

Master thesis
Business Administration
Strategic Management

Motives for the position in the Paradox of Openness:
The contextual influence on the relation between the regulatory
focus trait and -state of individual strategic decision-makers'
position in the Paradox of Openness

- *Radboud University Nijmegen* -

Author: Emma Kleinreesink

Student number: s1064227

Supervisor: Dr. Monic Lansu

2nd examiner: Dr. Sjors Witjes

Acknowledgement

I would like to express my gratitude to my primary supervisor, Dr. Monic Lansu, who guided me throughout this research with her inspiration, expertise and support.

My second reader, Dr. Sjors Witjes, provided me with useful feedback which made it possible to successfully perform the research, for which I would like to thank him as well.

My special thanks also go to the company that made it possible for me to conduct an interesting case study and obtain useful data for this research. I would also like to thank my fellow students for supporting each other. Last but not least, I would like to thank my friends and family for supporting me during this last project of my master's program in Business Administration with the specialization Strategic Management at the Radboud University.

Abstract

Digitalization causes business ecosystems becoming more complex. However, the necessity to respond to digitalization is high and one way to do so is value co-creation. This way to respond to digitalization gave rise to the concept of open innovation, which states that companies cannot innovate alone but have to cooperate with external actors in the ecosystem. A hot topic of open innovation is the Paradox of Openness, being a tension between knowledge sharing and knowledge protection with external actors in the ecosystem. As strategic decision-makers motivate such choices differently, we have used the motivational regulatory focus theory and applied this in a qualitative case study with interviews among eight strategic decision-makers in a specific business ecosystem to investigate how their regulatory focus is related to their position in the Paradox of Openness in certain contexts. Our study reveals that the specific contextual factors: the strategic context, integrity and a perceived necessity influence the regulatory focus state, regarding individuals' behavior, which results in a different focus compared to the regulatory focus trait, regarding the natural tendency, which is towards knowledge sharing concerning innovation in this sense. The research provides insights in how individual strategic decision-makers influence open innovation in certain contexts and provides practical implications for companies to manage this influence.

Table of contents

Acknowledgement	3
Abstract	4
1. Introduction	7
1.1 Data collection	10
1.2 Research objective and research question	10
1.3 Theoretical- and practical relevance.....	11
1.4 Outline research	12
2. Theoretical background.....	13
2.1 Relevant theories and perspectives	13
2.1.1 Paradox of Openness	13
2.1.2 Regulatory focus theory.....	15
2.2 Assumptions	18
2.3 Conceptual model.....	19
3. Methodology.....	20
3.1 Research approach	20
3.2 Single case study.....	20
3.3 Data collection	21
3.4 Respondents.....	22
3.5 Data analysis procedure.....	23
3.6 Operationalization.....	24
3.7 Validity and reliability.....	24
3.8 Research ethics.....	25
4. Results.....	26
4.1 Regulatory focus trait	26
4.2 Strategic context.....	27
4.3 Influence of context on regulatory focus state.....	28
5. Conclusion.....	37
6. Discussion	38
6.1 Theoretical reflection	38
6.2 Practical implications	38
6.3 Methodological reflection.....	39
6.3.1 Internal validity	39
6.3.2 Reliability and verifiability	40
6.3.3 External validity	41
6.3.4 Usability.....	41
6.4 Suggestions for further research.....	41

7. References43

8. Appendix46

 Appendix 1. Interview questions46

 Appendix 2. Code tree regulatory focus.....47

 Appendix 3. Dictionary regulatory focus words.....48

1. Introduction

Digitalization in the Netherlands

The digitalization area in the Netherlands is in an advanced stage when it comes to usage and expertise. The ICT sector is expected to increase by 5% in 2022 due to the increasing demand for technological products and solutions. As a result, the number of new companies in this segment increases as well (Rabobank, 2021). To guarantee the leading position of digitalization in the European Union, the Dutch government is putting effort into seizing opportunities regarding digitalization. Concrete actions are put on the political agenda to support organizations and citizens with the development of digitalization (Rijksoverheid, n.d.). Furthermore, 53% of the large and mid-sized organizations in the Netherlands expect an increase in their spendings on digitalization up to 5% (PwC, 2016).

Digitalization in business ecosystems

Consequently, business ecosystems, which are considered as “a dynamic structure which consists of an interconnected population of organizations.” (Anggraeni et al., 2007, p. 6) are becoming more complex and unpredictable due to digitalization (Jacobides, 2019). However, the necessity for companies to respond to digitalization in order to stay ahead of the competition and to stay relevant in the industry is high. There are many ways in which companies can respond to digitalization. One way is illustrated by McGrath (2013), who states that with regards to strategies, firms should not stick to one long-term strategy, but they should create a portfolio of advantages that complies with the latest digitalization trends in order to be resilient to continuous dynamics like digital innovations. Furthermore, Foege et al. (2019, p. 1324) state: “appropriating value from scientific discoveries and technological developments is critical, as it enables firms to reinvest in R&D and ensure their long-term survival”. Another way to deal with digitalization in business ecosystems is value co-creation, illustrated by the study of Ikävalko et al. (2018), who state that knowledge sharing between different actors form the basis for value co-creation in digital business ecosystems when responding to innovation. In this study, we focus on value co-creation by knowledge sharing in business ecosystems as a way for companies to respond to digitalization.

Open innovation

The necessity to respond to digitalization by value co-creation gave rise to the concept of open innovation. Open innovation is based on the idea that, especially in the 4th industrial revolution, a single organization cannot innovate in isolation. Organizations have to collaborate with external stakeholders in the business ecosystem by intentional inflows and outflows of knowledge in order to stay ahead of the competition (Bigliardi et al., 2021). However, knowledge sharing turns out to be a multifaceted issue due to companies not knowing all the other actors of innovation in the ecosystem (Paasi et al., 2020). This issue occurs specifically in innovative business ecosystems as they become more and more complex due to digitalization (Jacobides, 2019). This results in a tension between knowledge sharing

and knowledge protection with external actors in the case of open innovation. This innovation-related tension is known as the Paradox of Openness and arises as firms need to be open to collaborating with external actors in order to innovate, while at the same time they also need to protect internal knowledge to capture returns from their innovative ideas (Paasi et al., 2020). The paradox thus can be considered as an important characteristic of open innovation

The influence of individuals on a firm's openness

However, most research on knowledge sharing in open innovation in digital- and innovation related business ecosystems is about processes at firm level, addressing the question how open innovation can be made more efficient (Foege et al., 2019; Laursen & Salter, 2014; Paasi et al., 2020; Schmeiss et al., 2019). The role of individual decision-makers in open innovation processes has hardly been researched as yet (Foege et al., 2029). This least explored area of open innovation requires more attention for several reasons.

First, individual employees play a significant role in the area of open innovation. This results from individuals having different characteristics and will react differently to innovation in ecosystems (Bogers et al., 2018). For this reason, Bogers et al. (2018) have investigated how certain individual-level attributes related to employees' knowledge diversity aggregate to firm-level use of external knowledge for innovation. However, this research has not taken into account personal characteristics and indicated further questions about the influence of individuals on firm openness. This gap in the literature was earlier identified by the research of Dahlander et al. (2016), who found that external-focused individuals are only more innovative under the condition of allocating high attention to external knowledge sources. Still, the study indicates that insights on the influence of individuals on a firm's open innovation are lacking.

Besides, previous studies have shown that the range of employees being responsible for knowledge flows that benefit open innovation is becoming more distributed across organizations due to digitalization (Bogers et al., 2018). However, Whelan et al. (2010) found that not every individual might be suitable for effectively performing the responsibility for knowledge flows as it requires specific personal characteristics such as networking capabilities.

The lack of research on personal characteristics with regards to open innovation can therefore be seen as problematic, as it are no longer only specific functions being responsible for open innovation, but it becomes a responsibility for many persons in the organization and the success of it thus becomes dependent on more different personal characteristics (Whelan et al., 2010). In this sense, Ritala and Stefan (2021) found that successful knowledge flows between senders and receivers depend on their different motivations. This dependency of successful knowledge flows on personal motivations opens up an opportunity to investigate strategic decision-makers' personal characteristics and in particular how they motivate their decisions in relation to open innovation, such as the choice for knowledge sharing

or knowledge protection as two opposites of the Paradox of Openness as an important characteristic of open innovation.

Motivational regulatory focus theory

Therefore, we use a motivational theory to investigate the motivations for the positions (which are considered as the choice for knowledge sharing or knowledge protection) that individual strategic decision-makers take in the Paradox of Openness. For this purpose, we use regulatory focus theory as a theoretical lens. This motivational theory provides insights in personal characteristics and addresses in particular how decisions are motivated by individuals (Higgins, 1998).

According to Higgins (1998), people's motivated behavior is influenced by their regulatory focus. Using regulatory focus theory as a theoretical lens allows this research to investigate how people act in certain situations like when they are faced with the Paradox of Openness. That is, as regulatory focus theory describes how people regulate pleasure and pain (Higgins, 1998). It states that people are driven by two motivational systems: promotion focus and prevention focus. With a promotion focus, one tries to achieve positive outcomes and promotes gains. With a prevention focus, one prevents losses and is associated with the presence or absence of negative outcomes. These two different focuses have a major impact on people's feelings, thoughts and consequently people's actions. It even influences people's goals and their strategies to achieve those goals.

More specifically, regulatory focus can be manifested as a chronic trait or as a momentary situational state (Monni et al., 2020). "Chronic orientations characterize individual differences that are stable traits and natural tendencies. Momentary orientations or states refer to moment-to-moment inclinations that are temporarily activated by specific situations." (Monni et al., 2020, p. 4). Individuals' stable traits and situational states can have a different focus (promotion or prevention), as they use different self-regulation strategies to reach their end states (Higgins, 1997; Monni et al., 2020). It is thus important for this study to consider both the regulatory focus trait and state, as individuals' actual actions, induced by their regulatory focus state, can differ from their general personality, regarding the regulatory focus trait. This distinction between trait and state was defined in terms of a hierarchy including system, strategy and tactics by Johnson et al. (2015), who investigated multilevel regulatory focus in organizations. The system level most closely maps to a preference for end states or outcomes, the strategic level is a general preference for means and the tactical level maps to situationally specific means. In other words, the system/strategic levels relate to a regulatory focus trait, while the tactics level relates to a regulatory focus state (Johnson et al., 2015). Following this, this study will further address the regulatory system/strategy as the regulatory focus trait and the regulatory tactics as the regulatory focus state.

1.1 Data collection

In order to obtain empirical evidence to add to the existing literature on open innovation in business ecosystems (Bogers et al., 2018; Dahlander et al., 2016; Foege et al., 2019; Paasi et al., 2020), data will be collected at an industrial manufacturing company in the Netherlands. The company is growing rapidly and is more and more responding to trends in the market. As the company was originally not innovation-oriented but their strategy shifts more towards responding to demands for innovation in the market, strategic decision-makers are relatively more often confronted with strategic choices regarding open innovation compared to the past.

In more detail, the company has decided to respond to an Internet of Things (IoT) trend. The company aims to realize the implementation of this digital technology by collaboration with their external partners and other relevant companies. This illustrates that the company is involved in a digital business ecosystem that is faced with open innovation, which results in strategic decision-makers being faced with the Paradox of Openness in which they have to make the decision between knowledge sharing or protection from external parties about innovative ideas. As the Paradox of Openness explicitly occurs in digital related ecosystems (Paasi et al., 2020), a single case study at this company that is part of a digital related business ecosystem fits in with the characteristics that relate to the theory. This allows us to obtain relevant insights on the concept of open innovation with the Paradox of Openness in particular. Interviews with several decision-makers on strategic level will provide empirical data on the topic to be researched. This is further explained in chapter 3.

