer expectations, regulations or society raising awareness (Lozano et al., 2015). From these developments' businesses are changing from a reactive attitude to a more proactive attitude towards sustainability (Camilleri, 2017). Companies have different ways to obtain sustainability but what most is in common is that investments must be made to reach the corporate sustainability goals (Camilleri, 2017).

Organizations pursue the strategic goal of corporate sustainability. They apply corporate sustainability to continuously improve their resources. An organization is an environment of constant learning and goal adjustment through organizational learning (Souza & Takahashi,

2019). This organizational learning is the dynamic process of organizational change where knowledge and learning are intertwined (Souza & Takahashi, 2019). Knowledge creation and learning overlaps with seeking a balance between exploration and exploitation of business activities in an organization, which is called organizational ambidexterity (O'Reilly & Tushman, 2008). Important here is that an organization continues to learn and achieve organizational ambidexterity to create a coherent alignment of competences, structure, and cultures to realize exploration and exploitation (O'Reilly & Tushman, 2008). These goals may be influenced by the external environment, such as corporate social responsibility or innovative goals. These objectives all have the overarching goal of improving business performance (O'Reilly & Tushman, 2008). For example, to optimize firm performance, an organization sets corporate social responsibility goals to minimize risk and cost, achieve reputation enhancement, improve competitiveness and create value (Lindgreen & Swaen, 2010). Another path to innovate and develop as a company is to deploy innovative competencies from within the organization (O'Connor, 2008). These innovative objectives enhance competitive advantage through value creation and cost reduction (O'Connor, 2008). These, and many other objectives, ensure that an organization continuously analyzes where they want to go within their strategy and what objectives they want to achieve.

To achieve organizational strategic goals, including sustainability goals, organizational theory uses the dynamic capability theory (Teece, Pisano, & Shuen, 1997). The dynamic capability perspective focuses on achieving goals by integrating internal and external competencies of a company (Teece et al., 1997). This perspective supports the broad strategic goals and work practices of an organization (Thompson, 2007). From this perspective, it is known that organizations try to contribute to change and that the important aspects internal and external competencies provide actions or routines that are implemented by the Top Management Team (TMT). The TMT involves different levels of business to develop or prepare competencies from opportunities (O'Reilly & Tushman, 2008).

Previous research indicates that, so far, mainly theoretical foundations for dynamic capabilities theory have been developed through conceptual papers (Teece 2007; Zollo & Winter 2002; di Stefano et al. 2010). There is a broad discussion on how dynamic capabilities can help organizations to develop and grow in their innovation and organizational capabilities. From this theoretical discussion arises the demand for empirical study in dynamic capabilities in organizations (Ambrosini & Bowman, 2009; Foss & Pedersen, 2016). There is a need for detailed case studies of companies that have maintained an advantage over time in dynamic environments to fully understand the pursuit of strategic objectives (Ambrosini & Bowman,

2009). Small N case studies can help to better understand such situations and provides the opportunity to apply theory in practice (Foss & Pedersen, 2016).

There are several subjects within the dynamic capability perspective. One of these subjects is organizational ambidexterity. Ambidexterity is the balance between explorative and exploitative innovations. It is a critical mechanism for organizational adaptation (Tushman & O'Reilly, 1996). The dynamic capability of ambidexterity in an organization explains notice and seize new opportunities through exploration and exploitation of activities (O'Reilly & Tushman, 2008). The dynamic capability perspective, together with an organizational ambidexterity micro approach, can help to understand organizational change (Ambrosini & Bowman, 2009).

There are several ways to measure and analyze ambidexterity. These measurable indicators are called mechanisms (Turner et al., 2012). These mechanisms provide a micro representation of the phenomenon to be measured. By adopting such a micro approach, a concrete focus is chosen. This allows for an understanding of what organizations look like from their dynamic capabilities (Ambrosini & Bowman, 2009; Conboy et al., 2020). In addition, it provides insight into how the environment can influence strategic changes (Conboy et al., 2020; Ambrosini & Bowman, 2009). A central question is how the organization is explained on the micro level (Jarzabkowski, Balogun & Seidl, 2007). By explaining the objectives on micro level, macro variables can be explained (Foss & Pedersen, 2016). These macro variables are, for example, the organization's sustainability performance (Foss & Pedersen, 2016). Most of the current empirical work have general and structured approaches to ambidexterity. There is a lack of studies on micro-level (Turner et al., 2012). Studying on micro-level makes it possible to understand the underlying mechanisms of organizational ambidexterity (Foss & Pedersen, 2016). The existing studies do not fully describe how this micro mechanism enable organizational ambidexterity (Turner, Swart & Maylor, 2012). By employing the framework of Turner et al. (2012), it is possible to consider mechanisms vertically and horizontally, allowing science and practice to gain a better understanding at multiple levels.

These micro characteristics promotes the integration process of organizational change (Karlsson et al., 2010). How this integration takes place depends on the company's environment. Many mechanisms have already been developed, but there is a greater need to understand them (Sinding et al., 2014). The mechanisms can be divided into formal and informal mechanisms (Chen & Kannan-Narasimhan, 2015). Analyzing these mechanisms at different levels (organizational, group and individual) from the organizational capital can contribute to the

understanding of the organizational ambidexterity in relevant case study and literature (Turner et al., 2012).

The gap in the literature is that ambidexterity is not fully established as a business strategy (Turner et al., 2012). The concepts described in the literature are not comprehensive enough to describe the reality of the concepts in the organizations (Turner et al., 2012). It is important to know how an organization is ambidextrous by gaining knowledge from mechanisms. This is to promote understandings of theory and practice (Turner et al., 2012). By looking at the mechanisms used to make an organization ambidextrous from the point of view of dynamic capability, a better understanding of this can be obtained. From this literature gap, the following research question is formulated for the study: *To what extent are micro mechanisms for organizational ambidexterity employed to make a strategic contribution?*

This research question is examined in an HEIs. Radboud University is chosen as the case because several universities centrally and locally are working on this of which Radboud University is one. The social relevance of the research contributes to the discussion of how an HEI contributes to a change in society. The findings can serve as information for the Radboud University, HEIs and other organizations.

The following Chapter explores the debate in the literature used as the focus of the study. Chapter 3 presents the research design and operationalization. The Chapters 4 and 5 provide the results, conclusion, and discussion of the study.

CHAPTER 2: Theoretical background

In the following sections an introduction of the concepts is made. These concepts include dynamic capability perspective, organizational ambidexterity as a dynamic capability and the mechanisms resulting from it. These concepts will be used in a conceptual lens for the data analyzes and discussion. A conceptual representation of the theoretical framework is provided in Figure 1 below.

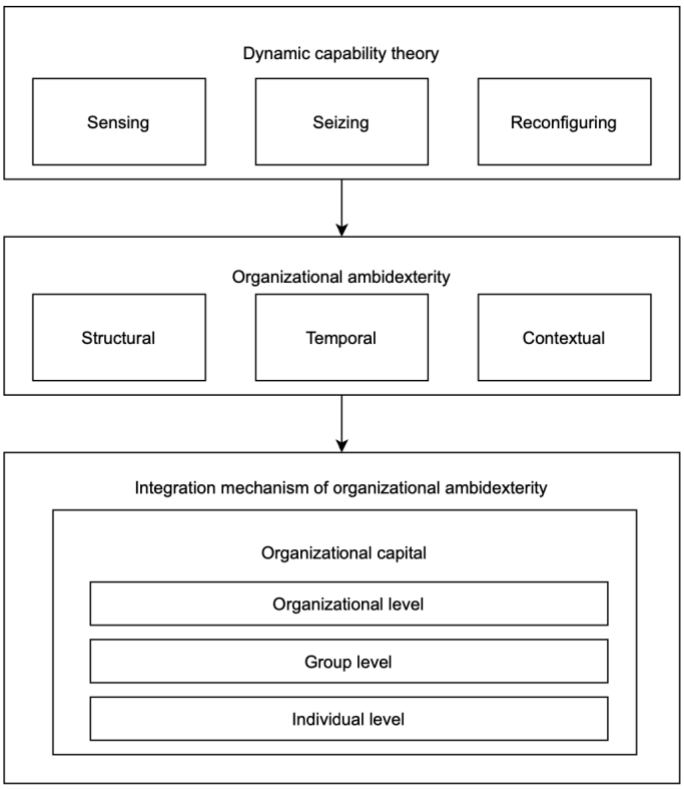

Figure 1: Theoretical framework

2.1 Dynamic capability theory

Organizations are in changing environments. Therefore, it is important that organizations continue to innovate and renew. The dynamic capability perspective focuses on achieving these goals by developing and integrating internal and external capacities (Helfat et al., 2007; Teece, 2007). The dynamic capability perspective studies the value of resources over time and is grounded in the Resource-Based View (RBV), which states that resources must be valuable, rare, imperfectly imitable, and imperfectly substitutable for a source of competitive advantage (Ambrosini & Bowman, 2009; Salvato & Vassolo, 2017). The dynamic capabilities theory provides organizations the space to influence the process of developing their resources and capabilities (Ambrosini & Bowman, 2009). Internal capabilities are the assets, knowledge, and skills of an organization (Teece et al., 1997). External capabilities are, for example, the network,

