A motivational perspective to decision-making and behavior in organizations
A motivational perspective to decision-making and behavior in organizations

Een motiverend perspectief op besluitvorming en gedrag in organisaties

Thesis

to obtain the degree of Doctor from the
Erasmus University Rotterdam
by command of the
rector magnificus
Prof. dr. R.C.M.E. Engels

and in accordance with the decision of the Doctorate Board.

The public defence shall be held on
Thursday June 13th at 11:30 hrs

by
Saeedeh Ahmadi
born in Tehran, Iran
Doctoral Committee

Doctoral dissertation supervisor:

Prof.dr. J.J.P. Jansen
Prof.dr. T. Mom

Other members:

Prof.dr. Taco Reus
Dr. Luca Berchicci
Dr. JP Eggers
Dr. Flore Bridoux
Prof.dr. Michaela Schippers

Erasmus Research Institute of Management – ERIM
The joint research institute of the Rotterdam School of Management (RSM)
and the Erasmus School of Economics (ESE) at the Erasmus University Rotterdam

Internet: www.erim.eur.nl

ERIM Electronic Series Portal: repub.eur.nl/

ERIM PhD Series in Research in Management, #477
© 2019, Saeedeh Ahmadi

Design: PanArt, www.panart.nl

This publication (cover and interior) is printed by Tuijtel on recycled paper, BalanceSilk®
The ink used is produced from renewable resources and alcohol free fountain solution.
Certifications for the paper and the printing production process: Recycle, EU Ecolabel, FSC®, ISO14001.

More info: www.tuijtel.com

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any
means electronic or mechanical, including photocopying, recording, or by any information storage and
retrieval system, without permission in writing from the author.
To Aryan Soren, my one year old bundle of joy

Live a life full of “motivation” and “challenging goals”. I will always believe in your “capabilities”, mommy!
Preface

Wasn’t there motivating teachers who had trust in my potentials, I was not where I am now, from Ms. Asadi, the teacher of second grade who looked at the eyes of a 7 year old girl and told that she must become a doctor or engineer to Professor Justin Jansen who gave me an opportunity to switch from Tinbergen Institute to Erasmus Research Institute of Management (ERIM) to follow my research interests in Erasmus University Rotterdam.

At the start of my PhD trajectory, just being back from my first visit of Academy of Management conference, I wanted to run experiments among managers. I was new to complications of experimental methods and the only one in the department who used it at the time. Because of the support of the team of co-authors who encouraged the idea and gave me some room to “experiment” and challenge myself, I could submit a full paper in the first months based on those experiments. It took three years for my first paper to get published and I needed to collect much more data but I gained a lot by learning from them and also through learning-by-doing in each submission.

Colleagues, family, friends, and institutes supported and inspired me in the past couple of years. I am indebted to the advisory team who became role models for me in different ways. I had the opportunity to learn hypothesis development from one of the most highly cited scholars in management research while he was correcting the logic in my texts. Wasn’t it a luxury for a PhD student? If the current version of the papers do not show that, I try to prove it better in years to come. In the first meeting, Justin told me to “be an entrepreneur in research” and encouraged me to become one. He taught me to be pragmatic about research and simplified my complex vague models, texts, and even thoughts. Being a person high in both prevention and promotion foci, I benefitted from the fit of the supervisory team and
motivational vacillations in the context. With his optimal delegation of authority, he gave me the freedom to experiment with several different research topics and data collections, and tolerated my trials even at the times I got so independent that I submitted papers based on my own judgement without his approval. As such, each time, I became more motivated to work harder to show him that I can “discern” those ideas that are “fruitful” from “futiles”. I was always waiting eagerly for the moment to share with him some good news. Luca, with his unique emotional intelligence and support, was a treasure. He was there to push the shy and cautious side of me forward once he knew me. He knew how to ask the most important fundamental questions in the beginning of the research and challenged me to think and express better what I am going to do. I am also thankful to Saeed Khanagha for encouragements in the initial steps, and his support in collecting data for the second chapter. I benefited from Tom Mom’s prior research and he was kind enough to join the advisory team in later stages of my PhD trajectory.

To JP Eggers and department of Management and Organization in Stern School of Business- I am grateful, for their exceptional attention and support that facilitated my research visit at the difficult time of the travel ban. The opportunity to visit Stern and know and learn from JP closely was invaluable. He was always there to think out of the box and suggest more interesting research questions or hypotheses about my research topics. Till now, he has been patiently translating my results and naïve ideas in to something more interesting, beautiful, and meaningful. JP became a role model for me in many aspects and most importantly in the way he cared about juniors and spent time to guide PhD students of the department.

I am thankful to RSM, ERIM and Trustfonds for supporting conference visits, data collection efforts, and the research visit. RSM gave structure and form to my mind for doing management research and NYU Stern showed me the ways
to get out of the structure and look differently at the phenomena when necessary. I could have still done better in this dissertation but years to come are for me to practice these and find my balance.

The colleagues and friends in RSM made the PhD journey more fun. Lance, Rene, and Emre made T7-26 not just a warm bright room but a pleasant comfortable second home. Jacomijn, Thijs, Krishnan, Taghi, Radina, Ilaria, Stefan, Roxana, Joost, Patricia, and many more contributed to shaping a positive atmosphere on 7th floor. The collaboration with Richard and Mallory in the quantitative method course was excellent and memorable. My my new colleagues in Amsterdam Business School have been instrumental in feeling great about academic work while I was following these final steps. I thank Michiel, my new office mate, for his help in writing the Dutch summary of this dissertation and sharing his insights and career development advices.

In the final year of my PhD trajectory, my dream came true and an angle came to my life but of course with some complications. Only then, I learned there is nothing as helpful as the support of a female network when life becomes complicated. They are the only ones who truly understand you and come to everyday life, not only with full support but also with their feminine warmth and compassion, when you need it the most, when you are a new mom trying to finish your thesis, compete in job market, and finish an R&R, when you are still weak and your baby is sick. I have been blessed to have the best of the females beside me. Somayeh, Atena, Nazanin, Mina, and Maryam, thanks for being there for me whenever I asked for. I would never forget those days. Marzieh, Rene, Jacomijn, Patricia, Magdalena, Ana, and Lotte thanks for your hugs and empowering words when I needed them the most.

Not only this dissertation and my education but also my life is affected by the family who showed me what unconditional love is- most importantly a father
who is a true man of wisdom and a mother who is kindhearted. They accepted me the way I was, supported the path I chose, and filled my life with love. Without Saeed’s companionship, not only this journey but my life would have been different. During my study, he showed extraordinary skills to help me in some aspects and leave me alone in some challenges in order for me to become very independent. As old friends and classmates, we moved from country to country, school to school, passed ups and downs, and proved that we could both achieve more when we were together. May it long continue.

Saeedeh Ahmadi

5 May 2019, Amsterdam
1 INTRODUCTION...........................................................................................................15
  1.1 RESEARCH AIM ......................................................................................................17
  1.2 METHODOLOGIES .................................................................................................19
  1.3 OUTLINE OF DISSERTATION ................................................................................21

2 STUDY 1 - A PSYCHOLOGICAL PERSPECTIVE ON MANAGERS’ EXPLORATION ORIENTATION: THE ROLE OF REGULATORY FOCUS, REGULATORY FIT, AND COMPLEXITY .............................................................................28

  2.1 ABSTRACT ..............................................................................................................28
  2.1 INTRODUCTION .....................................................................................................29
  2.2 THEORETICAL OVERVIEW ....................................................................................32
    2.2.1 A Psychological Perspective on Managers’ Exploration ..................................32
    2.2.2 Regulatory Focus, Organizational Context, and Complexity .........................37
  2.3 HYPOTHESES ......................................................................................................40
    2.3.1 Managers’ Regulatory Focus Trait and the Pursuit of Exploration .................40
    2.3.2 The Moderating Role of Organizational Context: Regulatory Fit .................42
    2.3.3 The Contingency Role of Decision-making Complexity ..................................45
  2.4 METHOD ..................................................................................................................47
  2.5 STUDY A ................................................................................................................48
    2.5.1 Research Setting and Participants ..................................................................48
    2.5.2 Procedure and Manipulations ......................................................................50
    2.5.3 Measures ........................................................................................................53
    2.5.4 Results ...........................................................................................................56
  2.1 STUDY B ................................................................................................................61
    2.1.1 Participants, Procedure, and Materials .........................................................61
    2.1.2 Manipulation Checks ....................................................................................63
    2.1.3 Results ...........................................................................................................63
  2.2 DISCUSSION AND CONCLUSION .....................................................................68

3 STUDY 2- STRETCH GOALS AND IDEA GENERATION: ONE SIZE FITS ALL? .......................................................................................................................... ERROR! BOOKMARK NOT DEFINED.

  3.1 ABSTRACT .............................................................................................................. ERROR! BOOKMARK NOT DEFINED.
  3.2 INTRODUCTION ..................................................................................................... ERROR! BOOKMARK NOT DEFINED.
  3.3 THEORETICAL OVERVIEW .................................................................................. ERROR! BOOKMARK NOT DEFINED.
  3.4 HYPOTHESES ...................................................................................................... ERROR! BOOKMARK NOT DEFINED.
    3.4.1 Stretch goals and Idea Generation Behaviors .............................................. ERROR! Bookmark not defined.
    3.4.2 Stretch goals, Fruitful and Futile Ideas ......................................................... ERROR! Bookmark not defined.
    3.4.3 Shaping the Effectiveness of Stretch Goals on Idea generation Outcomes ERROR! Bookmark not defined.
3.4.4 The Moderating Role of Individual-level Prior Success

3.4.5 The Moderating Role of Individual-level Organizational Tenure

3.4.6 The Moderating Role of Individual-level Hierarchical Position

3.5 DATA AND METHOD

3.5.1 Empirical Setting and Data Collection

3.5.2 Measures

3.6 ANALYSIS AND RESULTS

3.7 DISCUSSION AND CONCLUSION

4 STUDY 3- STRATEGIZING FOR EMERGING TECHNOLOGIES: THE ROLE OF MOTIVATION AND ABILITY IN SHAPING MANAGERS’ PREFERENCES FOR TIMING OF INVESTMENT

4.1 ABSTRACT

4.2 INTRODUCTION

4.3 TIMING OF THE INVESTMENT DECISION

4.4 HYPOTHESES

4.4.1 Perception of Capability Gap and Timing of the Investment Decision in Emerging Technology

4.4.2 The Interaction Between Capability Gap and Regulatory Focus

4.4.3 The Mediating Role of Exploration Orientation

4.5 METHODS

4.5.1 Research Context

4.5.2 Research Setting, Procedure, and Participants

4.5.3 Measures

4.6 ANALYSIS AND RESULTS

4.7 DISCUSSION AND CONCLUSION

5 DISCUSSION AND CONCLUSION CHAPTER

5.1 STUDY 1

5.2 STUDY 2

5.3 STUDY 3

5.4 MANAGERIAL IMPLICATIONS
5.5 **LIMITATIONS AND AGENDA FOR FUTURE RESEARCH**... *ERROR! BOOKMARK NOT DEFINED.*

6 **REFERENCES** .................................................................................................................................................. 73

7 **APPENDICES** ................................................................................................................................................. 89

7.1 **APPENDIX 2-A COMPLEXITY MANIPULATION- STUDY A** .............................................. 89
7.2 **APPENDIX 2-B REGULATORY FOCUS STIMULI MANIPULATION- VIDEO MANUSCRIPTS** .................................................................................................................. 91
7.3 **APPENDIX 2-C EXPLORATORY ORIENTATION ITEMS** .................................................. 92
7.4 **APPENDIX 2-D COMPLEXITY MANIPULATION- STUDY B** ....................................... 93
7.5 **APPENDIX 3-A – EXAMPLES OF NEW BUSINESS OPPORTUNITIES** ..................... 95
7.6 **APPENDIX 4-A - REGULATORY FOCUS CONTEXT MANIPULATION** ........... *ERROR! BOOKMARK NOT DEFINED.*

7.7 **APPENDIX 4-B- CAPABILITY GAP MANIPULATION** ...... *ERROR! BOOKMARK NOT DEFINED.*

8 **ENGLISH SUMMARY** ................................................................................................................................. 97

9 **SAMENVATTING (DUTCH SUMMARY)** ................................................................................................. 98

10 **ABOUT THE AUTHOR** ........................................................................................................................... 99

11 **PORTFOLIO** ............................................................................................................................................. 100

12 **ERIM PHD SERIES** ................................................................................................................................. 102
List of Tables

Table 1-1 Summary of the studies ................................................................. 20
Table 1-2 Summary of the main gaps and contributions............................ 25
Table 2-1 Attributes of regulatory focus, promotion and prevention.............. 34
Table 2-2 Regulatory focus aspects relevant to exploration .......................... 36
Table 2-3 Descriptive statistics and correlations- Study A ............................ 57
Table 2-4 Regression results of Study A ...................................................... 59
Table 2-5 Descriptive statistics and correlations - Study B ............................ 66
Table 2-6 Regression results of Study B ...................................................... 67
Table 3-1 Statistics and Correlations......................................................... Error! Bookmark not defined.
Table 3-2 Service Employees Idea Generation Behavior © Error! Bookmark not defined.
Table 3-3 The Number of Fruitful and Futile Ideas for New Business Opportunities © ......................................................................................................................... Error! Bookmark not defined.
Table 4-1 Descriptive statistics and correlations ............... Error! Bookmark not defined.