1.2 Research objective and research question

The above findings lead to the following objective of this research:

This research aims to contribute to theory about individual's influence on their organization's open innovation by providing insights into how the regulatory focus of strategic decision-makers in a digital related business ecosystem relate to their position in the Paradox of Openness.

In order to achieve this objective, the following research question is formulated:

How does the regulatory focus of strategic decision-makers in a digital related business ecosystem relate to their position in the Paradox of Openness?

To be able to give a substantiated answer to the research question, the following sub-questions are formulated:

- 1.1 What is the regulatory focus trait of individual strategic decision-makers in a digital related business ecosystem?
- 1.2 What are contextual factors that are of relevance for making the choice for knowledge sharing or knowledge protection?

1.3 What is the regulatory focus state of individual strategic decision-makers in a digital related business ecosystem when facing the decision for knowledge sharing or knowledge protection?

1.4 What decisions did individual strategic decision-makers in a digital related business ecosystem make between knowledge sharing or knowledge protection?

1.3 Theoretical- and practical relevance

Existing literature in the domain of open innovation is mainly about motivations on organizational level to engage in open innovation (Bogers et al., 2018; Dahlander et al., 2016; Foege et al., 2019; Paasi et al., 2020). This study aims to add to this literature by investigating individuals' motivations to engage in open innovation using regulatory focus theory. Herewith, insights will be provided into personal characteristics of individual strategic decision-makers and how this relates to their choices for knowledge sharing or knowledge protection. Research on this topic using the lens of regulatory focus theory is relevant as the individual level requires attention in the domain of open innovation (Foege et al., 2019). That is, because more and more individual decision-makers in organizations are responsible for knowledge flows with external actors in the business ecosystem (Bogers et al., 2018). Therefore, it is useful to know what motivate those different individuals with different characteristics to make certain choices related to knowledge sharing or knowledge protection and thus what position they take in the Paradox of Openness. Using the motivational regulatory focus theory will provide insights in this area. This will ultimately contribute to closing the gap in the literature about how individuals influence open innovation (Dahlander et al., 2016). Furthermore, knowledge flows are crucial for value co-creation in digital business ecosystems (Ikävalko et al., 2018), which makes insights in the Paradox of Openness on the individual level relevant for determining how open innovation is influenced.

With regards to regulatory focus theory, this study applies regulatory focus to a domain where it has, to our knowledge, not been applied to before, namely open innovation. However, this is relevant, as open innovation is a hot topic (Paasi et al., 2020) and the success of it depends on motivations of individuals (Ritala & Stefan, 2021). The study further adds to the limited qualitative case study material on the hierarchical levels of regulatory focus that distinguishes between the regulatory focus trait and state within one study (Johnson et al., 2015).

Next to that, not much literature exists that takes into account that strategic decisions are made by humans in the organization rather than the organization itself. This research aims to support organizations in gaining understanding of individual decision-makers' intentions and purposes, as personal goals, strategies and perceptions of situations differ from person to person. The insights of this study could therefore support negotiations on decision-making to be driven more by an understanding of each other's points of view rather than just frenetic dialogues on a technical level.

Furthermore, these insights could support understanding of various stakeholders in the decision-making process. For instance, when individuals perceive strategic decisions as non-ethical or do not understand

the motivation of the choices in another way. In this sense, this study could provide validation for the choices made based on certain motivations of decision-makers.

The single case study in combination with the literature review in the following section makes this study both practical as well as theoretical oriented. The insights by using a regulatory focus approach will add to the literature on the Paradox of Openness by providing a more individual-centric approach.

1.4 Outline research

The subsequent section provides the theoretical framework of this study. Thereafter, an explanation of the used methods to collect and analyze data is given. That section will be followed by the actual data analysis presented by results. Finally, a conclusion based on the results and a discussion with a theoretical- and methodological reflection are provided.

2. Theoretical background

2.1 Relevant theories and perspectives

This chapter contains an overview of relevant existing literature on the Paradox of Openness and regulatory focus theory. The first part of this chapter addresses existing literature and several relevant perspectives on the Paradox of Openness. The second part consists of existing literature on regulatory focus that is of relevance for this study. Finally, a conceptual model is provided that presents our assumption that we made based on the literature review.

2.1.1 Paradox of Openness

Concerning open innovation in business ecosystems, Paasi et al. (2020) found that there exists a Paradox of Openness among stakeholders that are faced with innovations. This paradox implies a tension between knowledge sharing and knowledge protection with regards to external actors. As single firms are not able to innovate alone but require a wide number of different knowledge sources outside the boundaries of the firm, being open towards innovation becomes crucial. However, being open towards external stakeholders and sharing knowledge with them threatens the potential return that can be captured from innovative ideas and markets in the future (Paasi et al. 2020). This results in resistance towards openness (Laursen and Salter, 2014).

In this sense, Laursen and Salter (2014, p. 1) refer to the Paradox of Openness as: “the creation of innovations often requires openness, but the commercialization of innovations requires protection.” In another context, Witte et al. (2020, p. 5) define the paradox of openness as: “the seeming tension that arises between benefits from open data sharing on the one hand, and conflicting interests to do so on the other hand.” The paradox is explicitly prevalent in business ecosystems as not all the actors of innovation are known. This is different from innovative networks, where the actors are known and the problem of knowledge sharing and protection is easily solved by joint ownerships which decreases the tension (Paasi et al., 2020).

Consequently, the existence of the paradox indirectly affects value co-creation in business ecosystems as this is being established by knowledge flows (Ikävalko et al., 2018). Assuming that actors might protect knowledge to prevent competitors from copying it might hinder the value creation process.

When diving into the literature on factors that influence openness towards external actors in the ecosystem, we find several motivations for either sharing or protecting knowledge. Furthermore, we find that the motivations depend heavily on contextual factors such as costs, the (complexity) of organizational boundaries and knowledge-, organization- and network characteristics.

Firstly, Ritala & Stefan (2021) found that especially in business ecosystems, there is a variety of motivations for sharing or protecting knowledge, besides the existence of multiple senders and receivers and bargaining dynamics. The motivation for the protection of knowledge is that a competitor might

copy the idea and the security of profit is at risk. This is in contrast to the motivation to share knowledge in order to receive rewards in terms of knowledge in return in order to benefit innovation (Ritala & Stefan, 2021).

Besides, we find that Laursen and Salter (2014) argue that openness and appropriability are closely linked concepts. Appropriability refers to obtaining significant economic returns from innovative activities (Foege et al., 2019; Laursen & Salter, 2014). The study of Laursen and Salter (2014) states that appropriability in the sense of capturing profit from an innovative idea is a predictor for keeping knowledge within the boundaries of the firm. As knowledge loses its value once shared (Ritala & Stefan, 2021), this predicts the protection of knowledge.

Based on the relationship between appropriability strategies and the Paradox of Openness, we take into account that protecting or sharing knowledge with other actors can be predicted by decision-makers' interest in making profit from an innovative idea. The distinction between the demand for security to make profit on the one hand and the demand for receiving knowledge in return without security of profit from innovation on the other hand can be considered as appropriation strategies that relate to the two opposites of the Paradox of Openness.

When we further address literature on the Paradox of Openness in ecosystems with respect to value creation processes, we find that Ritala and Stefan (2021) state that successful knowledge flows are hard to achieve for companies operating in ecosystems. This is due to complex organizational boundaries. However, they find and validate the earlier mentioned statements that knowledge flows are required to achieve organizational innovation and realize value co-creation. However, the different motivations and bargaining dynamics among knowledge senders and receivers across organizational boundaries make it challenging to transfer knowledge. In particular, power imbalance and risks negatively affect a successful knowledge transfer across organizational boundaries. In this sense, Ritala and Stefan (2021) argue that actors share knowledge when they want to create new value, while they protect knowledge when they rather capture value as exposing knowledge is perceived as too risky.

Another view of Ritala and Stefan (2021) on knowledge sharing and protection is the way in which knowledge is searched for. It was found that once knowledge is searched outside of the organization's borders, it is more likely that knowledge is shared with other actors. On the other hand, when knowledge is searched within the borders of the organization, knowledge is being protected from other actors.

Another context that is of relevance for the decision between knowledge sharing and knowledge protection is causal ambiguity of knowledge (Van Wijk et al., 2008). These authors found that the choice is dependent on the easiness of communicating, interpreting and absorbing the knowledge. Besides, knowledge ambiguity results in a difficulty for competitors to copy the knowledge, which influences the decision. Besides the characteristics of the knowledge, the organization's characteristics turned out to be of relevance as well for the decision. Van Wijk et al. (2008) found that firm size, prior experience and related knowledge contributes to the decision for transferring knowledge. Also network

characteristics were found to be of relevance for decision-makers for the choice between knowledge sharing and knowledge protection (Van Wijk et al., 2008). In particular social-capital, structural, relational and cognitive capital is related to the decision.

The above findings indicate that the choice for knowledge sharing or knowledge protection is contextually influenced rather than made based on personal convictions.

2.1.2 Regulatory focus theory

Regulatory focus theory is used to research how personal characteristics relate to choices for knowledge sharing or knowledge protection and thus to the positions in the Paradox of Openness. Regulatory focus as a motivational theory provides a relevant theoretical lens for identifying motivations of strategic decision-makers for their choice between knowledge sharing or knowledge protection.

The principle of regulatory focus is that people have fundamental needs for safety, security, as well as for growth and advancement (Higgins, 1998). According to Higgins (1998), fundamental needs determine people's goals, which strategies they follow to achieve those goals and which feelings they have when they do or do not achieve those goals. There are two ways in which individuals can regulate pain and pleasure, namely by a promotion focus and a prevention focus. These ways of regulation affect people's feelings, thoughts and actions. Although all individuals have needs for both safety, security and growth and advancement, they can have a different focus within their regulatory trait and state. This means that a person's state does not necessarily have the same regulatory focus as their trait (Monni et al., 2020).

Higgins (1998) explains that there are a set of hierarchically structured aspects that relate to both a prevention and promotion focus. These are fundamental needs, goals, strategies and feelings.

When considering the strategic differences between a promotion and a prevention focus, we find the following aspects (Crowe & Higgins, 1997; Higgins, 1998; Johnson et al., 2015):

On the one hand, individuals with a prevention focus have the fundamental need for security, safety and responsibility. Their goals are duties, obligations and necessities. The way in which they qualify the achievement of their goals, considered as their strategy, is being prudent, precautionary and thereby avoiding mismatches to the desired end state. Those individuals are motivated to prevent mistakes and minimize their chances for a mismatch between the current state and the outcome by ensuring they avoid errors of commission. The absence or presence of negative consequences results in the emotional experience of quiescence and agitation, respectively.

On the other hand, individuals with a promotion focus have the fundamental need for growth, advancement and accomplishments. Hopes and aspirations relate to their goals. Their strategy is to make progress by approaching matches to the desired end state by maximizing their chances. Therefore, they try out several behaviors to see what works to achieve a match between their current states and the actual

outcome. Emotional responses to the non-reward and reward for accomplishments are cheerfulness and dejection, respectively.

Next to the above-described hierarchy in aspects by Higgins (1998), (Johnson et al., 2015) identified a self-regulatory hierarchy in motivational abstraction when it comes to individuals' regulatory focus within organizations, namely: system, strategy and tactic. This is known as multilevel regulatory focus. As described in the introduction, the system level indicates preferences for desired end states or outcomes as a reference point for motivated action. The strategic level closely maps to a general preference of means used for goal striving, while the tactical level indicates situational-related means during goal striving.