cooperation or the position of the organization in the market (Teece et al., 1997). This theory divides dynamic capabilities into three activities or capabilities (Teece, 2007). The first is 'sensing', which is about scanning, searching, and exploring opportunities (O'Reilly & Tushman, 2008). This is particularly in rapidly shifting markets (O'Reilly & Tushman, 2008). The second type of activity in an organization is 'seizing' which is about achieving benefits from identified opportunities (O'Reilly & Tushman, 2008; Teece, 2007). Seizing opportunities involves weighing the various opportunities formulated at the sensing stage (O'Reilly & Tushman, 2008). The third capability is 'reconfiguring', renewing or changing resources (Teece, 2007). This reorganization affects operational capabilities. Over the long term, the success of this organizational capability ensures that it can be used to grow organizationally (O'Reilly & Tushman, 2008). Collectively, these capabilities drive the development of organizational or institutional change (Teece, 2009). Understanding the strategies of companies is easier by combining both resource-based and dynamic capability-based views (Borland & Lindgreen, 2013). Understanding these strategies has become more important for companies to recognize their capabilities (Borland & Lindgreen, 2013; Pisano, 2017). This is due to the change in society mentioned above. It consists of a theoretical discussion about the knowledge of capabilities and opportunities by organizations (Ambrosini & Bowman, 2009). Due to this discussion, a demand has arisen for more detailed case studies of companies over time (Ambrosini & Bowman, 2009). These companies should have maintained an advantage over time in dynamic environments in order to fully understand the pursuit of strategic objectives (Ambrosini & Bowman, 2009). Both small and large N studies have shown that it is difficult to determine how firms develop new capabilities in a turbulent environment (Salvato & Vassolo, 2017). However, the dynamic capability theory does not fully describe how capabilities can be renewed and combined at the individual and macro level (Salvato & Vassolo, 2017).

2.2 Organizational ambidexterity as a dynamic capability

When an organization is situated in a turbulent external environment, there is a need for strategic change. In this strategic change, they can strive for organizational ambidexterity. Organizational ambidexterity is the ability to balance between exploration and exploitation of the capabilities of an organization (Raisch & Birkinshaw, 2008). This organizational ambidexterity is a movement within dynamic capability theory for obtaining information and viewing organizational change. Basically, organizational ambidexterity is a foundation for an organization's long-term survival (O'Reilly & Tushman, 2008). Organizational capabilities leverage exploitation by utilizing their current competencies and capabilities. Besides that, they

are exploring, incorporating new opportunities and business models (O'Reilly & Tushman, 2013; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). Exploitation refers to existing incremental innovation and improvements in an organization's capabilities, while exploration is much more focused on experimentation and creativity in capabilities (Andriopoulos & Lewis, 2009; O'Reilly & Tushman, 2008; Tushman & O'Reilly, 1996). This ambidexterity is one of the critical dynamic capabilities for the long-term survival and growth of firms (Michelino et al., 2019). Eisenhardt and Martin (2000) describe that the ability of an organization to compete in the long term depends on the degree of integration of current capabilities. In addition, new competencies are being developed. This leads to long-term success as an ability to recombine and reconfigure assets and organizational structures to adapt to the turbulent environment (O'Reilly & Tushman, 2008). Tushman and O'Reilly (1996) describe that a success factor within exploitation is the short-term perspective, whereas for exploration, success is in the long term. There is a growing interest in research on how organizations implement change (O'Reilly & Tushman, 2008). Multiple studies have highlighted the benefits of ambidexterity over time, but how to achieve them is often still limited (Gil-Marques & Moreno-Luzon, 2020). Based on this limited knowledge in the empirical field, research is needed to generalize ambidexterity theory in complex changing environments (Turner et al., 2012). The application of structural, temporal, and contextual ambidexterity is needed to understand organizations and generalize these topics (Turner et al., 2012). In organizational ambidexterity, different types of mechanisms are used to create the conditions or opportunities to make an organization ambidextrous so that they have long term survival (Turner et al., 2012).

2.3 Structural, temporal, and contextual ambidexterity

The three main implementation approaches at the organizational level described within the literature are temporal, structural and contextual ambidexterity (Turner et al., 2012). Temporal ambidexterity means that exploitation and exploration are deployed simultaneously in a complex organization. This often starts in the context where the organizational change takes place. Organizations often have the experience that they need to change radically from the environment (Tushman & O'Reilly, 1996). Structural ambidexterity is when companies implement or use change at the ambidextrous level in individual business units. These are then often radical innovations (O'Reilly & Tushman, 2004). For example, one organizational unit may focus on exploration, and another may focus on exploitation. Resources can then be allocated whereby each group has the appropriate systems in place to carry out the specific activities in question. Diving the activities in this way fundamentally helps with strategic and

innovative change (Turner et al., 2012). It is important to approach this critically because an organizational structure is often more complex than a business unit or department (Raisch & Birkinshaw, 2008). It can help to generalize the organization in a complex structure, but it is also more difficult to apply a single model (Raisch & Birkinshaw, 2008). Contextual ambidexterity leads to a generalization, overarching and coherence within business activities where there is work towards a common goal (Turner et al., 2012). This implementation approach argues that the context of an organization associated with facilitation of organizational change improves when these activities are a common goal (Turner et al., 2012). The contextual and structural ambidexterity trigger a theoretical discussion (Turner et al., 2012). In a separated organizational structure, it is logical to choose a unit structure, because several business units function isolated. When there is a complete commitment in the structure to exploitative or exploratory resources there cannot be a complete homogeneity within the company of innovations (Raisch et al., 2009; Turner et al., 2012). The complete explorative and exploitative approach both do not reflect the reality of most organizations. This is exactly the gap in the literature, where more research is recommended. There is no explicit management strategy to implement organizational ambidexterity and the higher-level concepts in the literature do not provide a clear picture for an organization (Turner et al., 2012).

2.4 Integration mechanism of organizational ambidexterity

There are several ways to measure, analyze and implement ambidexterity. The measurable indicators are known as mechanisms (Turner et al., 2012). By applying and examining mechanisms for ambidexterity, more knowledge and understanding of organizational ambidexterity is generated. The organization can be understood in its complexity. The theoretical model adhered to in this study is the model developed by Turner et al. (2012). This model was developed to get a better understanding of generic mechanisms (temporal, structural, and contextual ambidexterity) from the literature (Turner et al., 2012). They distinguish three different capital resources (organizational, social, and human capital) for understanding at different levels (organization, group and individual). Appendix A depicts the multi-level categorization of ambidexterity mechanisms created by Turner et al. (2012). To create a better understanding of reality, a selected part of this model is retained in the study.

2.5 Organizational capital as an ambidexterity mechanism

In this study the choice was made to investigate the organizational capital at the different levels of analysis. It is not a social or a human strategy that is being analyzed in this case. It is purely

about how the organization deals with the balance between exploitation and exploration. Organizational capital is important for achieving ambidexterity because the organization is the starting point of the organization. As already described in the previous sections, it is about the organizational overarching strategy. This can be determined where exactly the capacity of the organization to innovate is established. The mechanisms help to look at the organization from the in- and outside. The external environment of the organization must be examined to understand the broader network and supply chain with rationale for the relationships involved (Turner et al., 2012). In an organization there should be separation of exploitation and exploration elements (Turner et al., 2012). However, in a complex organization this is difficult to distinguish due to the complicated structures (Turner et al., 2012). From an organizational capital perspective, the exploitative and explorative are seen orthogonally side by side (Turner et al., 2012). This means that in the organization exploration and exploitation should run parallel. This means that in addition to refinement of current activities, there are also complete renewed activities in the organization. A main aspect of this mechanism are the formal and informal organizational structures. The formal mechanisms for ascertaining ambidexterity include the documented processes, activities, capacities for integrating and coordinating sustainability (Burgers et al., 2009). Informal mechanisms refer to emergent social characteristics of the organization (Tsai, 2002). These activities emerge from a situation or environment and are not fixed (Tsai, 2002). Table 1 below is a representation of the mechanism on organizational capability to reach ambidexterity. These mechanisms on organizational-, group- and individual- level are researched in this study.

	Organizational level	Group level	Individual level
Organizational capital	Structural configuration and separation. Development and maintenance of inter-organizational relationships. Coexistence of formal and informal structures.	Reward systems to support ambidexterity. Processes for creating close social relationships and informal coordination. Formal and informal managerial integration and control mechanisms.	Multiple cross-functional interfaces to accommodate formal and informal coordination. Use of both 'best practice' and local managerial discretion and judgement.

Table 1: (Turner et al., 2012)

2.5.1 Organizational capital on organizational level

At the organizational level, the internal structure distribution mechanism of separating exploitation and exploration is subject to different views in the literature when approached in a formal or informal manner. On the one hand, radical product or service innovation is best in an informal structure, while incremental innovation is best in a formal structure (Menguc & Auh, 2010). The informal structure does not affect the development of innovation (Menguc & Auh, 2010). On the other hand, it is mentioned that ambidexterity often needs to be arranged informally rather than being regulated informally (Gibson & Birkinshaw, 2004). Other authors write that formal and informal structures can co-exist to promote incremental and radical innovations (Jansen et al. 2009; Turner et al. 2012). The need has clearly emerged to investigate how the mechanisms are deployed within formal and informal structures to see if they contribute to change. The problem with modern organizations is that they must deal with multiple levels of hierarchy where a multi-level context must be considered (Turner et al., 2012). This is a problem for organizations because they must make different considerations at each level and there is not enough insight into this (Turner et al., 2012). It should be concerned

with events in the company's environment. The challenge here is understanding the mechanism in different contexts (Turner et al., 2012).