List of Figures

Figure 1-1- An overall conceptual framework .............................................. 23
Figure 2-1 Interaction between prevention regulatory focus trait and organizational context – Study A ................................................................. 61
Figure 2-2 Three-way interaction-promotion focus trait, organizational context, and complexity – Study A ................................................................. 62
Figure 3-1 Interaction effect of stretch goal and prior success on fruitful ideas for new business opportunities ....................................................... Error! Bookmark not defined.
Figure 3-2 Interaction effect of stretch goal and organizational tenure on fruitful ideas for new business opportunities ........................................ Error! Bookmark not defined.
Figure 3-3 Interaction effect of stretch goal and Hierarchical position on fruitful ideas for new business opportunities ............................. Error! Bookmark not defined.
Figure 4-1 The determinants of managers’ preferences for timing of investment on emerging technologies ......................................................... Error! Bookmark not defined.
Figure 4-2 SEM model. Numbers in parentheses indicate indirect effects .......... Error! Bookmark not defined.
1 Introduction

As organizational tensions have become more salient in the contemporary organizations, scholars increasingly explore their nature, approaches to deal with them, and their impact (Schad et al., 2016). Focusing on efficiency-oriented exploitative activities and attempting to show exploratory behavior or following the future oriented wave of an emerging technology and continuing with the current ones are examples of such tensions that compromise survival and competitiveness of organizations and require managers to deal with high levels of uncertainty in complex decision-making situations.

Most often, attending to both sides is important for the organizations’ survival, but they are not always equally important (Puranam et al., 2006). For instance, scholars have suggested that in a rapidly changing environment with high levels of uncertainty the need for internal variety and effective adaptation necessitates an increased focus on exploration (Gupta, Smith, and Shalley 2006; McGrath 2001). However, organizations vary in their ability to cope with inherent challenges of such tensions (Levinthal and March, 1993; March, 1991; Tushman and O’Reilly, 1996) and studies have identified a range of reasons that explain this variation and a key role is played by managers. Notably, managers play an important role in facilitating exploration within organizational boundaries (Gibson and Birkinshaw,
In this dissertation, I focus on the underlying reasons for specific behaviors and performance under uncertainty in organizations. At the intersection of literature of strategic management and applied psychology, I focus on motivation as a main driver of strategic preferences and behaviors in organizations. Broussard and Garrison (2004) broadly define motivation as “the attribute that moves us to do or not to do something” (p. 106). I combine theoretical arguments from organization and psychological theories to explain managers’ decision making about exploration-exploitation trade-off in response to the uncertainties that emerging technologies impose and also to explain exploratory behavior and performance outcomes in response to a motivating intervention through challenging goals. Among many psychological elements that may affect the behavior, I choose motivation because it refers to “the reasons underlying behavior” (Guay et al., 2010, p. 712). It is the important impetus that gives direction to our behavior.

In the first study, I explain how motivational systems shape the decision of the manager in dealing with the complexity that emerging technology imposes. I try to explain the tendency of managers to exploration when they face the different levels of complex decision-making situation that emerging technology brings about, through a psychological perspective. In the second study, I focus on the motivating role of stretch goals as an extrinsic motives which impose tensions, and
investigate their positive and negative roles in encouraging members of service units to get out of their comfort zone, participate and engage in exploratory behavior and generate performance outcomes which translates to intended and unintended outcome for the organization. In the third study, I investigate the preference of the manager for the delay in investment on an emerging technology as a choice which is shaped by his perception of the situation and the stimuli of the context. Decision to invest in new technologies is one of the most important managerial decisions that involves uncertainty, because it involves an upfront commitment of resources to a highly uncertain future outcome which could compromise the competitiveness or the very existence of the firm. I combine motivation and capability lenses to explain how this decision is a consequence of managers’ prior decision in reconciling exploration-exploitation trade-off.

1.1 Research Aim

The overall aim of this research is to increase our understanding of how motivation affects the strategic behavior in organizations. The dissertation seeks to uncover key motivational drivers of strategic decisions and to identify the contextual factors that act as boundary conditions to the motivational factors. To do this, the dissertation develops a psychological perspective that considers the significance of motivational and behavioral aspects of managers’ decision-making and employee’s behavior by using four sets of empirical data in three studies to quantitatively examine the theories. The outcome variables of this dissertation
range from managerial preferences for strategic action to actual innovative output of the individuals in organization. As such, this dissertation makes a clear attempt to identify the effects of motivational factors across organizational levels. Consideration of organizational context with motivational lens is pertinent for understanding the nuances of strategic decision making and behavior. Although the idea that organizational context is an important driver of how motivational factors influence strategic actions seems intuitive, existing research provides little discussion about the combined effects of these factors. Therefore, the research aim of this dissertation are to increase the understanding of how motivation influences strategic behavior and examine the organizational and individual factors that act as boundary condition of the motivational factors in organizations.

In addressing the above objectives, this dissertation seeks a number of important contributions. First, it contributes to the literature on strategic decision-making by providing empirical evidence that how individual characteristics and perception, organizational context, and complexity of decision making interact and in combination determine the strategic preference of decision maker for exploration and timing of investment on emerging technologies. Second, by focusing on emerging technologies and strategic choices that need to be made under conflicting requirements of such technologies, this research advances the scholarly knowledge of organizational response to technological change. I identify a number of previously overlooked factors that determine when and how organizations
engage with a technological change. Finally, we contribute to the literature that
discusses the paradoxical nature of stretch goals as motivating levers. We bring
together the disparate logics, discuss their behavioral and performance outcomes,
separate the intended and unintended results, and describe the individual
differences that shape the performance variance in response to such goals.

1.2 Methodologies

This dissertation is based on an empirical approach and uses first hand data. Table
1-1 provides a summary of the studies which I will elaborate further in the
following chapters. In providing a micro-level motivational perspective on
exploration, study 1 and 3 use experimental methods. Through experimental
vignette methodology (EVM), I take exploration-exploitation tradeoff research in
a new methodological direction. While micro-level studies in this line of research
are still scarce, I try to go one step further and provide a better understanding on
not only what makes professional decision makers decide about these trade-offs
but also on how they behave the way they do in certain situations. I devised
experiments based on a business problem to which the participants could actively
relate. Involving business managers helped me to increase the internal validity of
the results and to avoid artificial responses in EVM, as recommended by Aguinis
and Bradley (2014).
<table>
<thead>
<tr>
<th>Table 1-1 Summary of the studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study 1</strong></td>
</tr>
<tr>
<td><strong>Data source</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Year</strong></td>
</tr>
<tr>
<td><strong>Unit of analysis</strong></td>
</tr>
<tr>
<td><strong>Dependent variable</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Mediators</strong></td>
</tr>
</tbody>
</table>

Using students of strategic management as the other sample, I could increase the generalizability of the findings by eliminating the potential effects of the particular
organizational context of our first study. In addition of text vignettes, I used video vignette which are expected to increase the immersion and external validity of the study (Aguinis and Bradley, 2014). In Study 2, I collected multi-source data and combined a time lagged survey and archival company data collected from service units of a large multinational ICT company.

### 1.3 Outline of Dissertation

This dissertation includes three studies each of which contribute in its own way to the research aim. Each study focuses on different research gaps, and sometimes on different theoretical constructs and levels of analysis which will be explained in the following.

In study 1, drawing on regulatory focus theory (RFT) (Higgins, 1997) as a recent motivation theory, I develop a motivational perspective on exploration orientation of managers in dealing with complexities of decision making about a new technology. It is known that organizations may vary in their ability to cope with the inherent challenges of pursuing exploration and exploitation (Levinthal & March, 1993; March, 1991; Tushman & O’Reilly, 1996), and studies have argued that a key role is played by managers in reconciling exploration and exploitation tradeoffs (Gibson & Birkinshaw, 2004; Lubatkin et al., 2006; O’Reilly & Tushman, 2011). However, research on what steers individual manager for exploration is scarce (Lavie et al., 2010; Laureiro-Mart & Brusoni, 2015), and only a few earlier studies on antecedents of exploration have considered factors
such as cognitive capabilities (Laureiro-Mart & Brusoni, 2015) or access to knowledge flows (Mom et al., 2007; 2015) without a motivation lens. I test my theoretical model which explains how a combination of trait and context shapes manager’s decision using an experimental setting. I collect data from two samples, including the managers in a large multinational corporation and master students of strategic management at Rotterdam school of management.

In the second study, I investigate the effect of stretch goals as external motivational triggers that are expected to encourage exploratory behavior of service units to seek new business opportunities out of existing routines. While for many years advocates of stretch goals have argued that such goals can improve performance by stimulating search and innovation, promoting new ways of thinking, and guiding effort and persistence, and there is prevalent anecdotal evidence for this (see Ordóñez et al., 2009; Sitkin et al., 2017), there is still limited evidence to supports such generalizations. Recently, some scholars have put forward some evidence highlighting the disruptive (unethical behavior) or no effects of stretch goals (Zhang and Jia, 2013; Gary et al., 2017). I theorize and provide an empirical investigation on the effectiveness of stretch goals for an interesting form of performance (identification of new business opportunities) which has been neglected before (Gary et al., 2017). To increase our understanding of the nuances of the puzzling nature of stretch goals, I discuss both desirable and undesirable consequences of such goals and the mechanisms that
empower or hinder them. A combination of a time-lagged survey and archival company data in service units of a fortune 500 company is used for this study.

Figure 1-1- An overall conceptual framework

While strategic management literature has extensively used capability lens in describing the variation in strategic choices and behavior, in the third study, I combine motivation and capability perspectives in studying managers’ preferences in dealing with the uncertainty that the capability gap imposes based on an emerging technology. This study contributes to recent research agenda that proposes that our understanding of the behavior by looking at ability is incomplete without adding a motivation lens to it (Zhao and Chadwick, 2014, Osterloh and Frey, 2000; Dahlin et al., 2018; Egger and Kaul, 2018). It explains the tradeoffs and pros and cons managers see in early versus late investment and how this is directly and indirectly affected by the way their perception of the gap between current capabilities of the firm and what is requires to be successful in the
emerging technology, and how the motivation shapes their judgements. In one step further than study1, I discuss the consequence of exploration approach in terms of timing of the investment decision. In fact, I show how the approach they choose to close the gap, through exploration or exploitation, indirectly affects their timing of investment in a different way that the direct effect works. I test the theoretical framework using data collected from managers active in health care sector involved with Internet of Things technology. Table 1-2 presents a summary of the literature gaps and the respective contributions. Figure 1-1 provides an overall conceptual framework that is central to the three studies.
### Table 1-2 Summary of the main gaps and contributions

<table>
<thead>
<tr>
<th>Study</th>
<th>Main Gaps</th>
<th>Main contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1- A psychological perspective on managers’ exploration orientation: the role of regulatory focus, regulatory fit, and complexity.</td>
<td>Organizations may vary in their ability to cope with the inherent challenges of pursuing exploration and exploitation. Despite the critical role played by managers in this regard, our understanding of what makes them more inclined to exploration is limited (Gibson and Birkinshaw, 2004; Gupta et al., 2006; Sitkin et al., 2011; Mom et al., 2015)</td>
<td>with a psychological perspective on preference of managers for exploration, this research shows their orientation toward search, risk-taking, and experimentation is shaped not only by their motivational systems, but also by the fit between their motivational systems and the motivational cues in the context as well as the complexity of the decision-making situation. It provides a micro level perspective to exploration but also it addresses calls to go beyond cognition, and attend to other psychological factors in connection with strategic decision-making (see Hodgkinson &amp; Healey, 2011). Drawing on the idea that complexity may activate self-regulatory systems (Bandura &amp; Jourden, 1991), the study explains how dealing with complexity has important implications not only for managerial preferences but also for managers’ receptiveness to motivational cues from the organizational context. This study provides a more nuanced understanding of the puzzling nature of stretch goals and extends the recent scholarly research that highlight no effect or negative effects of stretch goals (e.g. Gary et al., 2017; Zhang and Jia, 2013; Sitkin et al., 2017) by discussing behavioral and performance outcomes of such goals, operating intended and unintended results, and suggesting boundary conditions. It indicates that it is too early to decide about the ultimate inefficacy of stretch goals for all types of performance and different individuals. It provides new insights on the performance variance that stretch goals bring about (Gary</td>
</tr>
<tr>
<td>Study 2- Stretch goals and idea generation: one size fits all?</td>
<td>Despite years of advocacy for the motivating positive effects of stretch goals for performance through stimulating search and innovation, promoting new ways of thinking, and guiding effort and persistence, recent scholarly research highlights the disruptive (in form of unethical behavior) or no effects of stretch goals (Zhang and Jia, 2013; Gary et al., 2017) and agrees there is still limited evidence proving the effectiveness of such goals on performance in organizations.</td>
<td></td>
</tr>
</tbody>
</table>
et.al, 2017) and clarifies that they are largely beneficial for those who already possess the potential to discern the desirable outcome from undesirable outcome—based on their previously demonstrated capabilities, their organizational experience, and their level of seniority.