The general systems related to regulatory focus are in terms of gains and non-gains for a promotion focus and losses and non-losses for a prevention focus. The strategies being used to strive for desired outcomes are vigilant strategies for a prevention focus and eagerness strategies for a promotion focus. Common vigilant strategies are high levels of diligence and a high threshold for approval, which results in approval only for cases with high security. For these types of strategies, non-failure is of high relevance in contrast to success. Common eagerness strategies are low thresholds for approval and a lack of due diligence. The corresponding behavior is approaching gains and avoiding non-gains. For promotion-focused individuals, failure is irrelevant, in contrast to success (Johnson et al., 2015).

Important to note is that the system, strategy and tactic levels explored by Johnson et al. (2015), which correspond to the regulatory focus traits and states explored by Higgins (1998), are independent of each other, which results in the ability of individuals to alter tactics/behavior regardless of their system- and strategy orientation (Johnson et al., 2015) or regulatory focus trait (Higgins, 1998). When relating this to decision-making, the study of Johnson et al. (2015) indicates that individuals self-regulate behavior to adjust to situational factors. In other words, context influences how individuals use tactics and thus whether they behave with a prevention- or promotion focus, even though their strategic preferences might have a different focus (Johnson et al., 2015). In the literature, this is known as "situational regulatory focus", identified by (Cesario et al., 2008). These authors state that a promotion- or prevention regulatory focus state can momentarily be activated by situational features. In this sense, Cowden & Bendickson (2018, p. 940) researched impacts of regulatory focus and institutions on innovation and found that "situational regulatory focus stems from an additional factor that influences a decision beyond the innate motivation of the individual." In other words, strategic decisions, which can be considered as a momentary state or tactic, could be altered from a particular focus to the other in certain contexts, regardless of the system/strategy or regulatory focus trait.

When we further address the theory of Johnson et al. (2015), we find that in particular, for prevention-focused individuals, the status quo is the salient outcome at the systematic and strategic level. However,

when those individuals experience a loss state, they make promotion-focused tactical decisions when they have no way to return to the status quo (Scholer et al., 2010), which can be considered as a specific contextual influence. In this respect, Johnson et al. (2015) state that:

prevention-focused individuals seek risk when a situation takes them from the safety of status quo. When there is a choice between safe and risky options that can restore a status quo state from a loss state, a prevention focus predicts risk aversion in decision making. However, when faced with a lack of options that resolve the loss condition to the status quo, prevention focus predicts risk seeking. (p. 1505)

In other words, it is likely that prevention-focused individuals will alter their tactics/behavior into promotion-focused when they are confronted with the context of a loss state where there is a lack of options to return to the status quo. A shift from promotion- to prevention focus tactics are not likely for promotion-focused individuals, as the status quo is not a salient outcome for them.

Based on these findings of Johnson et al. (2015), we take into account the general notion that the regulatory focus state can be influenced by contextual factors.

When we further dive into the literature on what regulatory focus theory is able to predict regarding individual behavior within organizations, we identify several relevant findings.

Firstly, Gorman et al. (2012) found that regulatory focus predicts the levels of information sharing and motivation to solve innovation-oriented problems. As a promotion focus is concerned with realizing positive outcomes, it is positively related to information sharing and innovative-related problem solving. However, a prevention focus is negatively related to this.

Secondly, Crowe and Higgins (1997) found that strategic inclinations are affected by regulatory focus. A prevention focus results in guarding against errors and ensuring that errors will not be made due to individuals' prudence, precautions and avoiding mismatches to the desired end-state.

With a promotion focus, the strategic inclination is to ensure against omitting possible matches due to making progress by approaching matches to the desired end-state.

These relations could be underlying reasons for protecting or sharing knowledge with actors as well.

Third, with regards to economic decisions, regulatory focus theory explains how individuals approach desired ends. In this sense, the theory predicts individuals' preferences for absolute- or relative economic outcomes (Gu et al., 2013). Relative outcomes can be considered as outcomes that are compared to others and have important consequences for individual well-being. Absolute outcomes are a result of pursuing the greatest amount of necessities, conveniences and luxuries (Gu et al., 2013).

It was found that a prevention focus motivates people to regulate relative economic outcomes as a result of concerns with social status and security. In contrast, a promotion focus motivates people to focus on absolute economic outcomes as a result of maximization of opportunities.

Overall, we can state that a prevention focus is more concerned with the choices of other decision-makers, while a promotion focus is more concerned with overall accomplishment.

The reasons why individuals have a preference for either of these two types of outcomes could be underlying reasons for the tendency towards knowledge sharing and knowledge protection as well.

2.2 Assumptions

Based on the above findings that regulatory focus is related to several strategic decisions, we argue that regulatory focus theory in general is related to strategic decision-makers' choice for knowledge sharing or knowledge protection, considered as their position in the Paradox of Openness.

More specifically, taking into account the found literature on the Paradox of Openness and regulatory focus theory, we assume that the context of the situation results in a different regulatory focus state compared to the regulatory focus trait when it comes to the Paradox of Openness.

This assumption is based on the theory of Johnson et al. (2015). According to this theory, the decision to share or protect knowledge can be considered as a tactic by individual decision-makers and corresponds to the regulatory focus state. The study shows us that tactics are not necessarily related to the regulatory system or strategy of the individual, which can be seen as the regulatory focus trait. Based on the context of the situation, one regulates their behavior to the situation possibly into a different regulatory focus state (Johnson et al., 2015). Besides, the literature on the Paradox of Openness also indicates that contextual factors are of relevance for the choice between knowledge sharing and knowledge protection. Thus, we assume that the regulatory focus state, which motivates strategic decision-makers to make the decision for knowledge sharing or knowledge protection, is not necessarily related to the regulatory focus trait, regarding the regulatory system or strategy of their natural tendency towards knowledge sharing in open innovation, but is influenced by the context of the situation.

This assumption will be tested by a single case study. This is further explained in the Methods section.

The expected relationship is visually represented in a conceptual model in the following section.

2.3 Conceptual model

The following conceptual model provides a visualisation of the assumptions of this study.

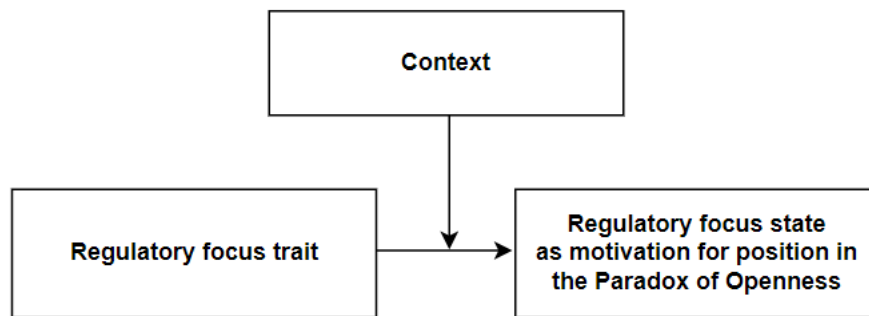


Figure 1. Conceptual model assumption

3. Methodology

This chapter consists of an explanation of the research methodology that was used for this study. The data collection and analysis will be addressed in order to indicate the consequences for the validity and reliability of this study as important quality criteria. Furthermore, an operationalization of the dimensions and indicators of the research is provided.

3.1 Research approach

The purpose of this study is to provide insights into the personal motivations related to the position strategic decision-makers take in the Paradox of Openness to contribute to the literature on the influence of individual strategic decision-makers on a firm's open innovation.

The company where a case study is conducted is more and more confronted with strategic decisions regarding open innovation as a result of the company being more oriented towards innovations compared to the past. This makes that strategic decision-makers have to deal with these strategic decisions related to open innovation, such as the decision for sharing or protecting knowledge, on a more frequent basis.

In order to obtain in-depth information about situations occurring in the company that are relevant for this study, the research was mainly qualitatively focused. That is, as qualitative research provides relevant information about specific situations (Myers, 2020). Therefore, interviews among strategic-decision-makers were conducted that provide insights into the regulatory focus trait and state with regards to the specific situation of the choice for knowledge sharing or knowledge protection regarding innovation. The interview questions (both in English and Dutch) are presented in Appendix 1.

As the assumption that was based on the theory of Johnson et al. (2015) can be disproved or confirmed by empirical observations, the research is deductive in nature. The formulated assumption based on this theory is that the context of the situation influences the relation between the regulatory focus trait and the regulatory focus state. By testing this assumption, the results of this study can be generalized to the theory of Johnson et al. (2015).

This deductive approach is valid, as there is much available literature on the topics to be researched (Bleijenbergh, 2015; Meyers, 2020), namely the Paradox of Openness and regulatory focus. Based on this literature, it was possible to operationalize the study into dimensions and indicators that together make it possible to provide a substantiated answer to the central question.

3.2 Single case study

The single case study approach that was used has the ability to study a specific element of a social phenomenon during a specific time period (Myers, 2020). It is therefore an appropriate approach, as herewith, specific characteristics of the company were central in the research. By focusing on these specific characteristics of the company, the study is idiosyncratic rather than generalizable (Bleijenbergh, 2015). This implies that data obtained from human beings provide insights only in the

individual characteristics, reactions and experiences of the persons being interviewed and are not representative of other human beings. Although this negatively affects the reliability of the research, it is a useful research strategy to explore the proposed assumption, as it can handle situations where variables are at stake that do not consist of available data references (Myers, 2020). This is the case with personal characteristics and motivations, as this information is generally not documented as data within organizations. The type of case study that was used is a positivistic case study. In this sense, the case study serves as a method to test and refine the assumptions about the real world. For positivistic research, the quality of the study will be defined in terms of validity and reliability (Myers, 2020). This is further elaborated in section 3.7.

By conducting a case study, besides the theoretical relevance of this study, the results are also of practical relevance for the case company. They will obtain better insights into what the underlying motivations of their decision-makers are when they make strategic decisions.

3.3 Data collection

Data on both the regulatory focus trait and state were obtained by in-depth interviews with relevant strategic decision-makers. To identify relevant contextual factors that are at stake in the situations in which strategic decision-makers make the decision for knowledge sharing or protection, documents concerning presentations about the digitalization strategy of new innovative ideas like a new IoT technology were analyzed.

During the interviews, the natural tendency of all respondents towards knowledge sharing concerning innovation was identified, which indicates the regulatory focus trait. Next to that, the actual choice and relevant contextual factors were identified and taken into account to identify the regulatory focus state. The interviews were semi-structured, which implies that questions are formulated beforehand. However, new questions could arise during the interview. In this way, it is certain that the required topics will be discussed, while the interviewer is able to follow up on relevant information given by the interviewee as well. The advantage of applying this type of interview is the structure on the one hand, while it also provides the interviewer with some freedom to improvise to a certain extent on the other hand. These two benefits lead to both an increase in validity and reliability (Myers, 2020). It was useful for answering the research question to conduct semi-structured interviews, as herewith, contextual factors that are of relevance for the choice made by the respondents could be mentioned by them. In other words, this method for data collection provided us with the opportunity to objectively test the assumption, as interviewees are not being guided by fully structured and formulated questions.

In order to discuss concrete situations during the interviews and to prevent the interview from being focused on general statements, a few days before the interview, the respondents were asked to formulate three situations that occurred in the past where the choice for knowledge sharing or knowledge protection had to be made with regards to innovation. Based on the formulated dimensions of regulatory

focus theory (see Appendix 2), the respondent’s needs, goals, strategies and feelings with regard to these three situations were addressed.