2.5.2 Organizational capital on group level

At the group level ambidexterity can be supported by an organizational structure (Turner et al., 2012). It may be necessary to encourage people with reward systems to promote exploration and exploitation (Ambos et al., 2008; Chang et al., 2009). Chang et al. (2009) describes that the bottom-up approach is important to achieve the strategic goals. The organization must provide support to motivate this. In addition to this formal reward system for achieving ambidexterity at the group level in an organization, it may be useful to use social relationships (Jansen, van den Bosch & Volberda, 2005). Social relationships might coincide with the informal coordination mechanisms. In these relationships, knowledge can be shared to change on group level. Creating an effective informal and formal operational structure at the group level can support exploitation and exploration (Turner et al., 2012). The structure must be supported by practical routines to keep the informal and formal structure in balance. This also applies at the individual level (Turner et al., 2012).

2.5.3 Organizational capital on individual level

At the individual level, it is important for organizational capacity to balance formal and informal mechanisms (Turner et al., 2012). There is a need to coordinate between the different individuals to enable ambidexterity at the individual level. The leadership role is important and must balance freedom of trial and error with allowing for operational flexibility. Informal and formal mechanisms for coordination and control can be used to achieve this (Jansen et al., 2009; Tiwana 2010). Tiwana (2010) states that leader need informal and formal control mechanisms for the coordination of the individuals. In addition, it is important that cross-functional interfaces are put together to merge different knowledge and talents into strength (Jansen et al., 2009). It is important that there is a balance between the use of interventions in practice and the flexibility that the leaders have (Matson & Prusak, 2003). This is important because the individual needs possibility to act by own interests. On the other hand there are needs to be formal organized leadership (Matson & Prusak, 2003).

CHAPTER 3: Research design

The introduction and theoretical framework make it clear that the purpose of this research is to investigate the micro mechanisms that enable an organization to be ambidextrous. The framework stated that the multi-level approach to organizational ambidexterity from Turner et al. (2012) was extracted as a lens for this research. This enables an understanding of the organization's dynamic capabilities. It shows how these capabilities can lead to organizational change (Ambrosini & Bowman, 2009; Conboy et al., 2020). To understand this change, it is necessary to intertwine practice and theory, because practice can be better understood by applying theory to a real-world case study. This Chapter describes the research design and methods used in the study. First, there will be an explanation of the chosen case study. Second, the data collection and analysis techniques will be explained.

3.1 Case study

This study is a case study. The reason for choosing a case study is the practical application of the theoretical research that it represents (Myers, 2013). It can be done in a particular situation and is used to draw conclusions about a particular topic to test or create a theory (Myers, 2013). This case study was done because of Foss and Pedersen's (2016) recommendation for small N case studies to better understand organizational situations and make the existing theory about organizational ambidexterity more applicable. By examining this at the micro level, it provides insight into how the underlying mechanisms enable organizational ambidexterity in the case in question (Turner et al., 2012). The research was done at an institution of higher education because universities have faced challenges in the past year with their working practices and development of capabilities in response to developments in society (Moscardini et al., 2020). Society's expectations of HEIs are changing, because universities are educating future generations (Geryk, 2018).

The study relates to Radboud University. In which the decision was made to specify sustainability objectives in their strategy. Sustainability is one of the strategic goals of Radboud University. The university has made sustainability central to its strategy: 'a significant impact' (Radboud Universiteit, 2019). To achieve this goal and make the strategy visible, the Radboud Center for Sustainability Challenges (RCSC) was established in 2019-2020 as the hub that motivates Radboud academics to strengthen the presence of sustainability themes in their teaching and research (Radboud Center for Sustainability Challenges, 2019). Because of the external developments around sustainability and the establishment of the RCSC, a discussion has started within the university about the role of the university in the development of a

sustainable society. It was investigated to what extent the micro mechanisms help the university to be more ambidextrous at the different levels of the sustainability goal set by the strategy.

The case study has an exploratory approach. In an exploratory research study, a problem or development is studied. A better understanding of a phenomenon in a specific context is created. This also applies to the case of Radboud University, where there is an overall sustainability strategy. The university wants a better understanding on how to achieve them strategic goals. In addition, there is also scientific demand for better understanding of this. In exploratory research, there are many flexibilities. This makes it possible to engage in different interventions during the research (Yin, 2003). This exploratory approach was chosen for this case study because Radboud University is in an exploratory phase regarding its sustainability goals. Administrators, employees and students are still searching how innovation can take place to become ambidextrous in the field of sustainability. There are still many flexibilities in the application to become ambidextrous and a search for a better understanding of sustainability within a university. When the university's goals are better understood, it provides information to Radboud University. Furthermore, it is exploratory because the micro-mechanisms in practice need to be understood to link this back to theory. The micro-mechanisms were drawn up from the multi-level approach to organizational ambidexterity by Turner et al. (2012).

In an exploratory study, results and statements can still go in different directions as the research continues and there is no sharply formulated hypothesis (Myers, 2013). There is a search for the cause and connection of a particular theory or phenomenon with the underlying relationships and motivations (Myers, 2013). There are fewer restrictions during the research itself, allowing more freedom in its interpretation and implementation (Myers, 2013). This allows for constant adjustments. This exploratory research approach is mainly reflected in the data collection methods. Semi-structured interviews are used in which there is freedom to deviate from the structure of the interview. As abovementioned, this ensures that respondents partially determine the research process rather than having a predetermined structure.

In this study, the transdisciplinary approach is combined with exploratory research. Transdisciplinary research combines knowledge from academics and non-academics, making the approach useful for science and society (Pohl et al., 2010). It is not only about scientific understanding, but also about making a powerful contribution to transformative change (Moser, 2016). In addition, transdisciplinary research is focused on societal impact (Moser, 2016). This aligns with the sustainability goals which are highlighted as a strategic goal in this case study. Transdisciplinary research is applicable when theory and practice are intertwined. This contributes to a real impact on society. Hereby, business science is a science that is applied and

thus engaged in practice. The impact on practice is minimal because it provides information for the HEI to get started with sustainability and, as a university, trains its employees and students as future generations and ambassadors for sustainability. The monodisciplinary approach is the main principle here. By examining a specific aspect of social practice, such as sustainability. Then the application is made for science. The specifics that transdisciplinary brings to the table have a tangible impact on society. When there is monodisciplinary research, there is also transdisciplinary research. Transdisciplinary research combines knowledge from academics and non-academics, making the approach useful for science and society, among other things (Pohl et al., 2010). It is not only about scientific understanding, but also about making a powerful contribution to transformative change (Moser, 2016). In addition, transdisciplinary research is focused on societal impact (Moser, 2016). This aligns with the sustainability goals which are highlighted as a strategic goal in this case study.

3.2 Data collection techniques

This section describes how the data is collected and the techniques used to conduct a complete analysis. To analyze this case study, it is necessary to search for results from various sources. This is called the triangulation method (Yin, 2003). In this case study, different sources were also consulted to obtain the results. Interviews, literature reviews and (participant) observations are examples of these. These are analyzed and approached in a qualitative manner.

3.2.1 Triangulation

This study provides triangulation. Triangulation is the idea that there is more than one research method used to gather information. Triangulation allows to combine data from interviews with data from documents or data from two different research methods (Myers, 2013). Triangulation increases the validity of the research because you collect and analyze data through multiple techniques and look at the research from multiple angles, increasing the likelihood that you are measuring what you need to measure (Bleijenbergh, 2016). This thesis research uses triangulation and different research methods namely, interviews, participant observations, questionnaires, document & literature analysis, and interventions. In this research the triangulation method strengthens the exploratory orientation by collecting information and insights in different ways. It provides more opportunities for adjustment than using only one of the methods.

3.2.2 Document and literature analyze

The first data collection method is document and literature analysis. In addition to collecting data in the field, this research for the scientific cycle of transdisciplinary research uses document and literature analysis. This can be documents that are normally stored as a text such as written or word documents, internet, university library documents, local librarian or relevant documents from the organization (Myers, 2013). In this case organizational documents are documents from the Radboud Center for Sustainability Challenges or from the Radboud University strategy documents and annual report. In addition, it is a literature study from the theoretical framework which complements the theory and is recurring throughout the study.

3.2.3 Interviews

The second data collection method is to conduct interviews. Interviews allow for the rich collection of data from people in various situations, which is done in this research (Myers, 2013). There is chosen for the use of semi-structured interviews. A semi-structured interview provides a structure but, in addition, room for improvisation during the interview (Myers, 2013). The questions for the interviews in this research will be designed based on the topics being discussed, but also allow for input from the person being interviewed. During the interview, the questions may not be strictly adhered to because the interview may take a different turn as the person being interviewed provides room for further questioning about his or her specialty. This can generate ideas which will be used to build concepts that will be tested in practice and will eventually add to the practice. Completely structured interviews would ensure that there is no freedom in the conversation to provide answers and completely unstructured interviews would be detached from the theoretical framework. Appendix B illustrates the interview guide. This indicates the (semi) structure that was maintained during the interviews.