Study 3 - Strategizing for emerging technologies - The role of motivation and ability in shaping managers’ preferences for timing of investment

Strategic management scholars extensively used capability lens to explain strategic decisions and actions. However, recent scholarship proposes that such understanding behavior by looking at ability is incomplete without adding a motivation lens to it (Zhao and Chadwick, 2014, Osterloh and Frey, 2000; Dahlin et al., 2018; Eggers and Kaul, 2018).

This study is one of a few that combines capability lens with motivation and explains the managerial strategic decisions in response to an emerging technology. It explains the tradeoffs managers see in early versus late investment and how this is directly and indirectly affected by the way their perception of the gap between current capabilities of the firm and what is requires to be successful in the emerging technology, and how the motivation shapes their judgements.

It extends the recent work that explain motivation and ability in firms’ strategic behavior (Egger and Kaul, 2018) by looking into these influences as an input to the decisions and at the level of individual strategic decision makers.
2 Study 1 - A Psychological Perspective On Managers’ Exploration Orientation: The Role Of Regulatory Focus, Regulatory Fit, And Complexity

2.1 Abstract

We develop a psychological perspective on managers’ exploration orientation. Our study suggests that the regulatory focus of managers may impact in different ways their orientation toward search, risk-taking, and experimentation, and that these relationships are contingent not only on the extent to which the organizational context fits with the motivational disposition of managers, but also on the complexity of decision-making. Using an experimental setting, we collected data from two independent samples: product managers within a large multinational corporation and business school students. We find that managers’ regulatory focus affects their willingness to experiment with alternatives and to take risks. Moreover, the extent to which the promotion focus of individuals demonstrates their exploration orientation is strengthened in an organizational context by promotion-focused cues, and in highly complex decision-making. This study has important implications for our understanding of managers’ exploration orientation in large organizations under complexity.

Keywords: Complexity, Exploration, Motivation, Regulatory Focus Theory

---

2.1 Introduction

It is almost a truism that organizations need to move beyond exploitative activities by attempting to achieve breakthroughs by means of exploratory behavior. Although both exploration and exploitation are important for an organization’s survival, they are not always equally important (Puranam et al., 2006). For instance, scholars have suggested that, in a rapidly changing environment, the need for internal variety and effective adaptation necessitates an increased focus on exploration (Gupta et al., 2006; McGrath, 2001). However, organizations may vary in their ability to cope with the inherent challenges of pursuing exploration and exploitation (Levinthal & March, 1993; March, 1991; Tushman & O’Reilly, 1996), and studies have identified various reasons for this. Importantly, this body of research has argued that a key role is played by managers (Gibson & Birkinshaw, 2004; Lubatkin et al., 2006; O’Reilly & Tushman, 2011). They may facilitate the coexistence of exploration and exploitation by supporting organizational members to move away from existing routines, allocating enough resources, and implementing differentiated organizational structures (Benner & Tushman, 2003; Boumgarden et al., 2012; Markides, 2014). Yet, our understanding of how psychological attributes may impact managers’ orientation toward exploration is underdeveloped, and fundamental pieces are missing (Gupta et al., 2006). In fact, despite the critical role played by managers in making decisions about exploration, there is only limited research on what mechanisms may make them more inclined to exploration (Sitkin et al., 2011). Hence, recent
research emphasizes the need to investigate the antecedents of individual-level exploration in organizations (Mom et al., 2015). In this paper, we develop a psychological perspective on managers’ exploration orientation, and argue that their orientation toward search, risk-taking, and experimentation is shaped not only by their motivational systems, but also by the fit between their motivational systems and the motivational cues as well as the complexity of the decision-making context. Our principal contributions are threefold.

First, drawing on regulatory focus theory (RFT) (Higgins 1997), we develop a psychological perspective on managers’ exploration orientation. Research on individual-level antecedents of exploration is scarce (Lavie et al., 2010; Laureiro-Mart & Brusoni, 2015), and only a few earlier empirical studies in this area have considered factors such as cognitive capabilities (Laureiro-Mart & Brusoni, 2015) or access to knowledge flows (Mom et al., 2007; Mom et al., 2015) without considering motivational factors. In line with research that considers regulatory focus to be a driver of managers’ preferences and decision-making (e.g., McMullen et al., 2009), we propose that the regulatory focus of managers – via either a promotion focus (a sensitivity to gains and a desire for advancement and growth) or a prevention focus (a sensitivity to losses and a desire for stability and security) – has an important bearing on their exploratory orientation. By uncovering the overlooked motivational drivers of exploration orientation, we address calls to go beyond cognition, and attend to other psychological factors in connection with strategic decision-making (see Hodgkinson & Healey, 2011).
Second, although earlier research has suggested that regulatory focus may affect strategic actions of decision-makers and leaders’ activities in organizations (e.g., McMullen et al., 2009; Tuncdogan et al., 2015), there are still few insights into how organizational conditions and traits may shape the effect of regulatory focus (Lanaj et al., 2012). By using the notion of regulatory fit, we argue that the match between the motivational drivers of individuals and motivational cues provided in the organizational context has important implications for managers’ preferences for exploration under complexity. In particular, we discuss how situations in which the emphasis is on gains, advancement, and hope – in contrast to those in which it is on obligations, possible failure, or loss – influence decision-makers differently, depending on their regulatory focus. Moreover, we postulate that such psychological effects may become more relevant as the complexity of the decision-making situation increases. Our theoretical argumentation and empirical analyses suggest that the effect of individuals’ motivational factors is not the same in all conditions and may vary according to the organizational context and the complexity of the decision-making situation. We provide a more comprehensive demonstration of how regulatory theory can be used (Hoyle, 2010) to study the strategic actions of managers.

Third, a growing body of research has emphasized the need for complexity to be considered a key factor in making sense of how managers behave and respond in different decision-making situations (Sargut & McGrath, 2011; Larsen et al., 2013). Complexity imposes a high degree of uncertainty and unpredictability
regarding the outcomes of managerial decision-making (Balasubramanian & Lieberman, 2010; Sargut & McGrath, 2011), and this makes it an important factor in studying managers’ choices in different decision-making situations – for example, in terms of the accuracy (Larsen et al., 2013) and timing (Raaijmakers et al., 2015). We posit that although the regulatory focus of managers and its fit with organizational triggers affect the managers’ exploration orientation, the combined effect of these two factors tends to be contingent on the complexity of the decision-making context. We provide explanations that enable us to develop a better understanding of the psychological foundations of a manager’s exploration in response to complexity. Drawing on the idea that complexity may activate self-regulatory systems (Bandura & Jourden, 1991), our study explains how dealing with complexity has important implications not only for managerial preferences but also for managers’ receptiveness to motivational cues from the organizational context. We test our theoretical framework using two experiments conducted with product managers in a large multinational corporation and master students in a business school.

2.2 Theoretical Overview

2.2.1 A Psychological Perspective on Managers’ Exploration

To explain a manager's exploration orientation, we use RFT (Higgins, 1997; 1998) which proposes that individuals have two distinct motivational systems. A promotion focus is concerned with aspirations for growth,
advancement, achievement, and ideals, and emphasizes gains (Crowe & Higgins, 1997). It is sensitive to the presence and absence of positive outcomes and focuses people on a promotion goal and approach tendencies (Higgins, 1997; 1998). Promotion focus leads individuals to a state of eagerness in which they desire to achieve “hits” and avoid “errors of omission” (i.e., to avoid closing off possibilities) (Higgins, 1998, p.27). They consider different criteria (Higgins, 1998), thereby broadening their search and considering different alternatives when dealing with problems that require such variance-seeking. A prevention focus is concerned with prudence, safety, and obligations, and emphasizes losses (Crowe & Higgins, 1997). It is sensitive to the presence and absence of negative outcomes and focuses attention on a prevention goal and avoidance tendencies (Higgins, 1997; 1998). It drives individuals to a state of vigilance in which they insure against “errors of commission” (i.e., they seek to avoid mistakes) (Higgins, 1998, p.27). It involves a strategic preference for avoiding mismatches or ensuring correct rejections. Therefore, having higher prevention focus, individuals tend to ensure safety and non-losses, stick to one approach, narrow search, and avoid failure. Table 2-1 demonstrates summary of the differences between prevention and promotion focus.

Prevention and promotion foci are general orientations “which serve as a general reference point by which people view their world” (Johnson et al., 2015, p.1504). Research has shown that individuals differ in their predisposition to
regulatory focus (e.g., Higgins, et al., 1997) and there is some consistency in this regard over time (e.g., Gomez et al., 2013; Higgins et al., 2001).

Table 2-1 Attributes of regulatory focus, promotion and prevention

<table>
<thead>
<tr>
<th></th>
<th>Promotion</th>
<th>Prevention</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant self-guide</td>
<td>Ideal self-guide, representation of the attributes that someone would like ideally to possess</td>
<td>Ought self-guide, representation of attributes that some one believes they should or ought to possess</td>
<td>Higgins &amp; Tykocinski(1992)</td>
</tr>
<tr>
<td>Regulation with respect to survival need</td>
<td>Nurturance-related regulation</td>
<td>Security-related regulation</td>
<td>Higgins (1998)</td>
</tr>
<tr>
<td>Goals</td>
<td>Wishes, hopes, aspirations for them</td>
<td>Duties, obligations, necessities</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Eagerness to attain advancement and gains</td>
<td>Vigilance to ensure safety and non-losses</td>
<td>Higgins et.al. (1994)</td>
</tr>
<tr>
<td>Outcome</td>
<td>Sensitive to events involving absence and presence of positive outcome</td>
<td>Sensitive to events involving absence and presence of negative outcome</td>
<td>Higgins &amp; Tykocinski(1992)</td>
</tr>
<tr>
<td>Strategic inclination</td>
<td>To be prudent, precautionary, avoid mismatches to the desired end state</td>
<td>To make progress by approaching matches to the desired end state</td>
<td>Crowe &amp; Higgins(1997), Higgins (1998), Liberman, Molden, Idsonand Higgins (2001)</td>
</tr>
<tr>
<td></td>
<td>Insure hits and against errors of omission</td>
<td>Insure correct rejections and against errors of commission</td>
<td></td>
</tr>
<tr>
<td>Consideration of alternatives</td>
<td>Simultaneous consideration of multiple alternatives</td>
<td>Consideration of fewer alternatives</td>
<td>Liberman, Molden, Idsonand Higgins (2001)</td>
</tr>
<tr>
<td>Preference for change</td>
<td>Induced preference for change</td>
<td>Seeking stability</td>
<td>Liberman, Idson, Camachoand Higgins (1999)</td>
</tr>
<tr>
<td>Strategic preference</td>
<td>Approaching matches</td>
<td>Avoiding mismatches</td>
<td>Crowe &amp; Higgins(1997)</td>
</tr>
</tbody>
</table>
We follow many scholars in considering this aspect of regulatory focus to be a trait. However, it is important to note that individuals’ levels of promotion and prevention foci are shaped by both internal and external influences. Individual regulatory focus is therefore also affected by contextual cues (Förster et al., 1998) and it is possible to induce situational promotion or prevention focus by use of certain triggers (see Higgins, 1998; Shah & Higgins, 2001). Hence regulatory focus differs from other personality traits such as Big Five traits. Promotion and prevention foci are also independent rather than representing opposite ends of a continuum (Higgins, 1997; 1998; Johnson et al., 2010). People can therefore have high levels of both promotion and prevention foci, just one focus, or neither focus, and it is thus better to examine the two foci separately.

Managers’ choice of strategic action in general and their orientation towards exploratory behavior in particular are influenced by persistent traits (Lavie et al., 2010). An exploratory orientation of managers refers to a preference for engaging in activities that require deviation from the current stage, consideration of different alternatives, and achievement of novelty. Such activities increase the probability of failure since their outcomes are uncertain and distant. When uncovering the foundations of exploration orientation, scholars have tended to investigate how managers’ access to knowledge flow (Mom et al., 2007) and their relational capital (Mom et al., 2015) may affect their engagement in exploratory activities. There has been less emphasis on motivational determinants
and how contextual factors may shape the relationship between motivational aspects and a manager’s exploration orientation. Yet, as a psychological factor, motivation is of high importance inasmuch as it can be defined as “the reasons underlying behavior” (Guay et al., 2010, p.712). Table 2-2 demonstrates the aspects of regulatory focus which are relevant to discussion of exploration.

**Table 2-2 Regulatory focus aspects relevant to exploration**

<table>
<thead>
<tr>
<th>Exploration aspect</th>
<th>Relation with regulatory focus</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search</td>
<td>Promotion focus facilitates memory search by mitigating against retrieval blocking</td>
<td>Friedman and Förster, 2001</td>
</tr>
<tr>
<td>Considering/generating different alternatives</td>
<td>Promotion-focused individual wants to ensure “hits” and insure against errors of omission. Individuals with a promotion focus generate more hypotheses (i.e., alternatives) than individuals with a prevention focus.</td>
<td>Higgins, 1998; Crowe &amp; Higgins, 1997</td>
</tr>
<tr>
<td></td>
<td>Individuals with a promotion focus are inclined to simultaneously consider multiple alternative hypotheses whereas individuals with a prevention focus try to choose a smaller subset of alternatives.</td>
<td>Liberman, Molden, Idson and Higgins, 1999</td>
</tr>
<tr>
<td>Novelty of alternatives</td>
<td>Promotion focus enhances the ability to generate creative alternatives.</td>
<td>Friedman and Förster, 2001</td>
</tr>
<tr>
<td>Deviation from current stage</td>
<td>When the old alternative represents a safe acceptable option, as in situations involving task substitution, promotion focus induces a preference for change whereas prevention focus is associated with seeking stability.</td>
<td>Liberman, Idson, Camacho and Higgins, 1999</td>
</tr>
</tbody>
</table>
Embracing failure/high probability of failure

Prevention focus is concerned with the presence and absence of negative outcomes. Individuals are more inclined to ensure against errors of commission or “making a mistake”.