The combination of evidence obtained by interviews and documents that both provide insights about (the context of) strategic decisions allows us to explore the phenomenon and test the assumptions within the context of a real-life situation. However, we have ensured the focus of the study, despite the fact that we were being faced with many interesting but yet irrelevant elements for this particular study during our research at the company. Though, doing a single case study offered the opportunity to identify all the relevant factors that are related to the phenomenon. This open research method, in contrast to a survey or experiment, ensured that no relevant factors were being missed out (Bleijenbergh, 2015).

Using a combination of two or more qualitative data collection methods (interviews and analyses of documents) is a characteristic of the case study and results in methods triangulation (Bleijenbergh, 2015). It gives a broader view about contextual factors that strategic decision-makers are faced with in case of open innovation. This context could be of influence on how strategic decision-makers make decisions, which is relevant for answering the main question.

3.4 Respondents

The group of respondents that was selected for the research implies both internal strategic decision-makers as well as strategic decision-makers of external parties that the company collaborates with concerning innovations. It is chosen to select both internal as well as external decision-makers, as the literature review showed us that no company is able to innovate in isolation, but has to collaborate with actors in the business ecosystem. Thus, a data pool of individuals that correspond to the concept of open innovation and are part of the same business ecosystem was ensured. It contains a relevant data pool with respondents who are involved with each other concerning innovation, have a dependency on each other and have to make the same decisions concerning knowledge sharing or knowledge protection. Furthermore, as the choice for knowledge sharing or knowledge protection is a strategic decision (Paasi et al., 2020), the selection criteria for respondents implies that the function that is performed within the company is merely concerned with strategic issues rather than operational tasks.

This summed up to a total of eight interviews with strategic decision-makers from different departments and positions stated in table 1. In the interest of anonymity of the respondents, they are randomly denoted as respondent 1 till 8.

Respondent	Department	Position	Internal or external
1	Management	Managing Director	Internal
2	R&D	R&D Manager	Internal

3	Procurement	Lead Buyer	Internal
4	Operations	Managing Director Operations	Internal
5	Management	Managing Director	External
6	Product Management	Director Strategic Sourcing & Head of International Product Management	External
7	Management	Owner machine development company	External
8	Sales	Sales Manager	External

Table 1. Respondents

3.5 Data analysis procedure

In order to answer the central question, the interviews and documents were analyzed. In general, content analysis demonstrates the definition of written or visual sources. This is done by systematically attaching the content to pre-determined categories. By searching for patterns or structures in the text, the content can be coded with relevant indicators (Myers, 2020). The dictionary of regulatory focus words of Gamache et al. (2015) supported the content analysis of the interviews and documents to identify the regulatory focus trait and state. The dictionary is included in Appendix 3.

We have asked all respondents for their permission for recording the interviews. For the respondents who gave permission, the recordings were transcribed verbatim into text. This means that everything that is said is literally registered, including hesitations and silences. In this way, in addition to the content, the social interaction is also registered for the purpose of analysis (Bleijenbergh, 2015).

In the cases where the interview could not be recorded, there was made a detailed interview report. This was done immediately after the interview to ensure that no information was lost.

The transcripts and interview reports were analyzed in a deductive way. This means that both the documents and the transcripts/interview reports were first labelled with indicators that are allocated to the central concepts of this study. An overview of this is provided in Appendix 2. Thereafter, the assigned indicators were clustered into dimensions. By comparing the identified data that belongs to the dimensions, connections arose that together made it possible to determine both the regulatory focus trait and the ultimate regulatory focus state as a motivation for taking on a specific position in the Paradox of Openness. Then, based on the analysis of the documents and interviews, it was possible to report the results. This was done by explaining the regulatory focus trait on the level of system/strategy and the regulatory focus state on the level of tactics. The regulatory focus trait was identified in terms of the natural tendency towards knowledge sharing concerning innovation. The regulatory focus state was identified in terms of the actual choice between knowledge sharing or knowledge protection in specific situations. This is consistent with the theory on the difference between the regulatory focus trait and

state of Johnson et al. (2015) and Monni et al. (2020). Based on the results, it was possible to derive general conclusions in order to answer the main question (Bleijenbergh, 2015).

3.6 Operationalization

To analyze the regulatory focus trait and state, the concept 'regulatory focus' has been operationalized in order to observe and measure the concept by means of content analysis of interviews and documents. The formulated dimensions and indicators of regulatory focus are based on the theory of Higgins (1998). They are visually presented by means of a code tree in Appendix 2.

The dimensions are needs, goals, strategies and feelings. The assigned indicators for a promotion focus are growth, advancement, accomplishments, hopes, aspirations, trying out several behaviors, cheerfulness and dejection. The indicators for a prevention focus are security, safety, responsibility, duties, obligations, necessities, prudent, precautionary, quiescence and agitation.

The dimensions were translated into interview questions for the empirical data collection (see Appendix 1). The indicators were used to label the document- and interview texts in a deductive way.

3.7 Validity and reliability

As this research is deductive and positivistic in nature, the internal validity, meaning that the study measures what it intends to measure (Bleijenbergh, 2015), in particular is ensured to a great extent (Myers, 2020). Due to the small number of observation units, the reliability and external validity are rather low. This results from the idiosyncratic case study, which means that it is difficult to repeat the study with different people (Bleijenbergh, 2015). However, for qualitative research, internal validity and verifiability are the most important quality criteria (Bleijenbergh, 2015). Therefore, this section focuses on how the researcher took these two criteria in mind before the analysis.

In order to ensure the internal validity of this research, analytical and reflective memos can be used. These document the research process, validates the methodological choices and registers the researcher's own comments, thoughts and feelings during the research. It contains insights and ideas about the meaning of the data (Bleijenbergh, 2015; Myers, 2020). Using semi-structured interview questions, as described before, further contributes to the internal validity. This ensures that respondents can bring up relevant information, besides the pre-defined questions. As different respondents provided information about the same situations, data triangulation occurred which positively contributes to internal validity (Bleijenbergh, 2015).

Verifiability indicates what choices are made and how this affects the study, which replaces the limited reliability (Bleijenbergh, 2015). This can be ensured by using transcripts and methodological memos. By this, readers/other researchers can always trace where the information and statements come from and are able to repeat the research (Bleijenbergh, 2015). Furthermore, making statements about the results

of the study limited to the specific studied domain, namely ‘motivations for the choice for knowledge sharing and knowledge protection’, contributes to reliability.

Lastly, besides the theoretical goal of the research, the research has a practical relevance as well, which makes that the usability is of great importance. Therefore, the results will ultimately be summarized in an understandable manner for all stakeholders in a management summary.

Concerning the limitations of the research, the implications derived from the research regarding the studied assumption can only be generalized to the theory due to the small observation unit of a single case study. Due to the idiosyncratic single case study, the external validity will be rather low. However, this study aims to add to academic literature and generalize to a theory rather than generalizing to a population and create a theory that applies to a specific range of companies. Nevertheless, in order to derive more universal implications, additional research in other industries and/or countries is required. This is further elaborated on in the Discussion section.

3.8 Research ethics

According to APA’s Ethics Code recommendations (Smith, 2003), this research has complied with Informed Consent by providing the following information by e-mail to interviewees before the interviews are conducted: the purpose of the research, the duration, procedures, rights to decline participation and withdraw from the research once it has started, potential risks of (cancelling) participation, limits of confidentiality such as data coding, sharing and archiving, incentives for participation, noting that they will be informed about the research results by internal mails and contact information in case of questions.

Before the interview was started, the confidentiality was again verbally expressed with regards to the information provided. It was made clear that only the function of the person in question will be reported, but the identity will be kept anonymous by referring to the respondents as numbers instead of names. There was also stated how the findings will be used and where it will be documented. The interviewees were also asked whether they agree with the recording of the interview. By these actions, the setting of the interview should be made more comfortable, which will positively contribute to the focus of the interview (Bleijenbergh, 2015) and the rules regarding Data Management are adhered to (Smith, 2003). To guarantee the confidentiality of the study, a confidentiality agreement was signed by both the researcher and the case company.

Furthermore, The Golden Rule will be taken into account with respect to respondents. It means that individuals will be treated in the way in which the researcher expects others to treat them (Myers, 2020). This implies that ethical sides of certain actions mentioned by interviewees or asked by the interviewer should always be considered with empathy.

4. Results

This chapter contains the results of the document analysis and the analysis of the interviews. Firstly, the identified regulatory focus trait for all respondents is explained on the level of regulatory system/strategy. Thereafter, the analyzed context is provided, which is followed by the analysis of the influence of the context on the regulatory focus state on the level of regulatory tactics. The identification of promotion- and prevention-focused traits and states are supported by the dictionary of regulatory focus words of Gamache et al. (2015) (see Appendix 3) and the operationalization based on the regulatory focus theory (Higgins, 1998) (see Appendix 2).

4.1 Regulatory focus trait

This section explains the natural tendency of the respondents towards knowledge sharing with external actors concerning open innovation. This indicates their regulatory focus trait on the level of regulatory system/strategy.

Respondent 1 has the natural tendency to take the position of sharing knowledge with the underlying motive that the gains are considered higher than the risks. The followed strategy is being the first player to share knowledge to create reciprocity, a win-win situation, connection, insights, growth and learning. This indicates a promotion-focused trait.

Respondent 2 has the natural tendency to take the position of knowledge sharing because no risks are perceived in sharing knowledge. The strategy is having and expressing trust in order to achieve the goal of creating loyalty and involvement at counterparties, receiving feedback to improve the quality of the innovation and learning. This indicates a promotion-focused trait.

Respondent 3 has the natural tendency to take the position of knowledge protection for as long as possible, so that he is not bound by obligations. Furthermore, with this, he aims to prevent losses in the sense of the innovative idea being copied and losing a competitive edge. This indicates a prevention-focused trait.

Respondent 4 has the natural tendency to take the position of knowledge protection. His strategy is being cautious in order to protect the organization, becoming independent from third parties and aiming to fulfill his obligations. This indicates a prevention-focused trait.

Respondent 5 has the natural tendency to take the position of knowledge protection. The followed strategy is being cautious, careful and think in a logical manner in order to prevent losses in the sense of costs, unicity, speed of innovation and quality. This indicates a prevention-focused trait.

Respondent 6 has the natural tendency to take the position of knowledge sharing. The strategy that is applied is creating an incentive for the counterparty to share knowledge as well. With this strategy where low risks are perceived, he aims to become more independent from external parties and to get closer to the customer. This indicates a promotion-focused trait.

Respondent 7 has the natural tendency to take the position of knowledge sharing. The strategy of never avoiding risks, taking initiatives and bunding knowledge is applied with the underlying goal of seizing

market opportunities and creating synergies, connections and growth. This indicates a promotion-focused trait.

Respondent 8 has the natural tendency to take the position of knowledge sharing. He applies the strategy of sharing knowledge with trusted partners to achieve more benefits for the customer, creating core competences, trust, keeping up with the standards of the market and having the best product in the market. This indicates a promotion-focused trait.

4.2 Strategic context

The analysis of the context in which strategic decision-makers have to make decisions with regards to innovations, named as the 'strategic context' is analyzed by means of three presentations (a total of 85 slides) about the Product Digitalization Strategy that involves the strategic thoughts behind the implementation of an innovative idea. Those presentations were organized by the management team for relevant stakeholders (and also respondents of this research) in the period between September 2020 and October 2021. By analyzing different documents that were used over a time range of one year, a shift in focus points can be identified which could have implications for the context in which the strategic decision-makers operate and thus what decision they make when having to make the choice between knowledge sharing or knowledge protection.