The interviews are conducted with internal and external stakeholders or specialists. These should be people working within the university, such as professors of different faculties, students, or others within the organization. External professionals, such as those from another institution in the Netherlands or sustainability experts from the program council for sustainability, will be approached. These professionals have all specialized in sustainability or HEIs. The people approached for an interview have a sustainability specialty or knowledge and will be collected and approached by the network of the Radboud Center for Sustainability Challenges.

After data collection and transcribing, the first stage based on data analysis is open coding (Myers, 2013). Open coding involves analyzing and summarizing the transcribed

interviews and observations. This analysis technique applies to analyzing the interview and (participant) observations. The open codes are descriptive, meaning they identify, name, or categorize the phenomena (Myers, 2013). A theory-generating perspective is clarified by Myers (2013) to avoid simply paraphrasing or describing and to create depth. This depth can be reached during open coding. In this process, words are constant comparisons of the pieces. Out of this comparison, patterns are made and recognized (Myers, 2013). As the research progresses, it takes shape and the concepts become clearer. The second part is the interpreting and categorization of the concepts and topics. The goal of this phase is to make sure the conceptual constructs and clarify them with descriptive edits (Myers, 2013). After interpreting and categorizing the concepts and topics, the third phase is the application of theoretical coding. This involves formulating the theory and creating statements from which further research can be conducted (Myers, 2013). This method of data collection is called theoretical sampling, where an emergent theory emerges from the analysis (Myers, 2013). The open coding method is used for the coding of interviews, observations, and literature and document analyses. Atlas.ti, the data program, is used for this coding.

3.2.4 (Participant) observations

The third data collection method is observation and participatory observation. The observations will supplement the concepts and collect qualitative data for the common understanding and idea generation. A normal observation is looking at people or a situation nonverbal (Myers, 2013). These observations are done during the interviews and during the internship at the Radboud Center for Sustainability Challenges. Moreover, this internship provides the opportunity for participatory observation. Because participatory observation involves not only observing from the outside but participating in the activities associated with the object being observed (Myers, 2013). Participation in meetings and brainstorms is possible during the internship. This is a useful way of observing in this research because by being part of the organization a better and complete understanding of the mechanisms might arise. When there is no participatory functioning during the research it is difficult to create a complete and reliable vision of the organization.

One limitation of conducting observations can be that you only observe a certain group (Myers, 2013). In this case study, the group was from the Radboud Center for Sustainability Challenges. The observations only provide a insight into the Radboud University case. Another limitation of observing is the nuance that can be found in describing the observation. Every research has personal interpretation and preference which makes it a limited contribution to the theory (Myers, 2013). One limitation of the current Covid-19 pandemic is that many

observations must be conducted online, which causes the results to differ from those obtained if they were performed in person.

3.2.5 Interventions

Based on the information gathered in the literature, documents, interviews and observations, the system understanding aspect can be developed and an enhanced understanding of the system clarifies challenges considering the scope and goal of the project (Vermeulen & Witjes, 2021). After comprehending them, various concepts are developed to be tested and implemented in practice. The evaluation of these interventions is decisive for answering questions regarding forming conclusions and giving advice to the Radboud Center for Sustainability.

CHAPTER 4: Results

In this Chapter, the findings that resulted from the interviews, (participatory) observations and desk research are presented and related to the literature. The results are grouped by analysis level for ambidexterity (organizational, group, individual) and ambidexterity mechanisms of each of these levels. Recurring in the results are both formal and informal ways of organizing things. The findings are based on Turner et al.'s (2012) multi-level categorization of ambidexterity mechanisms. The mechanisms of organizational capital are maintained, as indicated in the theoretical framework. The multi-level categorization can be found in Appendix A. Coded documents of the interviews and intervention analyze are available upon request.

Radboud University's innovative strategy of focusing on sustainability in education, research and operations is typified by a central and formal strategic strategy: 'a significant impact'. The university wants to contribute to a healthy, free world with equal opportunities for everyone. This ensures that it is relevant on both a regional and global scale. One of the goals of this strategy is to have an impact on sustainability. This central sustainability strategy distinguishes between objectives in education, research, and operations (Radboud Universiteit, 2019).

4.1 Organizational capital on the organizational level

Based on the multi-level categorization of ambidexterity mechanisms of Turner et al. (2012), organizational capabilities were analyzed at different levels. The first level is the organization level. The research on organization level investigated structural configuration and separation, the development and maintenance of inter-organizational relationships, and the coexistence of formal and informal structures at the organizational level.

4.1.1 Structural configuration and separation

According to the findings of this study, Radboud University's sustainability goals are exploratory. The University's sustainability developments and activities that follow this strategy are brand new. In contrast, there are operating changes in which some adjustments are made to current activities. In these different aspects, actions and visions have been named by the respondents. In the field of education, respondents indicated that several implementations and innovations for sustainability are needed, as well as action to be taken, in order to achieve the Radboud University's strategic goals (x1, x3, x5, x6, x7, x8, x11, personal communication, 2021). The reason for this is that sustainability is not yet sufficiently reflected in education. Respondents generally agree that sustainability should be reflected in education (x1-x11, personal communication, 2021). This is achievable for each division if innovations are made in an exploitive way from within the existing educational programs. This is also reflected in the citation below, where it is stated that it should be reflected in the existing core education programme (x3, personal communication, 2021). This is an exploitative way of innovating in the field of education.

Respondent (x3): *"If you want to meet the strategic goals, you must have sustainability in the core of every education, so not an extra subject, not a completely new curriculum, but just that it is reflected in the core of the existing.''*

However, in terms of education, it is stated that curricula are reviewed on a regular basis (x3, x5, x7, x9, x11, personal communication, 2021). This reconsideration makes the faculty think about how they want to structure their curricula. The findings imply that as faculties reflect on Radboud University's sustainability strategy, it is critical to consider incorporating sustainability within the curriculum (x3, x5, x7, x9, x11, personal communication, 2021). As a result, these curriculum revisions should take a more exploited approach. It is exploitative because not the entire curriculum can be changed, but some adjustments can be implemented (x9, personal communication, 2021). Moreover, each faculty will make different considerations. Several respondents indicated that conversations should be initiated to find out how each faculty pursues the organizational strategy and how they can collectively contribute to this strategy (x3, x5, x7, x8, x11, personal communication, 2021).

Respondent (x7): *"What we need right now is knowledge of which programs want to revise their curriculum. What we're doing certainly helps, but this is what we really need.*''

The university has been incorporating programs into the curriculum more frequently. This has happened in the discipline of philosophy education, for example. This has been a gradual shift that has evolved into a philosophy in all education programmes (x4, x5, x9, x11, personal communication, 2021). This incremental transformation could also occur in sustainability, as it did in philosophical education. An already existing innovation, but on a different subject, will emerge.

Regarding research at the university, there are two outcomes that respondents generally agree on. First, there needs to be a concrete goal and strategy for research (x1, x3, x4, x5, x7, x8, x11, personal communication, 2021). On this basis, a new interdisciplinary group of researchers studying sustainability must be formed (x7, x8, x11, personal communication, 2021). The topic is such a complexity of questions within doing research that it needs to look beyond the boundaries of disciplines. In this, a combination of disciplinary and interdisciplinary research must be done. On the one hand, the innovation is more sustainable disciplinary research, and on the other, a constantly innovative interdisciplinary group of researchers. An innovative hub for sustainability has been set up for this purpose: The Radboud Centre for Sustainability Challenges. This Centre has the start-up task of bringing these interdisciplinary researchers together. This is a growing initiative where there are more and more people coming together in an informal way (x7, personal communication, 2021). The second point that emerges is that the results of the research should not only be processed in theory but also pay attention to the practice in which this research topic is located (x3, x4, x5, x8, x9, x11, personal communication, 2021). This is because sustainability is a social issue, and it would only have an impact if theory and practice are intertwined. Several respondents indicated that it is important to cross over their own disciplines and become more interfaculty active in complex issues such as sustainability (x7, x8, x11, personal communication, 2021).

Respondent (x11): *"Organizationally, it works in such a way that you work together multidiciplinary and interdiciplinary. Disciplinary research remains important, but I think that the complexity of the questions in the world requires you to look across the disciplines.''*

In the area of business operations, mainly exploratory innovations are taking place (x1-x11, personal communication, 2021). Respondents and documents describe several new initiatives. Examples include campus circular systems, flight policies, employees and student transportation, vegetarian meals in restaurants, and sustainable purchasing. The green office is

an innovatively set up group that is a signpost for various innovative projects in the field of sustainability. Respondents mentioned that most of the gains for the university can be achieved through radical changes in business practices (x1, x4, x5, x6, x9, personal communication, 2021). A radical change for the university would, for example, be that foreign students would no longer have to fly to the Netherlands to attend classes, but everything would become virtual (x1, x4, x5, personal communication, 2021). In this way, it is possible to reduce air traffic. These radical changes in business operations could lead to a greater impact in conjunction with teaching and research. One of the reasons is that the practice of the entire university would then be more in line with the strategy that the university states.