Sensitivity to events involving the absence and presence of negative outcomes is greater when ‘ought’ concern predominates (prevention focus).

Prevention focus makes the minimization of negative outcomes a necessity.

Crowe & Higgins, 1997

Higgins, 1998

Das and Kumar, 2010

2.2.2 Regulatory Focus, Organizational Context, and Complexity

The contextual perspective (Rousseau, 1978; Salancik & Pfeffer, 1978; Ansari & Kappor, 1987) suggests that the organizational context, in addition to individual traits, may shape the ways in which managers deal with decision-making problems. For instance, leadership styles (Ansari & Kappor, 1987) or internal organizational systems (Sharma, 2000) may affect managers’ interpretation of a decision-making situation and their response. As such, the organizational context is instrumental in the construction of meaning in that it sets expectations regarding how individuals should behave and the consequences of that behavior (Salancik & Pfeffer, 1978). Hence, prior research (e.g., Higgins, 1997; Zhang et al., 2010) suggests that contextual cues that emphasize prevention or promotion can influence individual decision-making and behavior.

Embedded within the organizational context, goals, values, compensation and reward systems – as well as interpersonal interactions and communications –
may affect the promotion and prevention foci of individuals when dealing with decision-making situations (Brockner & Higgins, 2001; Johnson, et al., 2010). When the emphasis of the organizational context characteristics – goals, values, communication approach, or reward systems – are on recognizing people for a job well done (and withholding recognition when the job is not well done) and draws attention to the positive outcome and opportunities for advancement, it activates their promotion system (Brockner & Higgins, 2001). This could be called a “promotion-focused organizational context”. Conversely, when the organizational context focuses on sanctioning people for a job that has not been done well (and not sanctioning them when the job is well done), and draws attention to negative outcomes and obligations, individuals’ prevention focus will be activated. This can be termed a “prevention-focused organizational context”.

The emergency rooms of hospitals are likely to be characterized by a strong prevention-focused organizational context. Here, goals and values focus on survival, and this depends on preventing circumstances in which the patients are at risk. Therefore, sensitivity to negative outcomes is a common consideration, and minimizing the possibility of its occurrence becomes the main goal in most of the decision-making situations for individuals. By contrast, an entrepreneurial start-up is likely to have a strong promotion-focused organizational context. Such companies often reflect the vision, dreams, and ideals of their founders in different shapes of norms and goals (for example, goals for expansion), so that the ideals of the founder and focus on maximal goals and growth, and sensitivity to the
occurrence of positive outcomes are significant parts of the organizational context which can affect individuals’ decisions through promotion focus. This contextual perspective suggests that a manager’s decision can be influenced by contextual cues that indicate what is appropriate and is expected by the organization.

The complexity of the decision-making task is another contextual factor that could significantly affect the relationships between individuals’ regulatory orientation, regulatory-focused organizational context, and their preference for exploratory activities. Multiplicity (large number of factors), interdependence, and diversity (heterogeneity among factors) of influencing factors are important features of complexity that impose high degrees of uncertainty and unpredictability concerning the outcomes of managerial decision-making (Balasubramanian & Lieberman, 2010; Sargut & McGrath, 2011) and the appropriateness of the means for achieving desired outcomes (Campbell, 1988; March & Simon, 1958). Decision-making that involves a large number of factors or merely heterogeneity among factors is not simple, since making a decision in favor of a group of elements might cause disruption in the functioning of other elements (Ethiraj et al., 2012). However, this situation need not be highly complex, because the decision-makers might have a lot of information about how the involved factors will perform (Balasubramanian & Lieberman, 2010), and hence be able to use that to predict the potential outcome (Sargut & McGrath, 2011). The interaction between these factors can greatly increase the complexity (Simon, 1962), because besides understanding the individual factors, additional
cognitive effort is required to predict how they may be related (Espinosa et al., 2007). In fact, the same starting conditions can produce different outcomes, depending on how different factors play a role, and therefore interact with and affect each other and finally shape the outcome.

Complexity precludes the identification of optimal decisions and raises the importance of behavioral processes in decision-making (Rivkin, 2000). It has implications in terms of information-processing (Byström & Järvelin, 1995). As such, it imposes heavy decisional demands that are likely not only to increase the range of decision strategy (Payne, 1976), but also to activate individuals’ motivational processes and, in particular, to stimulate effective use of self-regulatory systems for competent functioning (Bandura & Jourden, 1991). We investigate the contingency role of decision-making task complexity in the relationship between individual regulatory focus, organizational context, and exploration orientation.

2.3 Hypotheses

2.3.1 Managers’ Regulatory Focus Trait and the Pursuit of Exploration
We argue that a manager’s regulatory focus trait will be related to his/her exploratory orientation for two main reasons. First, regulatory focus is known to be influential in determining the search behavior of individuals. A strong promotion focus increases the number of options that an individual will consider when a decision has to be made (Pham and Chang, 2010). In other words, a
stronger promotion focus generates a desire to increase the chances of success by trying as many alternatives as possible (to generate more hits) and reduce the chances of overlooking a potential solution (Higgins, 1998; Liberman et al., 2001). Also, while individuals with higher levels of promotion focus tend to process information more globally, those with higher levels of prevention focus are more inclined to process information more locally (Förster & Higgins, 2005; Semin et al., 2005). This is because a more global search is instrumental in fulfilling the eagerness of individuals with higher levels of promotion focus to identify opportunities for success and minimize errors of omission. Conversely, a more local search helps individuals with a higher level of prevention focus to examine a limited number of best options in detail and minimize the possibility of loss (Pham & Chang, 2010). Considering a larger set of alternatives (Smith & Tushman, 2004) and using a more global search (McGrath, 2010), we expect managers with a higher level of promotion focus (prevention focus) to engage more (less) in exploratory behavior.

Second, managers with a strong promotion focus are more sensitive to future success and gains, while those with a strong prevention focus are more focused on possible future failure and loss (Higgins, 1998). Ensuring the hits by performing acts of commission in response to perceived chance of gain promotes a bias towards positive outcomes based on promotion focus, whereas avoiding errors of commission and performing acts of omission in response to perceived chances of losses gives rise to an avoidance bias for the decisions based on prevention focus.
focus (Crowe & Higgins, 1997). Since managers with a stronger promotion focus are inclined to give more weight to gains than to losses and to take more risks, they tend to focus on more uncertain potential long-term benefits (Lavie et al., 2010) and show a more exploratory orientation. Conversely, managers with a stronger prevention focus tend to give more weight to possible losses that may come with exploratory actions and therefore focus on benefits that are more proximate, certain, and immediate (Lewin et al., 1999; March, 1991). This sensitivity to possible failure and loss can create a bias toward deploying existing competencies persistently at the expense of exploring new ones (Lavie et al., 2010). We therefore argue that:

_Hypothesis 1: Regulatory focus trait is associated with the exploration orientation of managers such that a) promotion focus is positively and b) prevention focus is negatively associated with the exploratory orientation of managers._

2.3.2 The Moderating Role of Organizational Context: Regulatory Fit
Prior research suggests that the effects of prevention or promotion focus traits vary in different conditions. Particularly, Higgins (2000) suggests that such effects are accentuated when the characteristics of the situation are congruent with individuals’ regulatory focus trait, a phenomenon called “regulatory fit”. In fact, people experience regulatory fit when the manner in which they engage in an activity sustains their current orientation (Higgins, 2000; 2003). For example, when the task incentive is aligned with the regulatory focus of the individual, both
promotion focus and prevention focus enhance performance and persuasion (Lee & Aaker, 2004; Shah et al., 1998). Another example is the match between the strategic framing of a message and the regulatory focus of individuals that affected evaluations of an object (Higgins et al., 2003). Although research on the effect of regulatory fit in organizations is scarce (Lanaj et al., 2012), Gamache and his colleagues (2015) have provided empirical evidence that incentives can reduce the risk-aversion tendencies of CEOs with a high prevention focus, and can affect the number and value of acquisitions made by a firm.

When individuals find themselves in a condition which fits with their regulatory focus, they “feel right” about what they intend to do (Camacho et al., 2003; Higgins et al., 2003; Lee & Aaker, 2004). Here, the goal pursuit feels right to them, which is “an experience of correctness whose source is the individual’s use of a strategy that his or her regulatory orientation prefers” (Camacho et al., 2003 p.499). When a manager makes decisions in an organizational context that provides cues which align with his or her regulatory focus, the motivation is being strengthened because the person “feels right” about the strategy of goal pursuit (Johnson et al., 2015). In this respect, an organizational context that emphasizes the opportunities for advancement and growth and sensitizes managers to the possible gains would transfer that “experience of correctness” to a manager with a strong promotion focus trait. The stronger the promotion focus of managers, when they operate within a context that offers possibilities for advancement and growth and emphasizes possible gains, the more clearly they envision the potential to
achieve superior outcomes and create opportunities for growth. This does not simply satisfy the need of the individual with a strong promotion focus but can act as a “preferred manner of goal pursuit” (Cesario et al., 2008, p.455), because it sustains the regulatory focus of the individual. Therefore, the manager will be more motivated to engage in risky endeavors and to seek outstanding and far-reaching outcomes, and will, in general, have a more positive orientation toward exploration.

Similarly, as the level of prevention focus trait increases, a manager will have a greater sense of being “right” to avoid activities that carry the risk of failure and have uncertain benefits if operating within an organizational context which lays stress on obligations and possible losses, rather than in one which emphasizes possible gains and opportunities for advancement and growth. As a result of this type of match between organizational context and the regulatory focus trait of managers, the effects of the regulatory focus trait on exploration orientation will be accentuated. Therefore, we expect there to be an intensification of the behavior that we hypothesized previously, based on the corresponding regulatory focus trait, and we argue that:

Hypothesis 2: Regulatory fit is associated with exploration orientation in such a way that (a) a promotion-focused organizational context strengthens the positive relationship between a manager’s promotion focus trait and his or her exploratory orientation, and (b) a prevention-focused organizational context strengthens the negative relationship
between a manager’s prevention focus trait and his or her exploratory orientation.

2.3.3 The Contingency Role of Decision-making Complexity

Under high levels of complexity, the information-processing abilities of individuals fail to commensurate high demands for information-processing in dealing with many different factors, interdependencies between those factors, and the considerable uncertainty. Such limitations constrain objective decision-making (Abelson and Levi 1985); decision-makers come to rely on more subjective criteria (Filley et al., 1976; Van de Ven, 1986) in favor of strategies that require less information-processing capacity. When the correctness of decision-making outcomes can rarely be judged, individuals increasingly prioritize the perceived legitimacy of their decision as the dominant evaluation criterion (Van De Ven, 1986) and involve themselves in considerable interpretation and construction of meaning (Bates, 1986; Kuhlthau, 1999; Whittemore & Yovits, 1973) in order to assess the appropriate ways of thinking, feeling, behaving (Bandura, 1977; Festinger, 1957) to modify them accordingly. In particular, high levels of complexity activate individuals’ self-regulation systems (Kanfer & Ackerman, 1989; Bandura & Jourden, 1991), so that they rely more on information that is relevant to their regulatory concerns before constructing a preference in their decision-making (Wang & Lee, 2006). Conversely, in situations of low complexity, individuals are not subject to the same limitations in terms of information-processing, and can therefore deal with all pieces of information more
systematically, and rather independent of the relevance to their regulatory concerns.

This observation has important implications for the effect of regulatory fit on exploration orientation. When dealing with less complex decision-making tasks, managers tend to rely more on the outcome of very rational processing of information related to the problem as the basis for their choice of exploration versus exploitation approach. In this situation, where they attend systematically to information independent of regulatory relevance, the available motivational cues in the context and their fit with individual regulatory orientation are less likely to suppress systematic attention to all available information relating to the problem at hand; as such, objective processing of that information prevails over subjective thinking driven by motivation systems. However, when faced with a highly complex decision-making task, managers increasingly rely on their guidance from their regulatory system and use this as a way of countering the limits of their information-processing capability. Therefore, it is more likely that they experience the type of regulatory fit which we hypothesized earlier. A manager with a strong promotion focus will pay attention to and prioritize available cues in the context that emphasize gains and achievements and, as we discussed before, are conducive to exploration. Such selective attention to matching motivational cue strengthens the reception of that regulatory trigger from the environment and intensifies the sense of “feeling right” and the experience of correctness that we discussed in the arguments leading to hypotheses 2a and 2b. In other words, where there is a high
level of decision-making complexity, the effect of regulatory fit experienced by the manager increases.