The analysis revealed the following relevant findings:

The first presentation that was held in September 2020 was mainly focused on the status quo implying the current state of the company and its available resources, assets and focus points. This mainly includes the (digital) landscapes and infrastructures of the total product portfolio including the products of partners. Also, a rather short-term focus of a 2-years outlook/planning was included in the presentation. The most important focus point of this presentation is that the management team identified that the company should respond to an IoT trend in the market. Furthermore, the possibility to "serve a whole field of customer interests' in digitalization" was brought to attention. However, no concrete action points or challenges were discussed.

In the second follow-up presentation organized in November 2020, the need for being a "Fast-Follower" and the necessity to "distinct the business from competitors" who were already implementing the digitalization technology were emphasized and put on the agenda.

The third presentation of October 2021 shows that the company determined a concrete strategy for responding to the digitalization IoT trend. The strategy implies acquiring external parties to fill the gap between available and required resources/knowledge to be able to implement the IoT innovation. However, the acquisition of external parties was considered as "challenging" by the management team. Overall, the concept of competitors who are already implementing the IoT innovation will be followed. With this strategy, the company aims to become a "trusted advisor" and "strategic business partner" for their customers.

When comparing the analysis of the current state of the company with its resources, assets and focuses in the first presentation to the strategy for the future in the third presentation, two important factors are identified that determine the strategic context in which strategic decision-makers operate and make decisions.

Firstly, it can be concluded that the company is shifting from being a product related services company with a descriptive/predictive attitude that is focused on the scope of the product portfolio towards a more customer related services company, with a prescriptive attitude towards the market as a result of their goal to become a “trusted advisor” and “strategic business partner” by the digitalization innovation. This requires a major change in the role that the company takes in the market with respect to its customers. This changing role is related to making strategic decisions on an individual level. Since the presentations indicate by action points and ‘questions to think about’ that the management team expects strategic decision-makers to take on this role, they might have to adapt their strategic decisions accordingly.

The interviews with the respondents will show how this strategic context concerning the changing role of the organization relates to the position in the Paradox of Openness of individual decision-makers.

Secondly, the necessity to obtain knowledge to respond to the digitalization innovation that is currently lacking in the organization is considered as an important strategic contextual factor for the choice to share or protect knowledge by strategic decision-makers.

These two contextual factors, i.e., the changing role of the organization and the necessity to obtain external knowledge, are considered as a relevant strategic context and have been taken into account during the analysis of the interviews with involved actors.

4.3 Influence of context on regulatory focus state

This section explains how respondents motivate their choice in certain contexts by means of the four dimensions of the regulatory focus theory, namely their needs, goals, strategies and feelings. By this, it is explained how the regulatory focus state on the level of regulatory tactics is influenced by context. The influence of the identified strategic context by the document analysis is reported at the end of each dimension. Also, other relevant contextual factors that were mentioned by the respondents were taken into account and reported for each dimension.

4.3.2.1 Needs

The needs based on which the respondents make the decision for sharing or protecting knowledge has two different forms. On the one hand, the need for value creation was identified. This exists in the sense of learning from the other party, efficiency and creating synergies and benefits for the customer. For example, respondent 1 mentioned that the underlying need for knowledge sharing is that it "always yields something" which he substantiates by the examples: receiving knowledge back, broadening insights and learning from the other party. Both respondent 1 and 6 also mentioned that "getting closer to the customer" was a need that led to knowledge sharing. Respondent 2 also mentioned that receiving

feedback, learning from the other party and receiving knowledge back which supplements incomplete knowledge about the innovation is an important need. In addition, he mentions that his need is to create involvement and loyalty among customers, as well as efficiency. Respondent 7 emphasized a clear need for synergy and long-term cooperation as a motive for knowledge sharing. The latter also applies to respondent 8. In addition, respondent 8 repeatedly mentioned the need to "create more success for the company" as a motive for knowledge sharing.

These forms of value creation are each a motive for knowledge sharing for the aforementioned respondents and are characterized as promotion-focused. What is striking is that these respondents reveal that their underlying idea is that there are no or negligible risks experienced in knowledge sharing and that this makes the need for value creation outweigh the possible risks.

On the other hand, there is a need for value protection among the respondents in the sense of preventing the loss of a competitive edge or the potential for a patent. For example, respondent 3 says: "You want to keep knowledge with you as long as possible, because then you have your competitive edge and you can keep it. Respondent 6 mentions the need for "not wanting to damage the relationship" as a motive for knowledge protection.

The need to protect the potential of a patent is mentioned by respondents 2, 3, 4 and 8. For respondent 8 this arose because of the fear that "competitors can kill your patent". It is noteworthy that respondent 2, on the subject of patents, explicitly addressed the strategy of the company. He says: "You always have to be careful not to give away everything, otherwise you won't be able to meet your patent quota. That is a formal matter, so certain choices are not 100 per cent up to me. I have a personal opinion on that, but the strategic choice within the company does influence the leeway you get as a decision-maker." He substantiates this by mentioning that with regard to some matters, he is forced to protect knowledge, whereas he would personally choose knowledge sharing. This shows that the context concerning the company's need to comply with a patent quota is related to respondent 2's changing position in the paradox.

However, in general it can be stated that the above-mentioned needs for value protection characterize a prevention-focused state and together constitute a motive for knowledge protection.

Another important need regarding value protection concerns preventing the competitor from copying the innovative idea. This reflects a prevention-focused state and was identified by respondents 3, 4, 5 and 8. However, this need is contradictory to the company's strategy of following the competitor's concept, which was revealed by the strategic context in the presentations. This shows that regardless of not introducing something much more innovative to the market compared to the competitor, decision-makers are still cautious about sharing knowledge and act out of fear that the competitor will find out something that could jeopardize the company's growth. For example, respondent 5 explains that the underlying danger experienced when implementing innovation is that the improvement and

strengthening of the company's proposition may be jeopardized, which in turn may hinder the company's growth.

Overall, when the above-mentioned needs for value creation and value protection are taken into account, it can be concluded that needs are twofold among the respondents, namely that a preference for value creation or value protection is clearly related to a certain position in the paradox. It can be stated that the need for value creation is a promotion-focused motive for knowledge sharing, while the need for value protection is a prevention-focused motive for knowledge protection.

A striking finding in the needs as a motive for a certain choice is the context of a perceived obligation. Some of the respondents (3, 4, 5 and 7) felt the need to fulfil the obligation to share knowledge with a counterparty because they had entered into a certain form of collaboration. For example, respondent 3 said: "If you enter into a collaboration, you have to continue to build on this collaboration, so then you feel obliged to start sharing knowledge." Respondent 7 mentioned something similar, namely: "If we have a bunch of innovative ideas, then you can say to your partner: you should do this and you should try that in this way and then you can save a huge amount of costs and you can eliminate problems. And that's how we are doing this project. We are going to automate a lot of things and then you feel obliged to share that knowledge."

For other respondents (4 and 5), a similar context is at play in the form of a perceived need. Although the need for careful and cautious handling of information about innovations is strongly present, this need is shifting towards anticipating a necessity that arises concerning the innovation. This necessity concerns cost reduction and risk spreading, both mentioned by respondents 4 and 5.

These needs to fulfil an obligation and to anticipate a necessity are seen as prevention-focused motives for knowledge sharing. The conclusion is that the context of a "necessity", in which the need to fulfil an obligation is also seen as a necessity, influences the regulatory focus state in the sense that respondents shift to a prevention-focused state and this determines the position of knowledge sharing.

Another finding regarding needs relates more to perceived needs of the other party with whom knowledge is shared with or protected from. This turned out to be a relevant motive for the choice respondents make. This motive has to do with the perception of the other party's interest in receiving the knowledge and was identified for respondents 2, 6 and 7.

For example, the perception that the other party has a low interest in receiving knowledge at all is used as a motive for knowledge protection by respondents 6 and 7. This is evident from a statement by respondent 6: "You do not start to tell stories, because they are not interested in getting information they do not need, they actually do not care." Respondent 7 said something similar, namely that not all customers are interested in receiving all the knowledge, because they would then "go crazy" he said. Both respondents mention that they would rather respect the "common sense" of knowledge protection

than share knowledge from which nothing can be gained anyway. It can be concluded from this that in the context of a low stake in the other party for receiving knowledge, these respondents have no ambition to gain other benefits from sharing knowledge and therefore make the choice for knowledge protection. This tends to be a prevention-focused motive for knowledge protection.

On the other hand, the perception of a low interest of the other party for receiving knowledge means that the risk of unwanted knowledge dissemination is considered very low. For respondent 2 this is therefore a motive for knowledge sharing.

According to respondent 2: "Parties do not always need your knowledge. But what you see is that as soon as you involve them in a development process and share knowledge with them, they feel much more loyalty and commitment towards you as the developing party. So that's why I say: I'm not so worried about the risk that they'll go straight to the competition, precisely because they feel involved." This low risk perception as a result of the low importance with the other party with the underlying idea of creating involvement is seen as a promotion-focused motive for knowledge sharing.

From these findings it can be concluded that the context of a low need to receive knowledge at the other party is both a prevention-focused motive for knowledge protection and a promotion-focused motive for knowledge sharing.

Influence strategic context for dimension needs

When we take the strategic context into account when analyzing the needs as a motive for the adopted position in the paradox, we see that the context of a necessity to obtain additional knowledge has no direct influence on the regulatory focus state, but explains the need for learning from the other party and receiving knowledge/feedback, which determines the position for knowledge sharing.

In addition, the need to fulfil the obligation to share knowledge and the need to create commitment and loyalty are in line with the strategic context of the organization's shifting role towards a "trusted advisor" and "strategic business partner". This contextual factor therefore explains the position of knowledge sharing, but also has no direct influence on the regulatory focus state as motives for the choice.

4.3.2.2 Goals

A striking finding with regard to the goals that the respondents use as a motive for knowledge sharing or knowledge protection is that 6 out of 8 respondents want to increase the quality of the innovative product. This goal is seen as promotion-focused, but is ultimately a motive for both knowledge sharing and knowledge protection.

For example, for respondent 1, a motive for knowledge sharing is to increase the speed and quality of innovations. For respondent 2, the aim of optimizing product quality is a motive for knowledge sharing. Respondent 3 indicates that achieving better products and smarter production is a motive for knowledge sharing. Respondent 7 cited the goal of achieving better quality in collaboration with another party as a motive for knowledge sharing. Finally, respondent 8 cited the goal of "realizing the best technical and

quality product in the market" as a motive for knowledge sharing. All these motives are considered to be promotion-focused and all lead to knowledge sharing. However, for respondent 4, gaining a technical and/or commercial quality advantage is a promotion-focused motive that actually leads to knowledge protection, which is a contradictory choice when we look at the corresponding goals of the other respondents. On the other hand, for respondent 5, the aim of securing product quality is an important prevention-focused motive for knowledge protection.

What is striking about this, first of all, is that only respondent 5 has a prevention-focused desired goal, which is recognized in 'securing product quality'. The other 6 respondents all had a promotion-focused goal, which in 5 cases led to the choice of knowledge sharing and in 1 case to the contradictory choice of knowledge protection.

From the difference in the choice of respondent 4 compared to respondents 1, 2, 3, 6 and 7, while all six have the same promotion-focused goal, it can be concluded that the same goal with the same focus is a motive for different choices and therefore leads to different positions in the paradox.