Respondent (x5): *"I have the impression the university wants a lot. For example, they want all students to get in touch with sustainability and think about it. But then there also has to be a kind of 'practice what you preach' with it.''*

These radical changes could lead to a greater impact in conjunction with teaching and research. The results suggest that explorative and exploitative innovations together have a stronger outcome. It is possible to achieve the strategy, because exploratory and exploitative innovations in the different formally stated areas run together.

4.1.2 Development and maintenance of inter-organizational relationships

Respondents mentioned that development and maintenance of inter-organizational relationships is formally organized in various ways (x1, x2, x6, x7, x8, x11, personal communication, 2021). The Radboud Center for Sustainability Challenges, the Sustainability Council and the Green Office are the formally established groups that pursue the development and maintenance of inter-organizational relationships in the area of sustainability for the university. Inter-organizational relationships refer to groups that are co-located in different departments/groups within the university. There are several working groups that consider issues of teaching, research, and operations within the university. Similarly, there are innovative hotspots where people and research topics are brought together. These hotspots work to explore and discuss certain fundamental themes. Here, inter-organizational relationships are maintained as sustainability-related topics are considered outside of disciplines. In general, the respondents find that these initiatives contribute to the renewal of inter-organizational relationships within the organization of the university (x1, x2, x6, x7, x8, x11, personal communication, 2021). Respondents emphasized the necessity of these networks looking outside their own networks

and ensuring the strength of their existing networks. It is indicated that these networks need to be made tighter to make them work (x7, personal communication, 2021).

Respondent (x7): *"For me, it is not necessarily about expanding the network. But it is mainly about making the network tighter. So that we can contribute to societal social tasks.''*

Furthermore, formal steps are taken as interfaculty proposals are drafted and submitted to the Executive Board. The Executive Board has a formal role in determining the university's value and defining its role. According to the respondents, this collaboration must continue to be set up to maintain the inter-organizational relationship and make innovative initiatives powerful (x3, x5, x6, x7, x9, x11, personal communication, 2021). Moreover, attention is paid to inter-organizational relationships in informal ways. During the observations, it emerged that people are introduced to each other or seek mutual contact in informal ways that are not planned. Meetings with researchers, employees, or students arise out of this. An example of this is the conversation which was an observation about the data driven sustainability issue with spontaneous people who came together in an informal way.

4.1.3 Coexistence of formal and informal structures

According to the interviews and desk research, the university has a formal structure. There is a layered structure at Radboud University (Appendix B). Formal questions are posed to the Executive Board, which, in collaboration with the Supervisory Board, decides on the faculties that include teaching and research Some research projects must be approved by the board of directors. For example, when it comes to large proposals, or funding for inter-faculty proposals. The results state that the top-down structure is a way of governing that is necessary for managing such a large organization as the Radboud University. This is because a structure is also needed to govern a complex organization. Respondents mention that this is also important to radiate the set strategy (x1, x2, x3, x4, x6, personal communication, 2021). These decisions may have an impact on how the university presents itself, as well as how it promotes sustainability in education, research, and business operations. The respondents' decisions are mainly related to financing sustainability projects (x1, x2, x5, x6, x7, x10, personal communication, 2021). Financially, the university is partly dependent on government support regarding sustainability issues.

Respondent (x5): "Of course the Executive Board can enforce things. They can just say this is going to happen happen. With scientists that doesn't work well if they're told from above what to do. With money it's a lot easier.''
Respondent (x3): "Top-down doesn't work at a university, it's really about the ideas coming from the ground up and that's why it's also likely to actually succeed.''

These citations are two of the citations that respondents named when it comes to top-down or bottom-up governance. Respondents mentioned that sustainability needs to be driven bottom-up to create ownership to achieve the goals (x1, x3, x4, x6, x11, personal communication, 2021). This is also made easier when financial support is provided, because students and employees seem to be more motivated when there is financial support (x1, x2, x5, x6, x7, x10, personal communication, 2021). The results indicate the reason that a top-down and formal structure can be better combined with the bottom-up ownership of the employees and students. By combining these, a drive from the top to get sustainability proposals is funded. On either perspective, the organization's drive to put it into action must be intrinsic.

4.1.4 Conclusion organizational level

At the organizational level, a first partial conclusion can be drawn from the given results. This is further explained in the section below.

On an organizational level, Radboud University's implementation of sustainability is an incremental innovation. It is approached incrementally and over the long term. There are some radical micro changes that can be made, but mainly, it is about the long-term vision of the strategy of Radboud University. On the one hand, there is a formal structure within the university that promotes this. This supports the written literature that states that exploration and exploitation in the form of incremental change works out best within a formal structure (Menguc & Auh, 2010). However, there is more than just a sustainability focus within a university. For example, a university is a modern organization whose core business is not sustainability. Secondly, it can be concluded that the separation and development of exploration and exploitation activities happens within the university. On the one hand, in the field of education, some faculties need to reconsider the curriculum. They must reconsider whether this will be an exploratory innovation within the curriculum or an exploitative transition in which the topic will be included in the existing curriculum. This may be different for each group. In terms of research, renewed collaborations are needed between different disciplines in the field of sustainability. This new research could guide the future of societal transformation. If the university wants to provide every student and employee with a critical viewpoint on

sustainability, they must combine their teaching and research with what they communicate in their commercial operations. It is conceivable to achieve the plan as exploratory and exploitative innovations in the many explicitly mentioned areas converge. Third, the university generally already commits itself to inter-organizational collaboration. In general, respondents indicated that these initiatives strengthen the power of collaboration. Inter-organizational networks should become more connected because they can better locate one another. Respondents stated that there is still a lot of space for improvement in inter-organizational interactions. This maintains an informal framework in which people know where to search for each other. These actions then lead to an informal collaborative structure that is not established now. The literature states that there should be an alternation between a formal and an informal structure (Turner et al., 2012). This is in line with the findings that there should be a bottom-up structure that collaborates informally and builds each other up, but on the other hand, there should also be decisions made from the top down to make changes in teaching, research, and operations. It is concluded that both formal and informal structures are important for building organizational ambidexterity.

4.2 Organizational capital on the group level

Based on the multi-level categorization of ambidexterity mechanisms of Turner et al. (2012), organizational capabilities were analyzed at different levels. The second level is the group level. The research on group level investigated reward systems to support ambidexterity, processes for creating close social relationships informal coordination and formal/informal managerial integration and control mechanisms.

4.2.1 Reward system to support ambidexterity

In general, respondents mentioned that for sustainability-related exploration and exploitation activities at the group level, there should be intrinsic motivation among the group students and employees of the university (x3, x5, x6, x7, x8, x9, x10, x11, personal communication, 2021). Groups of students and employees here refer to faculty, work and research groups. They mention that there should be a bottom-up structure regarding the initiatives for renewing on sustainability at the group level (x1, x3, x4, x6, x11, personal communication, 2021). From the aspect of societal relevance, there should be a sense of responsibility among the groupings of students and faculty members.

Respondent (x4): "I think it is a responsibility of everyone to be involved in sustainability contributions. The consequences are immense. Everyone is doing just a very small thing and if we are very honest it is not going in the right direction.''

The sense of responsibility from the bottom-up organization is growing. Respondents indicate that there are surprisingly many initiatives among students (x1, x5, x6, personal communication, 2021). Examples are research projects, well-attended educational programs or practical actions like vegetarian eating. More and more sustainability proposals are being submitted to the Executive Board. The downside that is convincingly mentioned is that the decision-making procedures at the Executive Board are slow (x1, x5, x6, personal communication, 2021). This makes the students less motivated to take up the projects. As also described at the organizational level, funding is a way through which the commitment to sustainability goals can be supported. For example, this can be done by releasing funds at the faculty level for sustainability-related education or research programs. Respondents mention that getting funds at the faculty level is a difficult and slow process (x1, x2, x5, x6, x7, x10, personal communication, 2021). A useful proposal must be submitted to the Executive Board to obtain funding. The results suggest that when there is more money, there will be more commitment within the university to sustainability (x1, x2, x5, x6, x7, x10, personal communication, 2021). On the one hand, the Executive Board mentions that the faculties are still not motivated enough to act on sustainability. On the other hand, it is also difficult to get funding for relevant research or teaching. As a result, the process of achieving sustainability goals is even slower.

Respondent (x5): *"Board of directors gives funding to faculty and groups who are not yet doing much about sustainability. Money is always a motivation, if you do not have those funds, achieving the strategy is an even slower process.''*

4.2.2 Processes for creating close social relationships and informal coordination

Respondents indicated that close relationships at the group level are important at the university (x1, x5, x7, x8, x11, personal communication, 2021). This is based on the reason that within these relationships, research and teaching can take place that looks beyond their own faculty network. So, within the university, these close relationships represent the faculty and interfaculty contacts. These groups can look beyond their own discipline. These faculty relationships do not currently look strong enough according to the respondents. Faculties work

autonomously within their own groups and in this structure. They mainly look at their own faculty strategy. Respondents indicated that this makes sense , but a shift is needed to work together with different disciplines and build closer relationships (x1, x5, x7, x8, x11, personal communication, 2021). As mentioned by a respondent in the citation below.