In light of the above, we argue that:

*Hypothesis 3: Complexity, organizational context, and the regulatory focus trait of managers interact in their effect on managers’ exploratory orientation such that a greater level of complexity will intensify the effect of the fit. In fact, a greater level of complexity will intensify both a) the positive effect of a promotion-focused organizational context on the relationship between the promotion focus trait of managers and their exploratory orientation and b) the negative effect of a prevention-focused organizational context on the relationship between managers’ prevention focus trait and their exploratory orientation.*

### 2.4 Method

We use experimental method in two studies to test our hypotheses. While exploration research has not traditionally included experiments, with an exception being Laureiro-Mart and Brusoni’s work (2015), recent work has shown how beneficial experiments can be in investigating questions about decision-making (Agarwal et al., 2010; Song et al., 2002). A major benefit of conducting experiments is that they provide higher internal validity for drawing conclusions about the causal direction between related variables (Campbell et al., 1966). Generally, the drawback of experiments is that external validity may be limited, because generalizing from a laboratory environment to real-world settings is more
difficult than generalizing from one real-world setting to another. We believe that conducting two studies has enabled us to achieve an acceptable balance between external and internal validity. In study A we use professional decision-makers and design manipulations to be close to the reality of their work. In study B we use students in order to provide an additional test of our framework with participants who have different characteristics and working contexts from those in our first experiment.

2.5 Study A

2.5.1 Research Setting and Participants

Using information from our pilot tests, we designed an experiment to be carried out with product managers of a large multinational telecom company. The company has more than 110,000 employees, working in more than 180 countries. A key aspect of this company is that it invests substantially in R&D, which has resulted in more than 33,000 patents. The company is more than 150 years old, and given its size, scope of operation, and financial turmoil, both R&D investment and cost efficiency are key concerns for the shareholders and senior managers. This setting is appropriate for our study for a number of reasons. First, although the telecommunications industry is at the forefront of innovation activities because of recent advances in technology and market changes, it is also characterized by old traditions and by large incumbents that need to be efficient. This makes trade-offs between exploration and exploitation particularly significant for managers
working in this industry. Second, we identified a homogenous population of managers within a single organization who had the same level of decision-making authority and similar relevant experience, as homogeneity is an important consideration for ensuring the quality of the experimental design (Webster & Sell, 2014). Our research design allows us to ensure there is a high level of homogeneity without losing the value of using relevant business practitioners working in a real business context. Third, we did not involve participants who were solely responsible for advancement, growth, and innovation, and might therefore be biased by their roles and the context of their work. Instead, we invited product managers who were responsible not only for dealing with short-term demand, efficiencies, and minimal goals but also for long-term product advancement strategies for the evolution of the company’s products in a high-tech industry. As influential middle managers they are therefore ideal subjects to use for studying the trade-offs related to the organization’s exploration activities. Finally, we focused on this business context because we have extensive understanding of the sector.

The materials for the experiment were designed in such a way that they contain a recent phenomenon in the industry, cloud computing. We identified cloud computing as a proper setting in which simulating different levels of complexity in our design would seem realistic. In fact, cloud computing is an inherently complex phenomenon and the levels of complexity can differ, making it ideal for our study. We were able to gain agreement from 142 product managers
(83% male, Mage = 44, SDage = 10.9) to participate voluntarily in this experiment. Participants were randomly assigned to the cells of a 2 × 2 between-subject design. Out of the 142 who initially agreed, 122 product managers (85% of the volunteers) finally completed the procedure, and their data were used in the analysis (85% male, Mage = 45, SDage = 10.6). In our attempt to balance the external and internal validity, we tried to limit the possible specific effect of this organization first by writing a simulated scenario, and second by asking managers to react to a decision-making situation purely based on the information provided in the experiment and regardless of their actual work environment in this organization. Moreover, we used videos to increase the chance of participants becoming immersed in the context described in the vignette and to increase the external validity of our study (Aguinis & Bradley, 2014).

2.5.2 Procedure and Manipulations

The participants were briefly informed about the experiment in an invitation email. The data collection was planned in two stages. In the first stage, two weeks before the experiment, participants were asked to complete a personality test, which included items relating to regulatory focus trait. In the second stage, each participant received a brief manual and an electronic link to the experiment. Each participant was given a scenario and asked to watch a video, on a random basis. Then, they were asked to review the case and think a few minutes before making any decision. Subsequently, dependent variable and manipulation
checks were administered, and participants were thanked and told that they would be informed of the results.

We operated two manipulations: one relating to decision-making task complexity and the other to organizational context (see Appendices 2-A and 2-B). For the decision-making task complexity manipulation, each participant received a written scenario of either high or low complexity. Before constructing the scenarios, we compiled a list of topics by drawing on several sources: articles in leading journals in the field, cases on technology change and product development, and interviews with two business researchers and one technology expert in the company’s R&D center. The two scenarios were drafted from these resources, and in close collaboration with a product manager, in order to include elements of complexity that were based on several factors in a product manager’s decision-making process in the workplace.

The final vignette covered technical considerations, customer requests, interactions with suppliers and other external parties, and other business elements, such as a pricing model. In the high-complexity case, we referred to “a general agreement”, whereas in the low-complexity case we referred “some specific features”. This distinction provides an important clue in terms of the means–ends uncertainty (Campbell, 1988; March & Simon, 1958) that is an important driver of complexity, especially in the context of product development (Hass, 2009). Moreover, in the high-complexity case we highlighted a systemic effect on many interdependent aspects of the product and its roadmap, and also on the business
model and relationships with other departments. Such clues point toward increased complexity in terms of a need to deal with many interdependent and diverse factors (Simon, 1987; Balasubramanian & Lieberman, 2010). To select the involved factors for manipulating the number, diversity, and interdependency of factors, we carefully attended to both complexity and product development literature. For example, in the highly complex case, we emphasized the need for “involvement of new suppliers”, as this brings with it uncertainty over reliability and predictability of supply (Bozart, et al., 2009) and creates a considerable complexity in the coordination and planning of product development activities (Almirall & Casadesus-Masanell, 2010). In the high-complexity case, a large number of diverse and interdependent elements therefore played a role and the emphasis was on unpredictability, uncertainty, and potential unknown elements. By contrast, the low-complexity case included a few known, certain, and influential elements. There was a strong emphasis on predictability and certainty, and the case did not include many interdependencies.

For the manipulation of a regulatory focus organizational context, we created two different situations for the decision-making of participants by framing of the context. Each participant was exposed to either a promotion-focused or prevention-focused organizational context by being asked to watch one of two videos after reading the scenario. In these videos a manager shared his evaluation of the situation with the participant, either by depicting a promotion-focused context or prevention-focused context. He emphasized either: (a) positive
outcomes, focusing on ideals, potential for advancement, future gains, and opportunities; or (b) negative outcomes, obligations and duties, potential for stability, future losses, and threats. The words used in the two videos were selected carefully to create two contrasting videos with similarly structured sentences, and were checked by two academic experts. Non-verbal language was kept consistent in both videos (e.g., similar body language, no demonstration of emotions).

Finally, the materials were reviewed and discussed by an academic expert in experiment design, a product manager, an expert in vignette studies, and then revised accordingly by two PhD students. In the analysis section, the manipulations were coded as follows. The complexity of the decision-making task manipulation is expressed by the Complexity (CPX) variable, which is equal to 1 if the managers received a high-complexity scenario, and 0 otherwise. The regulatory-focused organizational context manipulation is expressed by the Regulatory-focused situation variable (RFS), which is equal to 1 if the managers watched the promotion-focused video, and 0 otherwise.

2.5.3 Measures

Dependent variable

We adapted the original measure for exploration orientation (Mom et al., 2007) to make it in line with the specific context of this study (see Appendix 2-C). The items were modified to best match the scenario and specific decision-making context that managers encountered in this experiment. For example, the items included: “I choose strong renewal and change of the existing product architecture
and roadmap” vs “I choose incremental and stepwise adaptation of existing product architecture and roadmap”, and “I search for possibilities to introduce radically new products/services” vs “I search for possibilities to improve existing products/services”. The reliability score is at 0.75. In order to better resemble the trade-off nature of the exploration and exploitation decisions made by managers at the individual level, we used a bipolar scale, which is suitable for this purpose (Emmert & Barker, 1989; Gupta et al., 2006).

Independent variables

To measure the regulatory focus trait of each participant, we adapted the work-related regulatory focus measure devised by Neubert, Kacmar, Carlson, and Chonko (2008). We included eight items from both regulatory foci. We selected the eight items by choosing the four highest loading items from each of the two foci. We covered all aspects (achievement, ideals, gains) of promotion focus and all aspects (security, ought, losses) of prevention focus that were discussed by Neubert and colleagues (2008). We asked respondents to what extent the items describe them (1 = not at all true of me; 7 = very true of me). For example, the items included: “I concentrate on completing my work tasks correctly to increase my job security”; “I tend to take risks at work to achieve success”; “At work I focus my attention on completing my assigned responsibilities”; and “I take chances at work to maximize my goals for advancement”. The reliability measure is 0.63 for prevention focus and 0.79 for promotion focus.

Manipulation checks
As a complexity manipulation check, at the end of the study (after the measurement of the dependent variable), participants were asked to rate the complexity of the case they had received. In addition, they were asked about the extent to which the interdependencies of the elements involved in the case created uncertainty. A 2 (high complexity vs low complexity) by 2 (promotion vs prevention) ANOVA on manipulation check measure of complexity yielded statistically significant main effects only for complexity (F=127.6, p<.001). The same analysis of the additional measure of interdependency showed similar results (F=179.7, p<0.001).

As a regulatory-focused organizational context manipulation check, participants were asked to write about the main considerations and goals in the specific situation they were encountering and the potential consequences of that situation for them. Next, an independent coder coded the texts written by the participants, and counted the number of promotion words and prevention words used, according to the relevant word list provided by Gamache et al. (2015). A 2 (high-complexity vs low-complexity) by 2 (promotion vs prevention) ANOVA on the number of promotion words used in participants’ written texts showed statistically significant main effects only for this manipulation (F=50.9, p<0.001). The same analysis of the prevention words used by participants showed statistically significant main effects only for this manipulation (F=39.27, p<0.001).

We included controls for participants’ years of relevant experience, gender, age, and need for cognition in our analyses, and the results did not change.
We therefore present our results using only main variables in our models. Need for cognition was important as a control variable because individuals’ need for cognition affects their enjoyment of engaging in complex situations, their reaction to complexity (Cacioppo et al., 1996; Wu et al., 2014), and the ability to recall and process information relevant to the situation they are in (Cacioppo et al., 1996). In our case, participants were required to recall and process several different pieces of the information, and our theory was implicitly related to the information-processing limitations of particular situations. We used a version of need for cognition scale (Cacioppo et al., 1984), which included six items, following Wu et al. (2014).

2.5.4 Results

Table 2-3 shows the descriptive statistics and correlations and Table 2-4 presents the results of the regression analyses. Model 1 includes the main effects, the traits, and manipulations, to test hypotheses 1a and 1b. We find that complexity has a direct and positive effect on exploratory orientation, and this suggests that, when faced with complex decision-making tasks, managers tend to embrace exploratory activities. Turning to our main independent variables, we find that the regulatory focus trait is associated with the exploratory orientation of managers. Promotion focus is found to be positively associated with the exploratory orientation of managers (B=0.22, SE=0.08, P<0.05), while prevention focus is negatively associated with it (B=-0.44, SE=0.10, P<0.001). These findings are consistent with hypotheses 1a and 1b.
Table 2-3 Descriptive statistics and correlations- Study A

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Exploration orientation</td>
<td>3.4</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- Relevant experience</td>
<td>9.5</td>
<td>5.7</td>
<td>-0.032</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3- Age</td>
<td>45</td>
<td>10.6</td>
<td>-0.006</td>
<td>0.381*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4- Need for cognition</td>
<td>5.7</td>
<td>0.74</td>
<td>0.152</td>
<td>0.176</td>
<td>-0.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- Regulatory focus trait – Prevention</td>
<td>5.2</td>
<td>.99</td>
<td>-0.227*</td>
<td>0.031</td>
<td>-0.036</td>
<td>0.018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6- Regulatory focus trait – Promotion</td>
<td>4.3</td>
<td>1.32</td>
<td>0.090</td>
<td>-0.157</td>
<td>-0.176</td>
<td>0.195*</td>
<td>0.250*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7- Complexity</td>
<td>0.52</td>
<td>0.5</td>
<td>0.510*</td>
<td>0.054</td>
<td>0.111</td>
<td>-0.091</td>
<td>0.063</td>
<td>-0.082</td>
<td></td>
</tr>
<tr>
<td>8- Regulatory focus trait – Organizational situation</td>
<td>0.47</td>
<td>0.5</td>
<td>-0.032</td>
<td>-0.186</td>
<td>-0.040</td>
<td>-0.013</td>
<td>-0.078</td>
<td>-0.082</td>
<td>-0.014</td>
</tr>
</tbody>
</table>

N= 122, *Correlation is significant at the 0.05 level.

To test hypothesis 2 relating to regulatory fit, we followed Higgins et al. (2003, study B) and included the interaction (as the effect of regulatory fit) of the regulatory focus situation and regulatory focus trait in Models 2 to 4. We find that the interaction between the promotion-focused situation and the promotion focus trait of the individuals is not statistically significant. Thus, our hypothesis 2a is rejected. However, the interaction between the prevention-focused situation and the prevention focus trait of the individual is found to be statistically significant (B=0.46, SE=0.20, P<0.05). The simple slope test confirms the difference between slopes (t =-4.690, p=0.000). To ease the interpretation, we plot the interaction effect. Figure 2-1 shows that a prevention-focused organizational context (blue
line) can intensify the negative effect of the prevention focus trait on managerial inclination for exploration activities. Indeed, the stronger the prevention focus of managers, the lower their exploration orientation in prevention-focused situations, rather than in promotion-focused situations. This result supports hypothesis 2b. Model 4 includes both interaction terms.