A second remarkable finding regarding the goals as motivation for a certain choice is the creation of independence versus considering mutual dependence as the basis for knowledge sharing.

An important motive for knowledge protection for the respondents who have a closed attitude towards knowledge sharing is to reduce their dependence on external parties. This applies to respondents 4 and 6. For example, respondent 4 explains that the policy is to attract the success factors, by which he means the changing role of the company as described in section 4.2, to the company as much as possible with the aim of becoming less dependent on important external parties. This goal of reduced dependence is for him an important motive for knowledge protection, which is seen as prevention-focused.

In contrast, the respondents who have an open attitude towards knowledge sharing have the goal of creating a mutual dependency with an external party. In their opinion, this dependence serves as a basis for achieving a win-win situation in which more benefits can be offered to the customer, which contributes to the changing role of the organization to that of a "strategic business partner". These respondents see this as a motive for sharing knowledge. For example, respondent 1 illustrates: "Every form of collaboration and knowledge sharing also implies that you have to be prepared to allow a certain form of mutual dependency. In a situation where you are not dependent on anyone else at all, that does limit your comfort zone and also your scope for knowledge sharing." When asked how this plays a role in the choice of knowledge sharing, he replies: "Where there is already a mutual dependency, why not bundle the know-how and thus create a mutual dependency, then you don't have to do some things twice. Plus, by combining forces, you have much more capacity to bring the development of certain innovative products to the market faster. And speed, certainly in innovation, is of priceless value."

From this it can be concluded that the goal of creating a mutual dependency with the underlying goal of achieving a win-win situation is a promotion-focused motive for knowledge sharing, which contrasts with the prevention-focused motive for knowledge protection regarding reducing dependency.

Another notable finding concerns the different goals that are sought to be achieved by the strategy of sharing small portions of information, which will be explained in more detail in the next section, "Strategies". Respondents 2, 3 and 6 use the strategy of sharing only parts of knowledge, but they have different goals which serve as different motives for their final choice. For respondent 2, this concerns receiving useful feedback on what you show without giving too much away in order to be able to improve the product. For respondent 3, it was to prevent the innovation from being copied by outsiders. For respondent 6, the creation of an obligation for the other party to return knowledge applies. The latter is seen as necessary by respondent 6, because innovation depends on market information.

This shows that the same strategy is used to achieve both prevention- and promotion-focused goals and that these are various motives for (carefully) sharing parts of knowledge. Respondent 2, for instance, uses this strategy to improve innovation, which is characterized by a promotion focus. Respondents 3 and 6 use the strategy with the aim of preventing the innovation from being copied and fulfilling a need to gather market knowledge, which characterizes a prevention focus.

Influence strategic context for dimension goals

When we take the strategic context into account when analyzing these findings concerning the dimension 'goals', it is particularly noticeable that the dichotomy in goals for reducing dependency on the one hand and gaining benefits from dependency on the other can be explained by both the factor of the changing role and the need to gather knowledge. It appears that part of the respondents act from the need for knowledge creation in the sense that they allow a degree of dependency and share knowledge on this basis. In contrast to this, some of the respondents actually want to reduce the dependency as a reaction to complying with the changing role and therefore take the position of knowledge protection. In addition, as with the needs in the previous section, a connection can be seen between the goal of receiving useful information in return and the strategic context in terms of the need to receive knowledge in return, which explains the position for knowledge sharing.

4.3.2.3 Strategies

A prominent finding is that two different strategies for choosing to share or protect knowledge were identified with different underlying needs, as mentioned in the 'needs' section.

On the one hand, decision-makers see great risks in sharing knowledge and try to avoid losing the value built up by the organization by protecting knowledge. Respondent 4 demonstrates this with: "My strategy is more of protecting, but not only protecting our organization to the outside world. It is also really about protecting our organization and our people against a lot of extra stimuli. It is not only about not wanting to make our competitor any wiser, no, it is also about protecting our own employees. And in the broadest sense, so also of our processes." This is further substantiated with: "Then I say to our employees: don't share too much knowledge. Because the more we share, the more our organization will

be invaded. Because the problem is: if you start sharing things, then you get a lot of questions back and things get influenced. I'm very careful about that." However, once a necessity is perceived, as described in the 'needs' section, the strategy shifts to carefully sharing small portions of knowledge. However, because of the small parts of information and the cautious attitude, this strategy is considered to be prevention-focused.

Other decision-makers have the opposite need to create added value from innovation by sharing knowledge, both for customers and for the organization itself, and they use a different strategy for this. For example, respondent 1 said: "When we are working on innovation, my thought is often: it can be so much more, it can get so much more in the future." This need arises from the fact that these respondents experience no or negligible risks when sharing knowledge. The strategy that they use on this basis is therefore completely open book playing from the first moment, which is seen as promotion-focused. From this it can be concluded that the strategy with which one regulates possible value creation or value loss, whereby the need for value creation is seen as promotion-focused and the need to prevent value loss as prevention-focused, determines which choice is made. In this case, the strategy for value creation indicates a promotion-focused state that explains the choice for knowledge sharing, whereas value protection indicates a prevention-focused state that explains the choice for knowledge protection.

What is striking is that for a large number of the respondents there is a shift in strategy under conditions of integrity. The decision-makers who initially had an open attitude towards sharing knowledge (respondents 1, 2 and 7) became more cautious about sharing knowledge with a counterparty as soon as this party shared knowledge about third parties. Respondent 1 says: "If you notice that this company is talking a lot about your competitor, you immediately realize: wait a minute, if he talks about the competitor like that, he might as well talk about us at the competitor's. And then you get into a conflict situation with yourself about what information am I sharing with him?"

This also works the other way around, as decision-makers with a closed attitude to sharing knowledge (respondent 3, 4, 5, 6 and 8) will have a more open attitude once the other party provides evidence that creates trust and stimulates openness. For example, respondent 3 says: "How honest someone is about another party determines whether you share the knowledge." Which he then substantiates with: "If people show that there is trust and demonstrate and substantiate that through integrity about another party, then that integrity determines whether you will share the knowledge."

From this it can be concluded that one does not necessarily stick to one specific strategy to achieve a certain goal, but that the other party's attitude towards integrity has a considerable influence on the focus of the state based on which the choice is ultimately made. The degree of integrity of the other party changes a respondents' strategy from prevention-focused to promotion-focused and vice versa, whereby an ultimate prevention-focused strategy is a motive for knowledge protection and a promotion-focused strategy is a motive for knowledge sharing.

Influence strategic context for dimension strategies

When the strategic context concerning the changing role of the company and the need to acquire knowledge is taken into consideration, it can be noted that, with regard to strategies, there is a link here with what respondents 1 and 2 said. In fact, they deviate from their personal strategy in some matters because the strategic direction of the company is different. Respondent 1 says: "Knowledge sharing of the innovation is driven by the strategic goal, regardless of what I would do personally. What is best for the company is always considered." Based on this, the respondent ended up being more cautious, which characterizes a prevention-focused state, and ended up not sharing the knowledge. Respondent 2 answers the question: "To what extent is it a conscious choice to keep knowledge within the organization?" with: "That was actually more from the strategy imposed from above, that we did not want to go too much to outsiders with the idea that it would not benefit our name and our competitive position. But I personally would have done it differently." This motive is seen as prevention-focused and ultimately led to knowledge protection.

It is striking that both respondent 1 and 2 have an intrinsically open attitude towards sharing knowledge. From this we can conclude that the strategic context influences the regulatory focus state in the opposite direction when it comes to making strategic decisions at an individual level.

4.3.2.4 Feelings

A decisive motive, which has already been addressed in the "needs" section, is the feeling of a certain necessity to anticipate which causes a shift in choice. This aspect is also included in this section on feelings, because the respondents who were affected by the shift showed that they felt the necessity and anticipated it accordingly. For example, respondent 3 substantiated this with: "Following my feelings is the best thing I could have done". This sense of 'a necessity', is seen as prevention-focused and explains the knowledge sharing. In other words, in the context of a necessity, there is a feeling that this must be anticipated, which causes a shift towards a prevention-focused state as a motive for sharing knowledge.

With regard to the other feelings that were discussed, a clear difference in regulatory focus was identified. The mentioned feelings of "pride in the innovation" and "enthusiasm" are characteristics of a promotion-focused state. The mentioned feelings of "wanting to meet your obligations", "difficult" and "cautious" are characteristics of a prevention-focused state. What is striking is that all respondents have one specific focus in the feelings they express, so there is a clear division between prevention-focused feelings and promotion-focused feelings. However, it was not found that these feelings are a motive for a certain choice.

Strategic context for the dimension feelings

For 7 of the 8 respondents, the personal feeling with the person of the other party with whom business is being done determines the choice that is ultimately made. However, there are differences in the motives based on which choices are made.

The feeling of equality is an important motive for knowledge sharing for respondent 1 and the feeling of trust is an important motive for knowledge sharing for respondents 2, 6, 7 and 8. For respondents 3 and 4, reliability and integrity are important personal feelings that apply as a motive for knowledge sharing. However, for respondents 2 and 6 a negative feeling about a person is also a motive for knowledge protection.

We can conclude from this that for most respondents, a 'good' or 'bad' personal feeling is an important motive for one particular choice, namely that only the presence of a good feeling is a promotion-focused motive for knowledge sharing and that only the presence of a bad feeling is a prevention-focused motive for knowledge protection. However, for some respondents this works both ways, namely that a good feeling is a motive for knowledge sharing and a bad feeling is a motive for knowledge protection.

The strategic context regarding the changing role towards specifically a "trusted advisor" influences the regulatory focus state in the sense that there is a shift towards a promotion-focused motive concerning trust/confidence for knowledge sharing.

5. Conclusion

This research provides an answer to the central question: *“How does the regulatory focus of strategic decision-makers in a digital related business ecosystem relate to their position in the Paradox of Openness?”*

First of all, this study shows that the regulatory focus in relation to the Paradox of Openness has two types as known in the literature, namely that the motives for choosing knowledge sharing or knowledge protection can be clearly attributed to a promotion-focused state or prevention-focused state. In this sense, promotion-focused motives lead to knowledge sharing and prevention-focused motives lead to knowledge protection. However, it has emerged that certain contextual factors influence the regulatory focus state based on which respondents motivate their final decision. Therefore, this study confirms that the regulatory focus state is highly situation specific. Based on these findings, it can be concluded that contextual factors influence the regulatory focus state, which results in the regulatory focus state being different from the regulatory focus trait and causes a shift in the positions that respondents take in the Paradox of Openness.

This results from the finding that respondents do not motivate choices from one particular regulatory focus state (prevention-focused or promotion-focused) that is similar to their regulatory focus trait, but have both prevention-focused and promotion-focused motives which, in different (strategic) contexts, lead to different positions in the paradox. This confirms the expectation about the influence of contextual factors on the regulatory focus state and allows us to conclude that a certain regulatory focus state as motivation for a specific position in the Paradox of Openness is not by definition related to the regulatory focus trait.

In more detail, contextual factors that influence the regulatory focus state were found both in the strategic context and in situation-specific contexts.

The strategic context concerning the necessity for knowledge gathering for the purpose of innovation and the changing role towards a "strategic business partner" and "trusted advisor" influences the regulatory focus state in the sense that respondents with a promotion-focused trait motivate their decisions based on a prevention-focused state and vice versa.

Other identified contextual factors that influence the regulatory focus state are a perceived necessity/obligation for the innovation and integrity. These factors cause a shift in the focus of the state compared to the trait, which determines the final position in the paradox.