Respondent (x3): *"I think in part, faculties do always remain focused on their own strategy. The faculties are autonomous and there needs to be a shift to a more interdisciplinary close social relationship between the faculties.''*

According to respondents, it is critical that the processes for building these informal networks occur centrally (x1-x11, personal communication, 2021). It is highlighted in the results that there should be a coordinating and managerial capacity to stimulate informal networks (x7, x11, personal communication, 2021). In this way, they could become self-managing in an informal way. This managing capacity is represented by Radboud University's sustainability council and the Radboud Centre for Sustainability Challenges. This group of people facilitates the possibility of bringing together different disciplines and getting to know each other in an informal way. However, it is stated that it is critical that these networks continue to look beyond their own networks while preserving the strength of the existing networks (x1, x5, x7, x8, x11, personal communication, 2021). According to the respondents, each faculty can translate the sustainability issue in a different way. It is easier to express Radboud University's strategy when the disciplines themselves see where they can contribute or where they can find each other (x1, x5, x7, x8, x11, personal communication, 2021). Several faculties have appointed ambassadors who deal with sustainability within the discipline. These ambassadors meet on a sporadic basis in a consultation where they are kept up to date on what others are up to. In this way they learn from each other, but they can make use of each others network. The respondents indicate that these are generally positive discussions in which the importance of sustainability and the importance of positioning in the field of sustainability are widely recognized (x1, x4, x5, x6, x7, x8, x9, x11, personal communication, 2021). Everyone provides their own interpretation of the concept of sustainability. This ensures that there is a broad inspiration network for the various faculties. Another clear statement is that at the group level, the university's strategy could be even better reflected in the university's divisions and departments, as cited below.

Respondent (x11): "If you do not make sustainability a part of every division and every department, then employees are not going to consider it entirely relevant, but then they do not really see it as part of their job.''

4.2.3 Formal and informal managerial integration and control mechanisms

In different ways, leadership is integrated at the group level. This occurs formally through the Executive Board and the set standards. Furthermore, leadership takes place within the faculties themselves. There are members of this faculty who serve as the faculty's point of contact. These conversations are both formal and informal. Formally, by being a formal director of the faculty and directing the requirements imposed on them. Informally, they accomplish this by serving as an ambassador for what is going on the faculty. Together with other managerial employees, they are responsible for this. By clearly formulating the goals, these leaders ensure that it is clear to all employees what the course of the faculty is. What mainly emerges from the interviews and observations is that the element of control and 'practice what you preach' can be improved. Several respondents stated during the interviews that how the institution profiles itself is not consistently replicated in the faculties themselves (x3, x4, x5, x8, personal communication, 2021). The integration of sustainability objectives could be integrated even more within the faculties.

Respondent (x5): "It is important that first there is consistency, between what the own university propagates and the business operations and secondly that students within each faculty have a clear sustainability is related. So that for students who want to do something with sustainability, there is a place at Radboud University, from every discipline whether you are a lawyer or a doctor and can do something with that sustainability topic.''

A formal hub that focuses on integration and control over the entire group of employees and students is the Radboud Center for Sustainability Challenges. Respondents indicate this is a step toward long-term and transparent management integration (x7, x11, personal communication, 2021). Respondents indicate that more transformational fast leadership is needed to integrate (x3, x9, x11, personal communication, 2021). In addition to integration, the control of managers is also important here (x7, x9, personal communication, 2021). By control is meant the leadership and sense of responsibility. There should be care for the activities and there should be control and evaluation moments according to the respondents (x4, x5, x7, personal communication, 2021). There are some drivers at the group level, but more leadership

is needed to achieve ambidexterity at the group level. Moreover, this is reflected at the individual analysis level of ambidexterity.

4.2.4 Intervention for idea generation and validity check

The results at the group level were tested in an intervention. This intervention was conducted in a meeting with ambassadors from different faculties. The main question was: *How can we make sure intrinsic motivation for sustainability is achieved among employees and students? What do you see in your faculties when it comes to intrinsic motivation for sustainability?*

At the group level, it is mainly mentioned that each discipline has its own questions. Among other things on the sustainability issue, discipline has its own answer to this question, and each of these answers is at least partly right and contributes to an overall answer. This again reflects that the credibility of the message is really in the execution of the message. As a result, for the faculty, this strategy needs to be implemented more extensively in order to be more practice-oriented than the stated strategy. In this way, the strategy becomes more credible at other levels within the university. According to the respondents who participated in the intervention, there is an important action here.

4.2.5 Conclusion group level

At the group level, a second partial conclusion can be drawn from the given results. This is further explained in the section below.

A structure in the organization can support the achievement of both exploration and exploitation at the group level. However, this does not appear to be sufficient. Ambos et al. (2008) and Chang et al. (2009) write those rewards are needed to encourage exploitation and exploration at the group level. This support mainly coincides with the forward-looking strategy of the organization (Brion, Mothe & Sabatieret al., 2010; Sethi & Sethi, 2009). Furthermore, the study's findings confirm that this is the case at a university. Respondents confirm that funding would contribute to the motivation for employees and students within the university to engage in sustainability. Secondly, respondents mentioned that a tight network is needed to coordinate sustainability. This again gathers the intrinsic motivation that is needed from the bottom up, at the organizational level. Turner et al. (2012) describe that an informal and formal structure at the group level can be of support to become ambidextrous as an organization. This can be confirmed by the results. Respondents mentioned that there are relationships within the formally established Radboud Centre for Sustainability Challenges, for example. On the other hand, the RCSC should be a self-managing and informal network where groups of people can find each other. It is about informal relationships that become self-managing. Respondents

mention that there should be coordination, but that groups of people should also maintain their relationships within themselves.

4.3 Organizational capital on individual level

Based on the multi-level categorization of ambidexterity mechanisms of Turner et al. (2012), organizational capabilities were analyzed at different levels. The third level is the individual level. The research on the individual level investigated multiple cross-functional interfaces to accommodate formal and informal coordination and the usage of both 'best practice' and local managerial discretion and judgement.

4.3.1 Multiple cross-functional interfaces to accommodate formal and informal coordination

In general, the interviews revealed that several cross-functional interfaces contribute to improved sustainability performance. Examples include working groups and core team meetings. These are cross-functional teams where individuals with different qualities are brought together. Individual talents are used by deploying them together. This corresponds in part to the activities at the group level. Furthermore, it includes interdisciplinary research. In this, the groups as they currently exist are aligned with sustainability. However, several respondents, primarily students, stated that they would prefer more informal interfaces at times (x3, x6, x9, personal communication, 2021). It would be easier to implement or suggest ideas in this approach than if no personal contact is possible and only formal meetings could be attended. In terms of informal coordination, there are some coordinators who bring people informally together from different divisions. The sustainability program director and the coordinator of the Radboud Centre for Sustainability Challenges are major players in this. They immerse themselves in specific individuals and areas of expertise and try to capitalize on this during discussions about sustainability. According to respondents, this type of sustainable development leadership is already in place, but the primary goal is for these leaders to become more of a facilitator, allowing individuals to work on their own conditions (x1, x5, x7, x8, x9, x11, personal communication, 2021). Respondents indicated that they enjoyed being able to go informally to managers to ask questions in the case of sustainability issues (x3, x7, x11, personal communication, 2021). Moreover, the citation below refers to this.

Respondent (x3): *"I always found personal contact with managers much easier, they when listen directly, and you can informally spar about what is needed and it comes to actions faster than if it has to be formal. In a formal way it is less accessible for employees and students.''*

Through conversations with these coordinators, more commitment is emerging among employees and students (x2, x7, x11, personal communication, 2021). The findings indicate that these discussions are just getting started and that, in the current situation, innovation in the field of sustainability is possible. There is a growing interest among students and employees individually. According to the results, this is partly due to autonomous developments in the news and to trends in society. Besides this it arises from the university and how they profile themselves. The university educates future professionals. According to the respondents, the academic community should be aware of this. In the end, not only the employees from the divisions must get involved in sustainability, but the students must make it their own.

4.3.2 Use of 'best practice' and local managerial discretion and judgement

First, it is recurring in the interviews that the respondents indicated that the theory of science should be related to practice (x3, x4, x5, x8, x9, x11, personal communication, 2021). Theory and practice should be intertwined. This can ensure that actual change occurs as well. Respondents indicate that the interaction between practice and theory should be acquired within the university (x3, x4, x5, x8, x9, x11, personal communication, 2021). There should be a continuous interaction between what is stated from theory and what is undertaken in practice (x8, personal communication, 2021). For this, the managers, employees, and students should be enabled to do so. Respondents state that the awareness that this is necessary in practice is still too low and there is not enough room for it from the university (x3, x5, x8, personal communication, 2021). These results suggest that there should be more connection between the teaching at master level and the interventions in practice.

Respondent (x8): "That linkage of inside and outside of the strategic management is very important. That's exactly what strategic management should be about. Corporate sustainability is really a topic where you see in practice that there is a need for.''