Model 5 shows the results of the three-way interaction between complexity, promotion-focused context, and promotion focus trait. The coefficient is statistically significant (B=0.66, SE=0.31, P<0.05), which is consistent with hypothesis 3a. Further, we tested the conditional effect of two-way interactions at values of complexity. The result confirmed that the two-way interaction is indeed significant (B=0.54, p<0.05) under high complexity but non-significant (B=-0.11, p>0.05) under low complexity. Moreover, we tested the difference between simple slopes. The difference is significant (t =2.369, p<0.05) between the slope of promotion context-high complexity condition and the slope of prevention context-high complexity condition. However, a similar test on the difference between the slope of promotion context-low complexity condition and the slope of the prevention context-low complexity condition proved to be non-significant (t =-0.46, p>0.05).
Table 2-4 Regression results of Study A

Dependent variable: Exploratory orientation

<table>
<thead>
<tr>
<th>Traits/characteristics</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention focus trait (CPre)</td>
<td>-0.446***</td>
<td>-0.441***</td>
<td>-0.597***</td>
<td>-0.583***</td>
<td>-0.443***</td>
<td>-0.609***</td>
<td>-0.626***</td>
</tr>
<tr>
<td></td>
<td>(0.108)</td>
<td>(0.108)</td>
<td>(0.127)</td>
<td>(0.130)</td>
<td>(0.106)</td>
<td>(0.167)</td>
<td>(0.173)</td>
</tr>
<tr>
<td>Promotion focus trait (CPro)</td>
<td>0.224**</td>
<td>0.141</td>
<td>0.219**</td>
<td>0.172</td>
<td>0.219</td>
<td>0.229**</td>
<td>0.272+</td>
</tr>
<tr>
<td></td>
<td>(0.0809)</td>
<td>(0.110)</td>
<td>(0.0797)</td>
<td>(0.110)</td>
<td>(0.141)</td>
<td>(0.0802)</td>
<td>(0.146)</td>
</tr>
<tr>
<td>Manipulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity (CPX)</td>
<td>1.523***</td>
<td>1.528***</td>
<td>1.524***</td>
<td>1.526***</td>
<td>1.324***</td>
<td>1.352***</td>
<td>1.354***</td>
</tr>
<tr>
<td></td>
<td>(0.206)</td>
<td>(0.206)</td>
<td>(0.203)</td>
<td>(0.203)</td>
<td>(0.280)</td>
<td>(0.279)</td>
<td>(0.278)</td>
</tr>
<tr>
<td>Regulatory focus organizational situation (RFS)</td>
<td>-0.0893</td>
<td>-0.0793</td>
<td>-0.0483</td>
<td>-0.0455</td>
<td>-0.306</td>
<td>-0.293</td>
<td>-0.273</td>
</tr>
<tr>
<td></td>
<td>(0.205)</td>
<td>(0.205)</td>
<td>(0.203)</td>
<td>(0.204)</td>
<td>(0.292)</td>
<td>(0.296)</td>
<td>(0.295)</td>
</tr>
<tr>
<td>Two-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPro × RFS</td>
<td>0.172</td>
<td>0.0989</td>
<td>-0.110</td>
<td>-0.175</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.156)</td>
<td>(0.159)</td>
<td>(0.207)</td>
<td>(0.217)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPre× RFS</td>
<td>0.465*</td>
<td>0.431*</td>
<td>0.153</td>
<td>0.247</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.218)</td>
<td>(0.224)</td>
<td>(0.326)</td>
<td>(0.341)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPro × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.200</td>
<td>-0.242</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.217)</td>
<td>(0.221)</td>
<td></td>
</tr>
<tr>
<td>RFS × CPX</td>
<td>0.517</td>
<td>0.444</td>
<td>0.504</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.406)</td>
<td>(0.408)</td>
<td>(0.407)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPre × CPX</td>
<td>0.0348</td>
<td>0.0842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.255)</td>
<td>(0.260)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPro ×RFS × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.660*</td>
<td>0.655*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.312)</td>
<td>(0.320)</td>
<td></td>
</tr>
<tr>
<td>CPre× RFS × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.493</td>
<td>0.294</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.445)</td>
<td>(0.457)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.648***</td>
<td>2.651***</td>
<td>2.651***</td>
<td>2.652***</td>
<td>2.753***</td>
<td>2.740***</td>
<td>2.732***</td>
</tr>
<tr>
<td></td>
<td>(0.179)</td>
<td>(0.178)</td>
<td>(0.176)</td>
<td>(0.176)</td>
<td>(0.204)</td>
<td>(0.204)</td>
<td>(0.203)</td>
</tr>
<tr>
<td>N</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
</tr>
<tr>
<td>R-sq</td>
<td>0.371</td>
<td>0.377</td>
<td>0.394</td>
<td>0.396</td>
<td>0.410</td>
<td>0.410</td>
<td>0.436</td>
</tr>
<tr>
<td>Adj R-sq</td>
<td>0.349</td>
<td>0.350</td>
<td>0.368</td>
<td>0.364</td>
<td>0.368</td>
<td>0.367</td>
<td>0.379</td>
</tr>
</tbody>
</table>

N = 122, Standard errors in parentheses, + p<0.10, * p<0.05, ** p<0.01, *** p<0.00
For ease of interpretation, we have created two figures (2-2a, 2-2b). Figure 2-2a shows the interaction between the managers’ promotion focus and the promotion-focused situation on exploratory orientation in conditions of low complexity, while Figure 2b illustrates the same interaction in conditions of high complexity. The focus in Figure 2-2b is on the high-complexity condition, and it shows the impact of a promotion- or prevention-focused organizational situation on the relationship between the promotion focus trait of the manager and his or her preference for exploration. It suggests that promotion cues in the organizational context can boost the positive effect of their promotion focus trait on their inclination for exploratory activities when managers are having to deal with a high degree of complexity. However, in situations of far less complexity, this kind of mechanism will not play a significant role. Turning to our hypothesis 3b, in model 6, we do not find evidence that complexity influences the interaction between the prevention situation and prevention focus trait, since the three-way interaction is not statistically significant. Thus, our hypothesis 3b is rejected.

Study B was conducted to provide an additional test of our framework and used a different sample of respondents to explore potential deviations. We used a student sample that enabled us to investigate possible differences in results obtained from professional decision-makers operating in one specific working context and from students who were less likely to be affected by that particular work context. We created an alternative manipulation of complexity (see Appendix 2-D) to ensure
that the initial manipulation did not direct participants to one decision and we included extra manipulation checks.

Figure 2-1 Interaction between prevention regulatory focus trait and organizational context – Study A

2.1 Study B

2.1.1 Participants, Procedure, and Materials

One hundred and thirty-nine master students on a strategic management program at a large business school took part voluntarily in the study. The experiment was presented to them as a real business decision-making situation which would allow them to understand more about their own personality and their reaction to managerial decision-making after debriefing. The main experiment and personality test were conducted in one session. Participants were randomly assigned to the cells of a 2×2 between-subject design. All but two of the students (60% male, $M_{age} = 23$, $SD_{age} = 2.02$) completed the procedure and were included in
the analysis. The materials were the same as those used in Study A, except for the altered manipulation of complexity.

Figure 2-2 Three-way interaction-promotion focus trait, organizational context, and complexity – Study A
2.1.2 **Manipulation Checks**

After the dependent variable had been measured, participants rated the complexity of their case. Similar to Study A, the measure of checking complexity yielded significant main effects only for complexity (F=14.3, p<.001). In addition, participants were asked three questions about the extent to which uncertainty was imposed by: 1) interdependencies between the elements involved; 2) the variety of elements; and 3) the large number of elements involved in the case. The same analysis of these additional measures showed significant results (respectively: 1) (F=21.9, p<0.001), 2) (F=9.5, p<0.01), and 3) (F=4.9, p<0.05)). The procedure used for the manipulation check of the regulatory-focused organizational context was the same as in Study A. A 2 by 2 ANOVA on the number of promotion words used in participants’ written text showed statistically significant main effects only for this manipulation (F= 45.1, p<0.001). The same analysis on prevention words showed statistically significant main effects only for this manipulation (F=39.3, p<0.001).

2.1.3 **Results**

The descriptive statistics and regression results of Study B are summarized in Table 2.5 and 2-6. In our tests of hypotheses 1a and 1b, we find that prevention focus is negatively associated with the exploratory orientation of managers (B= -0.23, SE=0.10, P<0.001). We find there to be a positive association between promotion focus and the exploratory orientation of managers, but the coefficient is not significant. We find that the interaction between the promotion-
focused situation and the promotion focus trait of individuals is not statistically significant. Thus, our hypothesis 2a is rejected. Consistent with hypothesis 2b, the interaction between the prevention-focused situation and the prevention focus trait of the individuals is found to be significant ($B=0.48$, $SE=0.21$, $P<0.05$). Model 5 shows the results of the three-way interaction between complexity, promotion-focused situation, and promotion focus trait. The coefficient is statistically significant ($B=1.09$, $SE=0.47$, $P<0.05$), which is consistent with hypothesis 3a. The graphical representation of the interaction effect was similar to that of study A. We do not find a significant coefficient for the interaction between complexity, prevention-focused situation, and prevention focus trait. We included in our analyses controls for participants’ gender, age, and need for cognition, and repeated the slope difference tests. The results were similar to those of Study A.

Therefore, the results of Study B are generally consistent with those of Study A: a higher level of prevention focus in a manager is associated with a lower level of exploration orientation. As with Study A, we find support for hypothesis 2b and not for 2a. In fact, the stronger the prevention focus of an individual, the weaker his or her exploration orientation was in a prevention-focused situation, as opposed to a promotion-focused situation. Again, similar to our findings in Study A, we found support for hypothesis 3a, but not for hypothesis 3b; the results suggested that that when individuals are dealing with situations of high complexity, promotion cues in the organizational context can boost the positive
effect of the promotion focus trait on the individual’s inclination for exploratory activities.

One difference between the two studies, however, was that only Study A showed significant positive relationship between promotion focus and exploration. In Study B, while the same coefficient is still positive, it is not statistically significant. This means that we cannot fully reject the null hypothesis for H1a. We believe this discrepancy arises from the difference in work experience of the participants in the two experiments. This is consistent with Wang and Wong (2012), who also suggest the differences in their results stem from the different work experience of their two samples of participants. In fact, the relationship in hypothesis 1 is measured based on a work-related regulatory focus scale designed for individuals with work experience. To make the measurement consistent, we used the same scale for the student sample. However, it is possible that the professionals, who had an average of ten years work experience, may evaluate their own persistent regulatory focus in a working context differently to the students who did not have that experience and a great deal of familiarity with working environments. When we compare the two studies, we also observed that the regulatory focus of the organizational context has a significant effect on the exploration orientation of the students but not on that of the professionals, although we did not hypothesize an effect of this kind. This observation is interesting, as it might reside in the differences in work experience of the samples. It may be that, in our managerial sample, the organizational context that the
managers have experienced over a number of years is reflected to some degree in their own persistent regulatory focus. Therefore, it can be anticipated that their decision-making will be affected more by their persistent trait and its fit to the context, rather than by the context alone (which was the case for the student sample). An alternative explanation for the differences could be that the company we used might have specific regulatory focus characteristics, and if so, the participants in Study A might have been affected by that.