6. Discussion

6.1 Theoretical reflection

This study was able to contribute to Johnson et al. (2015), who showed that one's tactics, considered as the regulatory focus state, can be influenced by contextual factors, which results in a different focus compared to the regulatory system/strategy, considered as the regulatory focus trait. This is done by researching contextual shifts in the domain of open innovation. By this, the outlined expectation of the influence of context on the regulatory focus state based on the theory of Johnson et al. (2015) was confirmed. In this sense, this research has shown that the regulatory focus state, and thus with what focus individuals act and make decisions, shifts in the strategic context of the company and in the context of integrity and a perceived necessity/obligation. This is therefore a contribution to the theory of Johnson et al. (2015) with an addition of these specific contextual factors. Herewith, this study has contributed to the theory of regulatory focus, because it has shown that the regulatory focus state is strongly influenced by these specific contextual factors.

The study was conducted with qualitative research methods and has focused on the specific domain of open innovation, which offers a contribution to the study on multilevel regulatory focus of Johnson et al. (2015), who focused mainly on experimental studies.

The findings of this research further contribute to the theories on open innovation in business ecosystems of Bogers et al. (2018), Dahlander et al. (2016), Foege et al. (2019) and Paasi et al. (2020). This is done by providing insights about that specific contextual factors (strategic context, integrity and a perceived necessity/obligation) determine how individual decision-makers influence the open innovation of their firms, as it influences the choice of knowledge sharing and knowledge protection.

This research further shows that research on open innovation on the organization-level, performed by the above-mentioned authors, makes sense and is even useful to obtain insights in individual's influence on open innovation, as individual strategic decision-makers' ultimate choices are strongly influenced by the strategic context of the company. It appeared that personal preferences are no longer of such importance for the decision as soon as the strategy is clear, because then, decision-makers aim to focus on the strategy rather than following their own preferences. This also clarifies that the increasing scope of the responsibility for knowledge flows in organisations illustrated by Bogers et al. (2018) does not have to be problematic, because a clear strategy prevents different people with different personalities from making contrasting choices and thus influencing open innovation differently.

6.2 Practical implications

The most important practical implication of this research is the finding that a clear company strategy results in individual strategic decision-makers focusing on this and making decisions that benefit this strategy rather than making decisions based on their personal preferences. In other words, decision-

makers adapt their choices to the company's strategy. Therefore, clearly communicating the company's strategy is recommendable as it is positively related to how individuals deal with open innovation.

This also applies to a perceived necessity. This research shows that it can be crucial for companies to clearly communicate which situations and/or actions are necessary for the company and which are less, because in this context, the choice for knowledge sharing or knowledge protection strongly depends on the personal perceptions of the necessity. A clear indication by the company can guide decision-makers in assessing which situations are necessary to anticipate and can help them in determining which decision fits best to what situation with respect to necessities.

6.3 Methodological reflection

This section addresses the internal validity, reliability/verifiability, and external validity as quality criteria of this research. Overall, we can state that the relative inexperience of the researcher caused several limitations. It turned out that this sometimes caused difficulties in distinguishing core issues from less relevant issues, which made the interpretation and analysis of data challenging. However, by being critical and continuously making improvements, the research has been a very educational process and the quality criteria have been realized as much as possible.

6.3.1 Internal validity

Internal validity means that the research measures what it intends to measure (Bleijenbergh, 2015). In this research, this is guaranteed both in the sense of respondents and interview(questions). Firstly, the research complied with the theoretically motivated sample of 8 respondents that are part of the same business ecosystem. This group of respondents consists of strategic decision-makers with various disciplines and roles within both the case organization and external parties cooperating on innovation. By not only interviewing people with a certain function from one and the same company, we prevented the data from being biased. However, the identified strategic context could only be analyzed for the case company, as we did not have access to data on the strategic context of the external companies. The internal validity of the statements about the influence of the strategic context on the regulatory focus state of respondents of external companies is therefore limited. However, the respondents of external companies collaborate on such a basis with the case company that the strategic context is of importance for the decisions they make too. So, the strategic context indirectly influences their decisions as well.

With respect to the strategic context, it was decided not to ask explicitly about the strategic contextual factors during the interviews. This choice was made to prevent respondents from giving 'socially desirable' answers in the direction that corresponds to the imposed strategy of the company. Respondents might feel compelled to give answers that fit the company's strategy, while they actually have a different opinion and make different choices in practice. This was prevented by analyzing the context afterwards. By this, it was possible to independently determine whether the strategic context has any influence on the regulatory focus state. This has contributed positively to the internal validity.

Secondly, the pre-defined semi-structured interview questions were similarly asked during all interviews. The interview questions were formulated in such a way that the four dimensions of regulatory focus, namely needs, goals, strategies and feelings could all be identified. The semi-structured interviews in which respondents provided information about the same situations (data triangulation) and had the possibility to bring up other relevant information in combination with the case-study nature of this research, allowed us to go deeply into specific characteristics and situations, which contributed positively to the internal validity of the research (Bleijenbergh, 2015; Meyers, 2020). However, we experienced that it was sometimes hard to keep the focus on personal motivations/characteristics. Respondents tended to answer in the company's sense rather than explaining their own views, experiences and motivations. Through asking follow-up questions, we tried to focus on the personal motives for the respondents' position in the paradox, even when respondents deviated from this topic. The 'feelings' dimension relatively received the least attention compared to the other three dimensions, because it caused uneasiness among the respondents and they therefore did not discuss it extensively, even after asking follow-up questions. Also, due to time constraints, we have chosen to focus on the other three dimensions, on which relevant follow-up questions could be asked that resulted in less time available for the feelings dimension. During the analysis of the data, it turned out that this does not entail any limitations for the internal validity, because feelings could also be identified from the other three dimensions, on which sufficient data was obtained.

To measure the regulatory focus, in addition to own interpretation, the dictionary of Gamache et al. (2015) was used in the content analysis of the interviews. This is a validated, scientific list of words which helps identifying a promotion focus or prevention focus. This contributes to the internal validity, because herewith, the regulatory focus was determined by means of a validated list and not based on assumptions. However, some respondents repeatedly used both promotion- and prevention-focused words. Therefore, we had to dive into the content very deeply and precisely to identify the regulatory focus. Overall, it was manageable to identify the focuses for all respondents, which offers no limitations for the internal validity.

Besides internal validity, the research has a high face validity as well, as the research was conducted by means of a case study. A case study based on empirical research represents a real story that most researchers can identify themselves with (Myers, 2020).

6.3.2 Reliability and verifiability

The reliability, meaning that the findings should not deviate due to random deviations (Bleijenbergh, 2015), is relatively low because the specifically investigated group of decision-makers in a specific business ecosystem cannot easily be re-investigated in another empirical setting. This characterizes idiosyncratic research (Bleijenbergh, 2015). However, to ensure a certain degree of reliability, the

statements in the results and conclusion are limited to the domain that was investigated, which contributes positively to reliability.

As this qualitative research is not able to guarantee reliability to a great extent, an important criterion that replaces reliability is verifiability. This means that the entire research can be verified. All data and the used methods of data collection and data analysis were documented in detail. The interviews were transcribed verbatim, so that literally every word can be traced back. The codes and labels assigned to the transcripts were summarized in one document, so that they could be clearly traced for each respondent. In addition, quotations were frequently used in the Results section, which contributes to the verifiability of the statements. However, one respondent did not give permission for the interview to be recorded, so the choice was made to make a detailed interview report of the conversation. For another respondent, it was not possible to record the second part of the interview, so we made a report of this part of the interview as well. Herewith, the entire research process and all data can be traced, which guarantees verifiability.

6.3.3 External validity

The external validity of the study was limited by the limited size of the observation unit, which was a result of restricted time available for the research. As a result, it is not possible to generalize the findings to a population, but only to the theory of Johnson et al. (2015).

In other words, the contribution to the theory of Johnson et al. (2015) has a general scope, while the generalization to the population of the investigated sample does not. This is due to the analytical generalization which ensures that the patterns can be generalized to the theory (Bleijenbergh, 2015).

6.3.4 Usability

We ensured practical usability through the section 'Practical implications' and the abstract, which makes it possible quickly read what useful insights this study provides for the case company. Furthermore, we provide the case company with a management summary including all relevant aspects and findings written in a logical and understandable way for all relevant stakeholders of the organization and other readers. In addition, we provide the case company with the opportunity to arrange a meeting with us as the researching party, so that the findings of the study can be presented to the management team with a direct explanation of the insights and concrete take-aways. It will be focused on the mentioned aspects in the section 'Practical implications' during this presentation.

6.4 Suggestions for further research

Due to time constraints, we had to identify both the respondents' regulatory focus trait and state in one interview. Therefore, a suggestion for further research on open innovation with a regulatory focus lens would be to identify the regulatory focus trait by existing, validated measures such as the General

Regulatory Focus Measure by Gorman et al. (2012). This allows the researcher to focus on the regulatory focus state by a different data collection method like interviews.

Furthermore, some respondents mentioned that differences in the cultural backgrounds of collaborating parties regarding innovation play an important role in taking on a certain position in the Paradox of Openness. Unfortunately, due to the focus on personal motivations in this research, it was not possible to explore this aspect further. A suggestion for future research would be to investigate the relationship between cultural backgrounds of individual decision-makers and their position in the Paradox of Openness.

Also, the hierarchical structure of the organizations was brought to attention by the respondents as an important aspect for certain innovation-related decisions. It would therefore be useful for future research to focus on the influence of organizational structures on a firm's open innovation.

7. References

- Angraeni, E., Den Hartigh, E., & Zegveld, M. (2007, October). Business ecosystem as a perspective for studying the relations between firms and their business networks. In *ECCON 2007 Annual meeting* (pp. 1-28). The Netherlands: Bergen aan Zee.
- Bigliardi, B., Ferraro, G., Filippelli, S., & Galati, F. (2021). The past, present and future of open innovation. *European Journal of Innovation Management*, 24(4), 1130-1161.
<https://doi.org/10.1108/EJIM-10-2019-0296>
- Bleijenbergh, I. (2015). *Kwalitatief onderzoek in organisaties* (Tweede druk. ed.). Boom Lemma uitgevers.
- Bogers, M., Foss, N. J., & Lyngsie, J. (2018). The “human side” of open innovation: The role of employee diversity in firm-level openness. *Research Policy*, 47(1), 218-231.
<https://doi.org/10.1016/j.respol.2017.10.012>
- Cesario, J., Higgins, E. T., & Scholer, A. A. (2008). Regulatory fit and persuasion: basic principles and remaining questions: basic principles of regulatory fit and persuasion. *Social and Personality Psychology Compass*, 2(1), 444–463.
<https://doi.org/10.1111/j.1751-9004.2007.00055.x>
- Cowden, B. J., & Bendickson, J. S. (2018). Impacts of regulatory focus and institutions on innovation. *Management Decision*, 56(5), 939–954. <https://doi.org/10.1108/MD-11-2016-0826>
- Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational behavior and human decision processes*, 69(2), 117-132. <https://doi.org/10.1006/obhd.1996.2675>
- Dahlander, L., O'Mahony, S., & Gann, D. M. (2016). One foot in, one foot out: how does individuals' external search breadth affect innovation outcomes? *Strategic Management Journal*, 37(2), 280–302. <https://doi.org/10.1002/smj.2342>
- Foegen, J. N., Lauritzen, G. D., Tietze, F., & Salge, T. O. (2019). Reconceptualizing the paradox of openness: How solvers navigate sharing-protecting tensions in crowdsourcing. *Research Policy*, 48(6), 1323-1339. <https://doi.org/10.1016/j.respol.2019.01.013>
- Gamache, D. L., McNamara, G., Mannor, M. J., & Johnson, R. E. (2015). Motivated to acquire? The impact of CEO regulatory focus on firm acquisitions. *The Academy of Management Journal*, 58(4), 1261-1282. DOI: 10.5465/amj.2013.0377
- Gorman, C. A., Meriac, J. P., Overstreet, B. L., Apodaca, S., McIntyre, A. L., Park, P., & Godbey, J. N. (2012). A meta-analysis of the regulatory focus nomological network: Work-related antecedents and consequences. *Journal of Vocational Behavior*, 80(1), 160-172.
<https://doi.org/10.1016/j.jvb.2011.07.005>
- Gu, J., Bohns, V. K., & Leonardelli, G. J. (2013). Regulatory focus and interdependent economic decision-making. *Journal of Experimental Social Psychology*, 49(4), 692-698.
<https://doi.org/10.1016/j.jesp.2012.11.008>