Second, individual awareness through actions taken in practice is essential. The results suggest that awareness comes after an experience or action in practice. The crisis or moment is dependent not only on change, but also on the combination of theoretical knowledge and practical experience (x1, x4, x5, x8, personal communication, 2021). It is a long process of development which eventually causes a change to take place. It is the same as sustainability. For example, within the university quite a few insights have been gained in practice. This mainly concerns business operations. These operations are then adjusted based on, for example, employee actions. Examples here are plastic bottles of water in welcome packages, Christmas

trees on campus, travel traffic or other ways of managing. Third, it is worth noting that there is a lot of talk about work pressure at the individual level. Respondents indicated that the university already has a high workload, implying that if an individual needs to be motivated to work on sustainable development, there must be something in return (x5, x7, x10, x11). Intrinsic motivation is difficult for the average student or employee to achieve. This is due to the fact that there must be something in exchange for giving up already limited time. Furthermore, respondents indicate that there must be a reward (x1, x2, x5, x6, x7, x10, personal communication, 2021). Individuals strive to become more sustainable. When it takes money or effort it is many individuals leave out.

4.3.3 Intervention for idea generation and validity check

The results at the individual level were tested in an intervention. This intervention was conducted in a meeting with ambassadors from different faculties. In this way, the question was posed: *How can we make sure intrinsic motivation for sustainability is achieved among employees and students? What do you see in your faculties when it comes to intrinsic motivation for sustainability?*

This interfaculty group of people made several points concerning this topic. There are many fundamental motives to manage sustainability concerns collectively at the institution, but no practical initiatives have yet been taken. There are certain barriers to going from motivation to action. Education on sustainable behavior and installing the right reminders in the right places are two evidence-based ways to overcome some of these barriers. Several people have stated that there are many motivations among students at an individual level, and that they see a steady increase in this. However, barriers must be overcome for this to take place. This corresponds to barriers mentioned in the findings, such as creating more cross-functional interfaces, the connection between theory and practice and more leadership. Secondly, in the leadership area, it is mentioned that intrinsic motivation can be encouraged in norm-setting and communication by leaders. For those who are not (yet) intrinsically motivated to work on sustainability, a change in values is needed to motivate them. Clear messages from formal and informal leaders help to change these values. Moreover, this is in line with the results of the interviews in which it is stated that informal and formal leadership must be combined to achieve the set goals at an individual level.

4.3.4 Conclusion individual level

At the individual level, a third partial conclusion can be drawn from the given results. This is further explained in the section below.

At the individual level, it is important to strike a balance between using established best practices and allowing operational flexibility at the discretion of managers (Matson & Prusak, 2003). According to Matson and Prusak (2003), there should be formal activities as well as informal leadership where everyone is motivated from within to innovate. This individual level research confirms this theory. On the one hand, there must be a formal basis for teaching, research and operations. On the other hand, pioneering work must be done by several people in charge. Respondents indicated that this combination could work well within a university. This is also accompanied by remuneration or funding, which is equal to the results at the (faculty) group level. This combination should be balanced according to Jansen et al. (2009) and Tiwana (2010) so that it can lead to better performance. Respondents generally agree with this. By having several responsible people in combination with pioneering work, there should be a growing interest in sustainability coming to light at the individual level.

CHAPTER 5: Conclusion and discussion

Previous research has illustrated that micro mechanisms explain how an organization can achieve ambidexterity. The model used in this research makes a distinction between organizational, human and social capability at three different levels: organizational, group and individual (Turner et al., 2012). From the perspective of organizational capability, this research examined a combination of organizational, group, and individual levels.

5.1 Conclusion on the main findings

The conclusions are presented in the previous Chapter. However, this is per level of analysis for ambidexterity (organizational, group and individual). For this main finding it is important to compare and combine these findings. To answer the research question: *To what extent are micro mechanisms for organizational ambidexterity employed to make a strategic contribution?* After analyzing these three levels, there are several main findings that are interrelated. These are summarized in four themes.

The first recurring theme is the combination of *formal and informal structures*. This recurs in the different themes. It is concluded that both formal and informal structures are important for building organizational ambidexterity. At the organizational level, this is about the different structures in which ambidexterity can be promoted for example. The results indicate that this could be realized by working in a formal hierarchical structure, but that informal interactions are also required to achieve ambidexterity across the institution. Relationships also reflect formal and informal characteristics. For example, at the organizational level, these are the inter-organizational networks that must be formally

established, emerge and study themselves on the other disciplines. At the group level, this is reflected in the social relationships that must be close and may have to be set up formally and then become self-governing in an informal way. Moreover, at the individual level, this is reflected in the managerial qualities needed to lead in a formal and informal way.

The second recurring theme is the *network* within the organization that is important. At the organizational level, this is about inter-organizational networks. Throughout the organization, different departments should work together to achieve the desired results. The results demonstrate that, at the group (faculty) level, there should be collaboration with different departments and disciplines to achieve these sustainability goals. Social relationships will be important in order to expand the network. This would cause people to seek each other out on their own, thus creating teams that are cross-functional. Collaborations could emerge as a result of asking for support as a group and from individuals outside of their own knowledge, ensuring that the organization achieves its ambidexterity aim in terms of sustainability.

The third recurring theme is the *communication* of strategy. At the organizational level, it appears that there is still much to be gained in business operations. The study states that when these business operations become visible throughout the university, there is also more commitment and intrinsic motivation at the group and individual level to work on sustainability goals. It is important that what the strategy of the university states is also reflected at the organizational, group and individual level. This is important to ensure that ambidexterity is not only encouraged from the top of the organization (formally), but also that more initiatives to achieve ambidexterity arise from the bottom up (informally).

The fourth recurring theme also concerns the *intrinsic motivation* of employees and students within the university. The findings suggest that intrinsic motivation is required for an organization to become ambidextrous, because people who are more motivated have a better chance of achieving a sustainability strategy. Moreover, this is related to the other themes in order to ultimately make the entire organization ambidextrous in the area of sustainability.

5.2 Discussion

The central question was to what extent micro-mechanisms for organizational ambidexterity are employed to make a strategic contribution. The results from this study illustrates that the formal and informal structure must be combined for the strategic objectives to be achieved. This confirms the assertion of Turner et al. (2012).

At the *organizational level*, it is remarkable that a long-term strategy is implemented step by step. This incremental change is approached in a formal structure. The innovations are

promoted by the formal structure of the stated strategy. This is consistent with Menguc and Auh (2010) assertion that incremental change of exploitation and exploration is best reflected in a formal structure. It is argued that the informal structure does not contribute to the renewal of innovative capabilities (Menguc & Auh, 2010). Menguc and Auh (2010) claims that informal capability only affects the relationship and strengthening informal capability. The results suggest that for a sustainability goal within the university, informal structure is also needed in order to achieve these goals. In contrast, Gibson and Birkinshaw (2004) suggest that ambidexterity is often arranged informally rather than being arranged formally. In contrast, the results of the study indicate that there should be a combination of a formal and an informal structure. On the one hand, strategy must be determined from the top of the organization, and on the other hand, an informal network must emerge from the bottom of the organization through which goals are achieved. This is consistent with the findings of Turner et al. (2012) and Jansen et al. (2009). They argue that informal and formal control mechanisms combined provide a better outcome of ambidexterity. Furthermore, the formal and informal structures must be balanced. The research suggests that development must take place both on a fundamentally new level and on the refining of present activities. Only the combination of these will ensure that the goals are achieved within the set case.

At the *group level*, the importance of formal and informal structures is also reflected in the results. In addition to the formally imposed strategy, there must be informal motivation at the (faculty) group level to achieve the strategic goals. By this informal motivation is meant a deeper motivation from the bottom up to the to the top of the organization. This is consistent with the findings of Chang et al. (2009), who state that it is important for the organization not only to be governed top-down, but also to take bottom-up steps (Chang et al., 2009). This intrinsic motivation arises, on the one side from the formal environment in which the employee finds himself and, on the other side from the employee himself. This confirms, the same as at the organizational level, the stated literature of Turner et al. (2012). From the results, it appears that this motivation can be enhanced by reward. Specifically, at the group level, the lack of funding and time delayed organizational ambidexterity. Thus, to achieve strategic goals and counteract inertia, there must be rewards at the (faculty) group level. This confirms the findings of Ambos et al. (2008) and Chang et al. (2009). According to Ambos et al. (2008), when faculty are motivated to do activities other than their primary responsibilities, this results in commercial output for the university. Furthermore, Chang et al. (2009) state that if a university wants to perform better, they should also provide support for organizational improvement. In addition, the results confirm that social relationships create more inter-faculty collaborations. These close

relationships are necessary to pursue ambidexterity and these results are consistent with the findings of Jansen et al. (2005).

The results at the *individual level* indicate that there should be a formal basis for research, teaching and operations at the individual level. In addition to this formal basis, respondents indicated that informal pioneering should occur. Mainly, at the individual level, it is about commitment. The theory and the findings from the research correspond here. As at the group level, rewards are carried out at the individual level, because they are associated with intrinsic motivation and commitment. This balance is consistent with the findings of Jansen et al. (2009) and Tiwana (2010). The results illustrate that cross-functional teams are needed that promote ambidexterity within the university. By bringing together different individuals with different knowledge, there can be interesting initiatives related to ambidexterity. Furthermore, Jansen et al. (2009) state that these cross-functional interfaces have an effect on promoting organizational ambidexterity. Furthermore, this interactive need is consistent with the findings of Tiwana (2010), who state that it is necessary to have control mechanisms for informal control and facilitation and requires evaluation of activities. From the results, it also emerges that it is necessary to appoint some managerial leaders who perform this facilitating and controlling function.