**Table 2-5 Descriptive statistics and correlations - Study B**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Exploration orientation</td>
<td>4.15</td>
<td>1.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Age</td>
<td>23.2</td>
<td>2.05</td>
<td>-0.0907</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Female</td>
<td>0.4</td>
<td>0.49</td>
<td>-0.0408 -0.0761</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Need for cognition</td>
<td>5.2</td>
<td>0.91</td>
<td>0.1153 -0.0832 -0.1083</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Regulatory focus trait – Prevention</td>
<td>5.3</td>
<td>0.95</td>
<td>-0.1920* -0.0221 0.1751* -0.1336</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-Regulatory focus trait – Promotion</td>
<td>5.1</td>
<td>0.87</td>
<td>0.1206 0.0310 -0.2615* 0.3741* -0.1672</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-Complexity</td>
<td>0.51</td>
<td>0.5</td>
<td>0.2119* 0.0385 0.0387 0.2022* -0.0423 0.1491</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-Regulatory focus Organizational situation</td>
<td>0.49</td>
<td>0.5</td>
<td>0.2472* -0.0281 -0.1042 0.0211 -0.0011 0.0730 0.0222</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N= 137, *Correlation is significant at the 0.05 level.
Table 2-6 Regression results of Study B

Dependent variable: Exploratory orientation

<table>
<thead>
<tr>
<th>Traits/characteristics</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention focus trait (CPre)</td>
<td>-0.229*</td>
<td>-0.231*</td>
<td>-0.436**</td>
<td>-0.439**</td>
<td>-0.268*</td>
<td>-0.449*</td>
<td>-0.449*</td>
</tr>
<tr>
<td>Promotion focus trait (CPro)</td>
<td>0.0638</td>
<td>0.0770</td>
<td>0.0863</td>
<td>0.0540</td>
<td>0.0954</td>
<td>0.0852</td>
<td>0.0829</td>
</tr>
<tr>
<td>Manipulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity (CPX)</td>
<td>0.475*</td>
<td>0.474*</td>
<td>0.502*</td>
<td>0.505*</td>
<td>0.702*</td>
<td>0.699*</td>
<td>0.715*</td>
</tr>
<tr>
<td>Regulatory focus organizational situation (RFS)</td>
<td>0.592**</td>
<td>0.592**</td>
<td>0.589**</td>
<td>0.588**</td>
<td>0.807**</td>
<td>0.787**</td>
<td>0.790**</td>
</tr>
<tr>
<td>Two-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPro × RFS</td>
<td>-0.0301</td>
<td>0.0750</td>
<td>-0.562+</td>
<td>-0.436</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPre × RFS</td>
<td>0.485*</td>
<td>0.498*</td>
<td>0.575*</td>
<td>0.435</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPre × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.130</td>
<td>-0.146</td>
<td></td>
</tr>
<tr>
<td>RFS × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.530</td>
<td>-0.413</td>
<td>-0.498</td>
</tr>
<tr>
<td>CPre × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0269</td>
<td>0.0100</td>
<td></td>
</tr>
<tr>
<td>Three-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPro × RFS × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPre × RFS × CPX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.632***</td>
<td>3.633***</td>
<td>3.620***</td>
<td>3.616***</td>
<td>3.528***</td>
<td>3.522***</td>
<td>3.522***</td>
</tr>
<tr>
<td>N</td>
<td>137</td>
<td>137</td>
<td>137</td>
<td>137</td>
<td>137</td>
<td>137</td>
<td>137</td>
</tr>
<tr>
<td>R-sq</td>
<td>0.139</td>
<td>0.139</td>
<td>0.173</td>
<td>0.173</td>
<td>0.199</td>
<td>0.182</td>
<td>0.224</td>
</tr>
<tr>
<td>Adj R-sq</td>
<td>0.1131</td>
<td>0.106</td>
<td>0.141</td>
<td>0.135</td>
<td>0.15</td>
<td>0.136</td>
<td>0.156</td>
</tr>
</tbody>
</table>

N= 137, Standard errors in parentheses, + p<0.10, * p<0.05, ** p<0.01, *** p<0.00
2.2 Discussion and Conclusion
Prior research suggests that key decision-makers have an important role in reconciling exploration and exploitation (Gibson & Birkinshaw, 2004; Lubatkin et al., 2006; O’Reilly & Tushman, 2011). What is less well understood is how motivational factors influence their orientation toward exploration. To advance research in this area, we looked at expert decision-makers’ orientation toward exploration, from a psychological perspective. We used theories of regulatory focus and complexity to provide a framework that would allow in-depth analysis of the motivational drivers of exploration orientation in the organization. In particular, we attempted to portray exploration orientation in organizations as an outcome of decision-makers’ persistent traits and reaction to cues in an organizational context, and introduced the degree of complexity as a boundary condition. This study has several important implications.

First, our psychological perspective provides important new insights for researchers who use micro-organizational analyses to study exploration and move beyond recent studies (e.g., Laureiro-Mart & Brusoni, 2015, who took a cognitive perspective) to introduce the motivational aspects. Strategy scholars might thus be able to build on a better understanding of the psychological foundations of exploration/exploitation decisions, which can be used to develop comprehensive models of strategic choice based on the particular characteristics of key decision-makers. Our results show that regulatory focus is a trait that, under certain
conditions, has the potential to shape the strategic preferences of managers, particularly their exploratory orientation.

Second, our framework has important implications for understanding how traits and organizational context interact to form the preference of decision-makers. Our research extends prior research which has for the most part discussed either the trait aspect of regulatory focus in managerial strategic preferences or looked at cues from the organizational context (e.g., Rhee & Fiss, 2014). We have responded to calls for more research on regulatory fit in organizations (Lanaj et al., 2012; Johnson et al., 2010) by exploring the importance of contextual factors as determinants of managers’ preferences. Our results demonstrate how promotion and prevention systems have different effects in different organizational contexts, and interestingly we find the match between the context and trait to be significant only in prevention systems – when external cues from the context emphasize prevention by reinforcing the tendency of manager with high level of prevention focus to avoid exploratory activities which are risky. What is also interesting is that the asymmetric effects of regulatory fit for the promotion and prevention systems which we have found are consistent with Gamache and colleagues’ (2015) findings about the effects of the fit between CEO regulatory focus and compensation on acquisition decisions. We extend this line of work by revealing the possibility of underspecified models, and introducing the complexity of the decision-making context as a contingent factor in describing such asymmetric
effects in order to provide a more accurate account of regulatory focus theory in studying managerial preferences.

Third, our study is of relevance for the research that investigates the implications of complexity for managers’ behavior and choices (Sargut & McGrath, 2011; Larsen et al., 2013; Raaijmakers et al., 2015). Our results show that the level of complexity in decision-making affects the relationships between motivational factors and managers’ preferences. In fact, when managers are dealing with a high level of complexity, a conducive effect of promotion-focused organizational context triggers exploratory activities in particular for promotion focus of managers. We did not, however, find complexity to play any significant role in the effect of the prevention aspect of the motivational system. This interesting finding can also be explained by recent studies in neuroscience. For instance, there is evidence that promotion regulatory focus is associated with activities in the left hemisphere of the brain, whereas prevention regulatory focus is associated with activities in the right hemisphere (Amodio et al., 2004). Right-hemisphere structures are known to have an important role in emotional processing (Tranel et al., 2002) while left-hemisphere structures are involved in third-order higher cognitive functioning (Van Den Heuvel et al., 2003); this includes planning, i.e., the ability to achieve a goal by means of a series of steps (Robbins, 1998). Moreover, prior research suggests that increased task complexity is correlated with the involvement of left-hemisphere activities (Van Den Heuvel et al., 2003). In summary, both promotion focus and complexity involve the left
hemisphere and, this may lead to an amplification of their individual effects. In contrast, prevention focus and task complexity involve two distinct parts of the brain, and this may explain the absence of any meaningful interaction between the effects.

Finally, by using experimental vignette methodology, we take research on the trade-off between exploration and exploitation in a new methodological direction. We devised two experiments based on a business problem to which the participants could relate. Involving business managers helped us to increase the internal validity of the results and to avoid artificial responses, as recommended by Aguinis and Bradley (2014). Using students of strategic management in the second study, we could increase the generalizability of the findings by eliminating the potential effects of the particular organizational context of our first study. While micro-level studies in this line of research are still scarce, we have tried to go one step further and provide a better understanding not only of what influences professional decision-makers when making these trade-offs, but also of how they behave the way they do in certain situations. We hope that researchers working on exploration/exploitation trade-offs will embrace this methodology in the future.
3 References


Cuervo-Cazurra, A. (1999). Resource development through the co-evolution of resources and scope (Doctoral dissertation), Massachusetts Institute of Technology.


Kevin Ashton, That Internet of things thing, It can be accessed at: http://www.rfidjournal.com/articles/view?4986


Tuncdogan, A., Van Den Bosch, F., Volberda, H., W., (2015), Regulatory focus as a psychological microfoundation of leaders' exploration and exploitation activities, The Leadership Quarterly, 26 (5), 838-850


## 4 Appendices

### 4.1 Appendix 2-A Complexity Manipulation- Study A

**Vignette text**

You are a strategic product manager, in charge of a strategic product in a telecom vendor. You are responsible for defining product strategies, plans and road map to secure long term product evolution. One of the key trends in your industry is Cloud computing and for a few years, industry players were speculating how and when Cloud would influence their businesses.

Suppose you receive information that a strategic customer that you work closely with has made a number of concrete decisions on how to utilize Cloud opportunities during next 2-4 years. This implies a need to start preparation and responses from your side and potentially consider adaptations in the product that you are in charge of.

In a senior-level meeting, you receive more information concerning the intended implementation of Cloud technology in your product. Please continue for the details. Here are the highlights of the meeting and the information you have gathered so far:

<table>
<thead>
<tr>
<th>Manipulations</th>
<th>High-complexity case</th>
<th>Low-complexity case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>An agreement has been made with the customer in general terms about implementing Cloud in your product.</td>
<td>An agreement has been made with the customer about implementing some new features based on Cloud in your product.</td>
</tr>
<tr>
<td></td>
<td>This case entails many interdependent changes in the architecture and interfaces of your product. Overall, the influences on existing product road map might be significant.</td>
<td>This case entails some independent changes in the architecture and interfaces of your product. Overall, the influences on existing product road map would not be significant.</td>
</tr>
<tr>
<td></td>
<td>Technologies to support this adaptation (e.g. security issues) are not available. There is a high level of uncertainty involved in complementary technologies. You may need to interact with many external parties for your development activities.</td>
<td>Technologies to support this adaptation (e.g. security issues) are available. There is not a high level of uncertainty involved in complementary technologies. You may not need to interact with many external parties for your development activities.</td>
</tr>
<tr>
<td></td>
<td>Current ways of doing business, e.g., pricing model and nature of interactions with customer, may change. There will be a need for</td>
<td>Current ways of doing business, e.g. pricing model and interactions with</td>
</tr>
</tbody>
</table>
collaborations with new suppliers. Therefore, predicting the magnitude of business impact will be relatively difficult. The technical and business impacts are highly intertwined and interdependent in such a way that relying on a type of technical solution, the degree of business impact will change, and vice versa.

<table>
<thead>
<tr>
<th>Final task</th>
<th>You are made responsible by the organization for managing this case, deciding and taking actions when needed. Please note that your organization has agreed to provide required resources.</th>
</tr>
</thead>
</table>

Therefore, predicting the magnitude of business impact will be relatively easy. The technical and business impacts are not highly intertwined and interdependent.
4.2 Appendix 2-B Regulatory focus stimuli manipulation- Video Manuscripts

In a meeting, a senior manager explains your organizational situation in this case:

Promotion focus situational cue manipulation
“I think it is a good idea to consider this situation thoroughly. This request brings about lots of opportunities for growth for you as the project responsible. It helps you to exceed your yearly targets which is your main ambition. If you manage to do a good job and show superior performance… you will be associated with a success that contributes to future deals of the organization. You may improve your reputation in driving such strategic projects. You will certainly receive more support and resources from the organization in the future… But if you do not manage to do it, none of these will be achieved”

Prevention focus situational cue manipulation
"I think you have to consider this situation thoroughly. This request brings about lots of obligations and duties for you as the project responsible. You have to do it to avoid falling below your yearly targets which is your main duty. If you don’t manage to do a good job and show poor performance…you will be associated with a failure that will jeopardize future deals of the organization. You may damage your reputation in driving such strategic projects. You will certainly receive less support and resources from the organization in the future… But if you manage to do it, all of these will be avoided.”
4.3 Appendix 2-C Exploratory orientation items

What would be your choices and managerial activities in this situation?

It is more likely that I would...

choose strong renewal and change of the current product architecture and roadmap.

search for possibilities to introduce radically new products/services.

approve major deviation from existing best practices and known processes.

exploring only 1 or 2 most promising alternatives (solutions).

choose incremental and stepwise adaptation of existing product architecture and road map.

search for possibilities to improve existing products/services.

ensure full compliance with existing best practices and known processes.

exploring a wide range of alternatives (solutions).
Baseline information: You are a strategic product manager, in charge of a strategic product in a telecom vendor. You are responsible for defining product strategies, plans and road map to secure long term product evolution. One of the key trends in your industry is Cloud computing and for a few years, industry players were speculating how and when Cloud would influence their businesses.

Suppose you receive information that a strategic customer that you work closely with has made a number of concrete decisions on how to utilize Cloud opportunities during next 2-4 years. This implies a need to start preparation and responses from your side and potentially consider adaptations in the product that you are in charge of.

In a senior-level meeting, you receive more information concerning the intended implementation of Cloud technology in your product. Please continue for the details. Here are the highlights of the meeting and the information you have gathered so far:

<table>
<thead>
<tr>
<th>Manipulations</th>
<th>High-complexity case</th>
<th>Low-complexity case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>An agreement has been made with the customer in general terms about implementing Cloud in your product.</td>
<td>An agreement has been made with the customer in general terms about implementing Cloud in your product.</td>
</tr>
<tr>
<td></td>
<td>This case entails many interdependent changes in the architecture and interfaces of your product. Overall, the influences on existing product road map might be significant.</td>
<td>This case entails some independent changes in the architecture and interfaces of your product. Overall, the influences on existing product road map would not be significant.</td>
</tr>
<tr>
<td></td>
<td>There is a high level of uncertainty involved in complementary technologies. You may need to interact with many external parties for your development activities.</td>
<td>There is not a high level of uncertainty involved in complementary technologies. You may not need to interact with many external parties for your development activities.</td>
</tr>
<tr>
<td></td>
<td>Current ways of doing business, e.g., pricing model and nature of interactions with customer, may change. There will be a need for</td>
<td></td>
</tr>
</tbody>
</table>
collaborations with new suppliers.  