- Higgins, E. T. (1998). Promotion and Prevention: Regulatory focus as a motivational principle. *Advances in experimental social psychology*, 30, 1-46. [https://doi.org/10.1016/S0065-2601\(08\)60381-0](https://doi.org/10.1016/S0065-2601(08)60381-0)
- Ikävalko, H., Turkama, P., & Smedlund, A. (2018). Value creation in the internet of things: Mapping business models and ecosystem roles. *Technology Innovation Management Review*, 8(3).
- Jacobides, M. G. (2019). In the ecosystem economy, what's your strategy? *Harvard business review*, 97(5), 128-128.
- Johnson, P. D., Smith, M. B., Wallace, J. C., Hill, A. D., & Baron, R. A. (2015). A review of multilevel regulatory focus in organizations. *Journal of Management*, 41(5), 1501-1529. <https://doi.org/10.1177/0149206315575552>
- Laursen, K., & Salter, A. J. (2014). The paradox of openness: Appropriability, external search and collaboration. *Research Policy*, 43(5), 867-878. <https://doi.org/10.1016/j.respol.2013.10.004>
- McGrath, R. G. (2013). Transient advantage. *Harvard business review*, 91(6), 62-70.
- Monni, A., Olivier, E., Morin, A. J. S., Olivetti Belardinelli, M., Mulvihill, K., & Scalas, L. F. (2020). Approach and avoidance in Gray's, Higgins', and Elliot's perspectives: A theoretical comparison and integration of approach-avoidance in motivated behavior. *Personality and Individual Differences*, 166. <https://doi.org/10.1016/j.paid.2020.110163>
- Myers, M. D. (2020). *Qualitative research in business & management* (Third edition. ed.). SAGE Publications Ltd.
- Paasi, J., Valkokari, K., Rusanen, H., Makkonen, H., & Laiho, T. (2020). Paradox of openness: knowledge sharing-protection tension in ecosystems. *The ISPIM Innovation Conference: Innovating in Times of Crisis. Lappeenranta University of Technology*. <https://urn.fi/URN:NBN:fi-fe202101283104>
- PwC. (2016). *Innovation in the Netherlands*. <https://www.pwc.nl/en/publicaties/innovation-in-the-netherlands.html>
- Rabobank. (2021). *ICT: naast goede vooruitzichten ook genoeg uitdagingen*. <https://www.rabobank.nl/kennis/d011191761-ict-naast-goede-vooruitzichten-ook-genoege-uitdagingen>
- Rijksoverheid. (n.d.) *Nederland profiteert van digitale toekomst*. <https://www.rijksoverheid.nl/onderwerpen/ict/nederland-profiteert-van-digitale-toekomst>
- Ritala, P., & Stefan, I. (2021). A paradox within the paradox of openness: The knowledge leveraging conundrum in open innovation. *Industrial Marketing Management*, 93, 281-292. <https://doi.org/10.1016/j.indmarman.2021.01.011>
- Schmeiss, J., Hoelzle, K., & Tech, R. P. G. (2019). Designing governance mechanisms in platform ecosystems: Addressing the paradox of openness through blockchain technology. *California Management Review*, 62(1), 121-143. <https://doi.org/10.1177/0008125619883618>

- Scholer, A. A., Zou, X., Fujita, K., Stroessner, S. J., & Higgins, E. T. (2010). When risk seeking becomes a motivational necessity. *Journal of personality and social psychology*, 99(2), 215. <https://doi-org.ru.idm.oclc.org/10.1037/a0019715>
- Smith, D. (2003, January). Five principles for research ethics. *Monitor on Psychology*, 34(1). <http://www.apa.org/monitor/jan03/principles>
- van Wijk, R., Jansen, J., & Lyles, M. A. (2008). Inter- and intra-organizational knowledge transfer: a meta analytic review and assessment of its antecedents and consequences. *Journal of Management Studies*, 45(4), 830–853.
- Whelan, E., Teigland, R., Donnellan, B., & Golden, W. (2010). How internet technologies impact information flows in r&d: reconsidering the technological gatekeeper. *R&d Management*, 40(4), 400–413. <https://doi-org.ru.idm.oclc.org/10.1111/j.1467-9310.2010.00610.x>
- Witte, A.-K., Fürstenau, D., & Zarnekow, R. (2020). Digital health ecosystems for sensor technology integration-A qualitative study on the paradox of data openness. In ICIS.

8. Appendix

Appendix 1. Interview questions

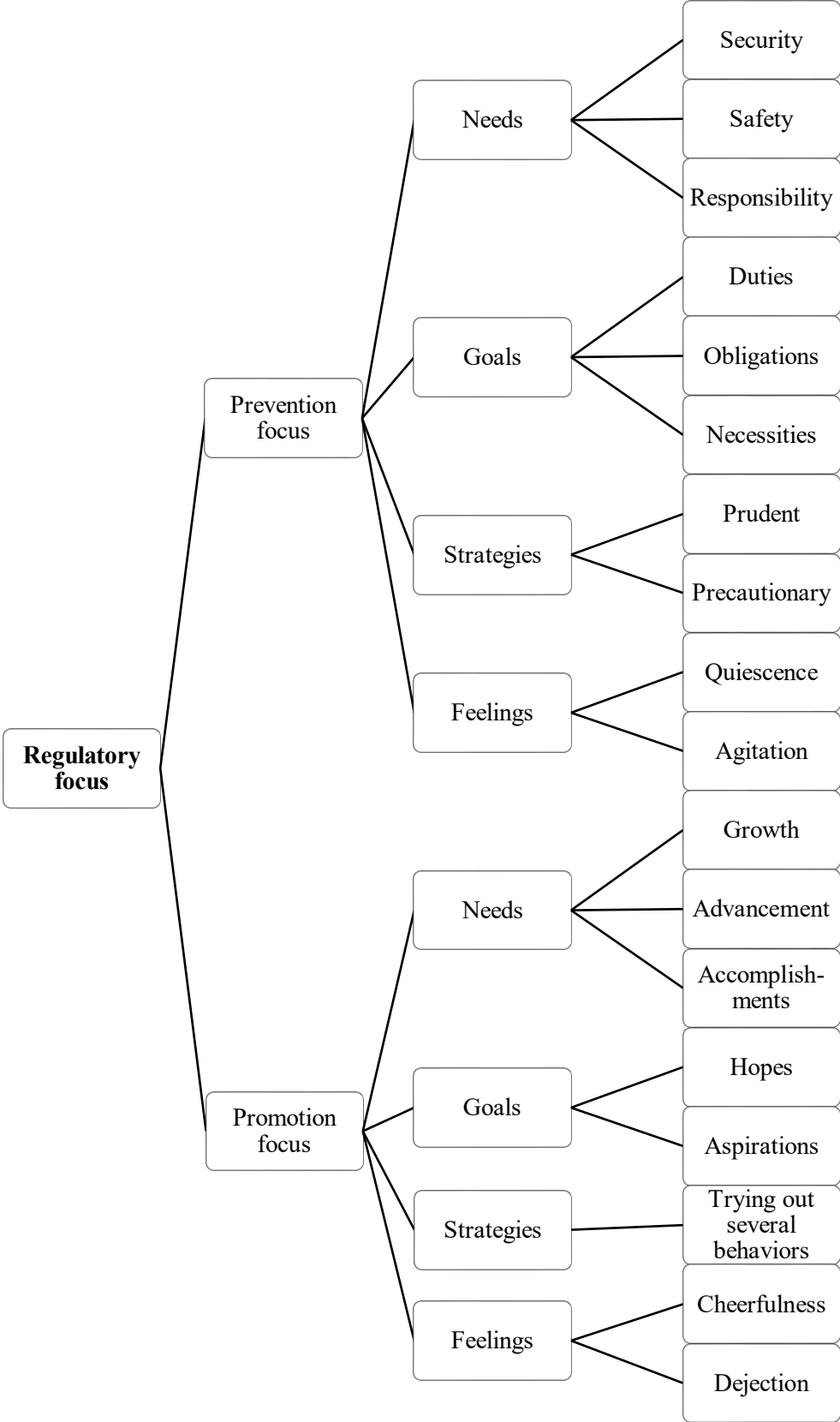
English

1. What were your goals in making the choice to share knowledge or protect knowledge with respect to external companies with regards to innovation?
2. What were your needs for making this choice?
 - a. How do you think your needs differ from those of other decision-makers?
3. How would you explain the underlying strategy based on which you made the decision?
 - a. How did your strategy differ from those of other decision-makers?
4. How would you explain the feelings that you had when making the choice?

Dutch

1. Wat waren de doelen die u wilde bereiken met het maken van de keuze om kennis te delen of kennis te schermen ten opzichte van externe bedrijven ten aanzien van innovatie?
2. Wat waren de behoeften om deze keuze te maken?
 - a. Hoe verschilden uw behoeften van die van andere besluitvormers?
3. Hoe zou u de onderliggende strategie op basis waarvan u dit besluit hebt genomen omschrijven?
 - a. Hoe verschilde uw strategie van die van andere besluitvormers?
4. Hoe omschrijft u de gevoelens die u had bij deze situatie?

Appendix 2. Code tree regulatory focus



Appendix 3. Dictionary regulatory focus words

Regulatory Focus Words	
Promotion Words	Prevention Words
<i>Accomplish</i>	<i>Accuracy</i>
<i>Achieve</i>	<i>Afraid</i>
<i>Advancement</i>	<i>Careful</i>
<i>Aspiration</i>	<i>Anxious</i>
<i>Aspire</i>	<i>Avoid</i>
<i>Attain</i>	<i>Conservative</i>
<i>Desire</i>	<i>Defend</i>
<i>Earn</i>	<i>Duty</i>
<i>Expand</i>	<i>Escape</i>
<i>Gain</i>	<i>Escaping</i>
<i>Grow</i>	<i>Evade</i>
<i>Hope</i>	<i>Fail</i>
<i>Hoping</i>	<i>Fear</i>
<i>Ideal</i>	<i>Loss</i>
<i>Improve</i>	<i>Obligation</i>
<i>Increase</i>	<i>Ought</i>
<i>Momentum</i>	<i>Pain</i>
<i>Obtain</i>	<i>Prevent</i>
<i>Optimistic</i>	<i>Protect</i>
<i>Progress</i>	<i>Responsible</i>
<i>Promoting</i>	<i>Risk</i>
<i>Promotion</i>	<i>Safety</i>
<i>Speed</i>	<i>Security</i>
<i>Swift</i>	<i>Threat</i>
<i>Toward</i>	<i>Vigilance</i>
<i>Velocity</i>	
<i>Wish</i>	

Source: Gamache et al., 2015