5.3 Implications

In addition to providing interesting findings, there are also some implication and limitations in this study. These are described in the section below.

5.3.1 Theoretical implications

This research contributes to the organizational ambidexterity literature. First, it uncovers aspects of the extent of the micro mechanisms that enable organizational ambidexterity and how this can lead to the achievement of strategic goals. It provides insight into how ambidexterity can be a dynamic capability for an organization. The study answers the call of Turner et al. (2012), for further research into understanding the micro mechanisms for an ambidextrous organization. There are many collective and structural studies, but the application of Turner et al.'s (2012) model presents the opportunity to better understand theory and practice at different levels. A contribution was made to the demand for smaller N-case studies to better understand practice.

5.3.2 Practical implications

In addition to the scientific contribution, this research makes a societal contribution. This is because the findings can serve as information for Radboud University. Within Radboud University it is mainly useful information for the coordinators of Radboud Centre for Sustainability Challenges and Radboud Sustainable. When considerations are made to innovate, this research can be used as a guide. The research can be used to make changes within the strategic choices.

5.3.3 Limitations

In addition to this research gathering scientific and societal insights, there have been some limitations to this research. First of all, the research was done at one HEI and, therefore, the results are from this case. This makes it difficult to determine if there are factors that are unique to this HEI. When generalizing about another setting or organization, exercise caution. The results and conclusions may not be reliable in another setting. Second, during the investigation, it was discovered that the observations did not produce the expected outcomes as planned. The observations were designed to be specific to be incorporated into the final results and conclusion. However, these cases were mainly useful for getting a better idea of the organization as a researcher. In addition, these observations also provided personal involvement. The reason for the difficulty in observing the organization is partly due to the restrictions imposed by the Covid-19 virus. Because of these measures, all observations, interviews and the intervention were online. Nonverbal actions and content were visible, but it is possible that the results were misinterpreted because of these online meetings.

Methodical and scientific lessons can also be learned from the study. During the study, a transdisciplinary and exploratory approach was encountered. It is referred to as transdisciplinary because it has a minor impact on society. However, this actual impact is small because the exploratory approach has led to a different research direction than previously stated. It was planned ahead of time that multiple interventions would take place. During the research, these interventions turned out to be more of a validity check or brainstorm and there was too limited time to make these interventions impactful in society. This teaches us that there should be more time or a more established structure in place from the start so that the exploration is less intense and the research is less iterative.

5.3.4 Suggestions for further research

Given the limitation of the study, follow-up research can be done. First, it is recommended that organizations or HEIs that are different from the case studied be analyzed. The results and conclusions can then be compared. Second is to further investigate entire model of Turner et al.

(2012) in a similar type of organization. Thus, in addition to organizational capability, human and social capability can also be analyzed. This analysis should then also take place at the organizational, group and individual level. In this way, more depth can be added to the entire model. It is advisable to conduct more in-depth research on the findings of this study. Suggestions for this are research into formal/informal structures, network, communication and intrinsic motivation.

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APPENDIX

Appendix A: a multi-level categorization of ambidexterity mechanisms

(Turner et al., 2012)

Table 3. A multi-level categorization of ambidexterity mechanisms

Levels of analysis	Intellectual capital resources		
	Organizational capital	Social capital	Human capital
Organization	Structural configuration and separation. Development and maintenance of inter-organizational relationships. Coexistence of formal and informal structures.	Knowledge-sharing relationships with new and existing external parties. HR practices supportive of ambidexterity.	Individuals reconcile and coordinate exploitative and exploratory functions. Management ability to reconfigure organizational assets. TMT behavioural integration and complexity.
Group	Reward systems to support ambidexterity. Processes for creating dense social relationships and informal coordination. Formal and informal managerial integration and control mechanisms.	Complex network of strong and weak ties for effective knowledge-sharing, supported by formal and informal behaviours. Relationships supportive of ambidexterity. Shared values and goals.	Strong, compelling vision. Participation in cross-functional interfaces. Transformational leadership.
Individual	Multiple cross-functional interfaces to accommodate formal and informal coordination. Use of both 'best-practice' and local managerial discretion and judgement.	Individuals creating and supporting the context for ambidexterity. Both relational- and task-focused leadership.	Taking the initiative; cooperative behaviour; multitasking; brokering.

Appendix B: Interview guide

The qualitative data was collected through in-depth interviews conducted using semi-structured questionnaires. Semi-structured questionnaires allow for deviations from the main themes, allowing the respondent room for their own input (Myers, 2013). Semi-structured interviews make it possible to find out what is happening within Radboud University in the field of sustainability and how micro mechanisms are used to achieve organizational ambidexterity.

Based on the theory, topics have been formulated that make the main concepts measurable. The interview questions are based on different topics. The topics can be found in Appendix A.

At the start of the interview, the purpose and anonymity of the study are made explicit, and it is asked if the conversation may be recorded. The interviews are specified by the person and the relevant function (student, employee or external).

Central questions

a. Can you take me through the transition you see from your expertise in society in terms of sustainability?

b. What do you think this transition means for organizations? (in terms of Corporate Sustainability)

c. What does this transition mean for the Higher Education Institutions? (In terms of the Radboud University)

d. What capability do you think the University needs to innovate? (In terms of ambidexterity)

Topics interview questions

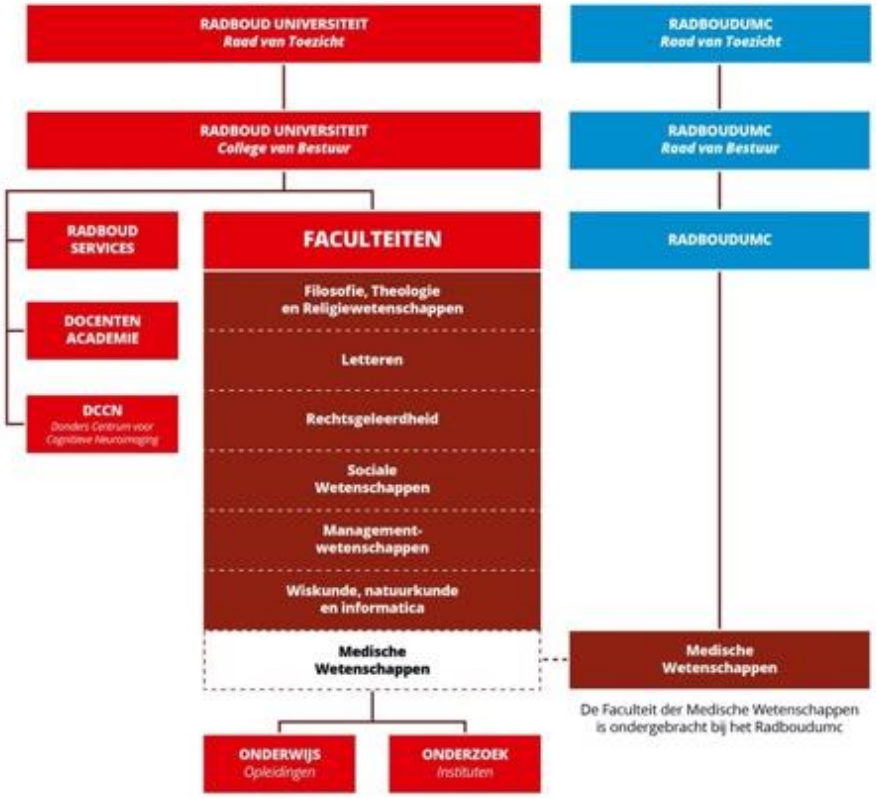
- Organizational capital on organizational level

Topics	**Interview questions**
- Structural configuration and separation (Menguc & Auh, 2010). - Development and maintenance of inter-organizational relationships (Turner et al., 2012). - Coexistence of formal and informal structures (Gibson & Birkinshaw, 2004; Menguc & Auh, 2010).	- In the Radboud Strategy, the term "societal impact" or "strategic impact" is used. Can you explain what we're talking about when we talk about societal impact? - How is innovation in education, research and operations regulated? Is there a radical change or a more temporal change? - In what and what kind of innovative activities do you see the sustainability strategy of Radboud University reflected? - What impact do inter-organizational relationships have, and are there enough of them at the university?

- Organizational capital on the group level

Topics	Interview questions
- Reward systems to support ambidexterity (Chang et al. 2009; Ambos et al. 2008). - Processes for creating close social relationships and informal coordination (Jansen et al., 2005). - Formal and informal managerial integration and control mechanisms (Turner et al., 2012).	- What does sustainability developments look like at the group level? - How is this development within the different faculties? Is there a commitment within these groups? - What would help motivate you at the group level? - What exactly is an interdisciplinary collaboration at Radboud University? - What leadership and managerial integration and controls are in place within the university?

- Organizational capital on the individual level

Topics	Interview questions
- Multiple cross-functional interfaces to accommodate formal and informal coordination (Jansen et al., 2009). - Use of both 'best practice' and local managerial discreation and judgement (Turner et al., 2012)	- At the individual level, what is the intrinsic motivation to innovate? - What do the working groups? What is the composition of the core team? How diverse are they assigned? - How are individuals motivated? - What is reflected in individual actions in practice?

Appendix C: Organization chart