The technical and business impacts are highly intertwined and interdependent in such a way that if you rely for example on one type of technical solution, the elements of business model (e.g. pricing, interactions with customers and reliance on suppliers) will change vice versa.

activities.

Current ways of doing business, e.g. pricing model and interactions with customer, will not change. There will be no need for collaborations with new suppliers.

The technical and business impacts are not highly intertwined and interdependent. For example, by relying on one type of technical solution, the elements of business model (e.g. pricing, interactions with customers and reliance on suppliers) will not change, and vice versa.

Final task  
You are made responsible by the organization for managing this case, deciding and taking actions when needed. Please note that your organization has agreed to provide required resources. There are two viable approaches to follow. One approach, for example, includes introducing radically new products and approve major deviation from known processes, and the other includes adapting the products incrementally and ensure compliance with known processes. Note that both approaches are viable but it depends on you to decide about them, when you are asked about it.
## 4.5 Appendix 3-A – Examples of new business opportunities

<table>
<thead>
<tr>
<th>Title</th>
<th>Suggested new business opportunity</th>
<th>Technical details</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPMO REDE Binary Decoder</td>
<td>The service unit combines her knowledge of the customer plans, knowledge of the customer technical capability gaps (lack of post processing solutions), and creatively makes use of the current organization technical capabilities and resources (OSS-RC O14B and internal decoders) to innovate a new feature for a line of products and suggesting new service offerings that could be sold with that.</td>
<td>TelecomA are deploying RPMO into their network. They currently do not have any post-processing solution in place handling RPMO REDE files. A REDE binary decoder does exist and is used internally in the organization but has never been looked at as a published interface. Within O14B line (a set of products) a new feature could be added to make REDE binary decoder available. Vodaones would then be able to create their own post-processing solution based on OSS-RC’s REDE binary decoder. PL-OSS plan to publish a REDE binary decoder as new feature in OSS-RC O14B will be licensed and priced separately. In addition to that, installation, test, deployment and maintenance of the REDE decoder can be included in the offering as well.</td>
</tr>
<tr>
<td>Adding new MSC-SBC as a passive standby node</td>
<td>The service unit combines her knowledge of the changes in customer side (structure of the transformed networks), and customer needs (traffic recovery after disaster), and the internal technical knowledge creatively to suggest a novel solution for solving the problem by adding a novel functionality to the current product with a few changes.</td>
<td>With the recent Core Network Transformation, customers like BTelecom have all their ISUP connectivity handled by few blade clusters (3 for Rogers). In case of fire or other disasters, if one MSC-S BC goes down, there is no way to recover lost ISUP traffic in short term or even sometimes long term. POI (over ISUP) redundancy has been a hot topic for Rogers ever since their 20 MSCs were transformed into a new core network consisting of just three blade clusters. The magnitude of loss of ISUP connectivity in case on MSC-BC goes down is enormous as compare to older nodes( where if one node went down just a few ISUP routes would have been effected). We did some preliminary work on POI migrations and type of redundancy can be achieved for ISUP routes on the new core network. We have also talked about a possible MDE which is still under QS review. During a steering group meeting, a question was put up by Jim Fielder (one of Rogers Directors), asking on what needs to be done if a long outage is experienced on one of the blade cluster. How can the ISUP routes be rehomed given that a blade cluster controlling them has gone permanently down or is out for long duration ( eg. fire)</td>
</tr>
</tbody>
</table>
During brainstorming sessions with the customer one idea that everyone came up with was that why can’t we just define all ISUP routes in all the blade cluster. The routes will remain blocked in BCs where they are not primarily controlled. In case of outage with DT changes done on STP and MGW, the routes could be de-blocked on secondary BC. The result of brainstorming was not bad but has a few shortcomings:

1. The BCs should have been configured with this situation in mind beforehand. This means more blades could be required in design.
2. Expected higher traffic would mean that SAEs would have to be adjusted (at least for all ISUP side).
3. If this was done earlier, we could have had identical DT, i.e. device "UPDNAR1-540" for example would mean the same thing in all BCs as it would be connected to the same "RouteX1" going to same destination "DPC yyyy" and using the same CIC. This is not achievable now and would be a nightmare to keep track of it.

So I have this new idea…

The solution is that

1. We use a new MSC-BC with same hardware configuration as existing node i.e. 7+1 blades. Nothing more.
2. Connect this MSC-BC to their IP network, O&M, Billing etc. Everything is tested and verified.
3. In case of permanent failure on say TOUMSC2, customer just loads the TOUMSC2 backup on this new BC.
4. Configure the adjacent router with Subnets as required by TOUMSC2. Everything should come up since same IP as TOUMSC2 is defined on the new BC. This means all associations towards adjacent nodes, MGWs, RAN nodes, STPs will automatically come up and even the ISUP routes handled by TOUMSC2 will come up since from all MGW perspective, the TOUMSC2 is UP and running.

During normal situations, this new BC can have a different dump (as a fourth BC node) loaded. They can even use it for testing and LAB purposes which will benefit us when it comes to doing FOA of new software.
5 English Summary
At the intersection of strategic management and applied psychology research, this dissertation focuses on motivation as a main driver of strategic preferences and behaviors in organizations. It explains micro level drivers of managers’ preferences in trade-offs related to responding the uncertainties of emerging technologies through a motivation lens, and further combines a capability lens with motivation to investigate the preference of the manager for the delay in investment on an emerging technology. It also explains the exploratory behavior of front-line employees in generating ideas for new business in response to a motivating intervention via stretch goals.

The findings are as following. 1) Manager’s orientation toward search, risk-taking, and experimentation is shaped not only by their own motivational systems rooted in their characters, but also by the fit between their motivational systems and the motivational cues in the organization as well as the complexity of the decision-making situation, while there is an asymmetry in response to opposing motivational cues. 2) Stretch goals indeed foster exploratory behaviors to fuel innovation processes in organization, by increasing participation of employees in idea generation for new business opportunities although they may not be as effective in increasing the effort of those employees who have been participating. When it comes to performance outcomes, the difficulty and novelty of stretch goals make individuals less sensitive to the results of their efforts. As such, the paradoxical nature of stretch goals, results in both intended and unintended performance outcomes. They seem to be more effective for the individuals who are already able to discern the good ideas from the bad based on their experience and seniority. 3) The tradeoffs managers see in early versus late investment in an emerging technology is directly and indirectly affected by their perception of the gap between current capabilities of the firm and what is requires to be successful in the emerging technology. However, it is the motivational cue in the context that interferes with this perception and shapes the final judgements of the managers.
6 Samenvatting (Dutch summary)
Op het snijvlak van strategisch management en toegepast psychologisch onderzoek, richt dit proefschrift zich op motivatie als een belangrijke aanjager van strategische voorkeuren en gedragingen in organisaties. Het verklaart de 'drijfveren van de voorkeuren van managers in afwegingen gerelateerd aan het reageren op de onzekerheden rond opkomende technologieën dankzij motiavieen individuele capaciteiten, om zo de voorkeur van de manager te onderzoeken voor de vertraging in investering op een opkomende technologie. Het verklaart ook het verkennende gedrag van eerstelijnsmedewerkers bij het genereren van ideeën voor nieuwe bedrijven als reactie op een motiverende interventie via stretch goals.

De bevindingen wijzen het volgende uit 1) De houding van de manager ten opzichte van het zoeken naar kennis, het nemen van risico's en experimenten wordt niet alleen gevormd door hun eigen motivaties die hun oorsprong vinden in hun karakter, maar ook door de fit tussen hun motivaties en de motiverende signalen in de organisatie en de complexiteit van de situatiet rond besluitvorming, terwijl er een asymmetrie is in reactie op tegengestelde motiverende signalen. 2) Stretch goals bevorderen inderdaad verkennend gedrag om innovatieprocessen in de organisatie aan te wakkeren, door verhoogde deelname van werknemers aan het genereren van ideeën, hoewel ze mogelijk niet zo effectief zijn in het verhogen van de inspanningen van de werknemers die hebben deelgenomen. Als het gaat om de uitkomsten van prestaties, maken de moeilijkheid en nieuwheid van stretch goals individuen minder gevoelig voor de resultaten van hun inspanningen. Als zodanig resulteert de paradoxale aard van stretch goals in zowel bedoelde als onbedoelde resultaten. Ze lijken effectiever te zijn voor de individuen die al in staat zijn om de goede ideeën van de slechte te onderscheiden op basis van hun ervaring en anciënniteit. 3) De afwegingen die managers zien in vroege versus late investeringen in een opkomende technologie worden direct en indirect beïnvloed door hun perceptie van de kloof tussen de huidige mogelijkheden van het bedrijf en wat nodig is om succesvol te zijn in de opkomende technologie. Het is echter het motiverende contextuele signaal die deze perceptie verstoort en de uiteindelijke oordelen van de managers bepaalt.
About the Author
Saeedeh Ahmadi (1982 Tehran) received bachelor of industrial engineering from Khaje Nasir university and master of management from Sharif university, Tehran. After a couple of years working in telecom industry, she obtained a master of Data-mining and Statistics from Linkoping university Sweden. She started her PhD in the department of Strategic Management and Entrepreneurship of Rotterdam School of Management, Erasmus University in 2014. As a part of her PhD trajectory, she visited Stern School of Business New, York University in 2017.

Saeedeh’s research is at the nexus of strategic management, innovation management, and psychology. Focusing on managerial decision-making in uncertain situations, she tries to understand what makes managers oriented toward riskier options, why some managers get out of comfort zone and why others do not or delay some actions. She is also enthusiastic about assessing the effectiveness of managerial interventions that try to motivate variety seeking and idea generation in organizations.

Saeedeh has presented her research in major international management conferences such as Academy of Management and Strategic Management Society. She has served as ad-hoc reviewer of Journal of management Studies and Psychological Reports.

Saeedeh Currently works as assistant professor of Strategic Management at the Department of International Strategy and Marketing of Amsterdam Business School, University Van Amsterdam.
## Portfolio

### Publications and Works in Progress

- **Published paper**

- **Working paper**
  - Ahmadi, S. New business opportunities at front end: When stretch goals work? –recipient of Trustfund grant- Under revision in Organization Science

- **Work in progress**
  - Ahmadi, S., Assessing Firm Response To the Cloud Computing Revolution- in the second round of data collection
  - Ahmadi, S., Breet, S., Glazer, L., Jansen, J. Opportunity recognition by service employees: When setting stretch context backfires – in data analysis phase

### Conference Presentations


RESEARCH VISIT

- Stern School of Business, New York University
  Visiting PhD student in department of Management and Organization (2017)- Professor JP Eggers

TEACHING

- Bachelor level
  - Teaching Fellow in Bachelor Research Training course (2014)
  - Teaching Fellow in Bachelor Internship (2016)
  - Supervisor of 13 bachelor theses (2014)
- Master level
  - Teaching Fellow in Master Research Clinic course (2015-2017)
  - Instructor in research method for management-Quantitative track (2017)
  - Instructor in Managerial decision-making in face of technological change (scheduled for May 2018)

PROFESSIONAL ACTIVITIES AND SERVICES

- Reviewer for Journal of Management Studies (2017– Present)
- Reviewer for Psychological reports (2018– Present)
- Reviewer for Academy of Management conference (BPS ; 2014 – Present)

WORK EXPERIENCE

- Customer Intelligence Internship, T-Mobile NL , 2011-2012
- Marketing Analyst, Taliya 2008-2009
- Strategy Analyst, Taliya (joint of Tele2 Sweden and MCCI Iran ), 2006-2008
9 ERIM PhD Series

The ERIM PhD Series

The ERIM PhD Series contains PhD dissertations in the field of Research in Management defended at Erasmus University Rotterdam and supervised by senior researchers affiliated to the Erasmus Research Institute of Management (ERIM). All dissertations in the ERIM PhD Series are available in full text through the ERIM Electronic Series Portal: http://repub.eur.nl/pub. ERIM is the joint research institute of the Rotterdam School of Management (RSM) and the Erasmus School of Economics (ESE) at the Erasmus University Rotterdam (EUR).

Dissertations in the last four years


Brazys, J., *Aggregated Macroeconomic News and Price Discovery*,


Cranenburgh, K.C. van, Money or Ethics: Multinational corporations and religious organisations operating in an era of corporate responsibility, Prof. L.C.P.M. Meijs, Prof. R.J.M. van Tulder & Dr D. Arenas, EPS-2016-385-ORG, http://repub.eur.nl/pub/93104


Kerkkamp, R.B.O., Optimisation Models for Supply Chain Coordination under Information Asymmetry, Promotors: Prof. A.P.M. Wagelmans & Dr. W. van den Heuvel, EPS-2018-462-LIS


Meulen, van der, D., The Distance Dilemma: the effect of flexible working practices on performance in the digital workplace, Promotors: Prof. H.W.G.M. van Heck


Pennings, C.L.P., Advancements in Demand Forecasting: Methods and Behavior, Promotors: Prof. L.G. Kroon, Prof. H.W.G.M. van Heck & Dr J. van Dalen, EPS-2016-400-LIS, http://repub.eur.nl/pub/94039


Szatmari, B., *We are (all) the champions: The effect of status in the implementation of innovations*, Promotors: Prof. J.C.M van den Ende & Dr D. Deichmann, EPS-2016-401-LIS, http://repub.eur.nl/pub/94633


