



Vaasan yliopisto  
UNIVERSITY OF VAASA

JESSE HEIMONEN

# Growth, profitability, and innovation performance of a firm

The enabling role of  
entrepreneurial orientation

ACTA WASAENSIA 394

BUSINESS ADMINISTRATION

ACADEMIC DISSERTATION

*To be presented, with the permission of the Board of the Faculty of Business  
Studies of the University of Vaasa, for public dissertation  
in Auditorium Nissi (K218) on the 15th of December, 2017, at 2 pm.*

Reviewers     Dr. Teemu Kautonen  
Associate Professor of Entrepreneurship  
Aalto University School of Business  
Department of Management Studies  
P.O. Box 11000  
FI-00076 AALTO  
FINLAND

Dr. Pasi Malinen  
Research Director  
University of Turku  
Brahea Centre  
FI-20014 TURUN YLIOPISTO  
FINLAND

<b>Julkaisija</b> Vaasan yliopisto	<b>Julkaisupäivämäärä</b> Joulukuu 2017	
<b>Tekijä(t)</b> Jesse Heimonen	<b>Julkaisun tyyppi</b> Artikkeliväitöskirja	
<b>ORCID</b>	<b>Julkaisusarjan nimi, osan numero</b> Acta Wasaensia, 394	
<b>Yhteystiedot</b> Vaasan yliopisto Kauppätieteellinen tiedekunta Johtaminen ja organisaatiot PL 700 FI-65101 VAASA	<b>ISBN</b> 978-952-476-788-0 (painettu) 978-952-476-789-7 (verkkoaineisto)	
	<b>ISSN</b> 0355-2667 (Acta Wasaensia 394, painettu) 2323-9123 (Acta Wasaensia 394, verkkoaineisto)	
	<b>Sivumäärä</b> 162	<b>Kieli</b> englanti
<b>Julkaisun nimike</b> Yrityksen kasvu, kannattavuus ja innovaatio- ja suorituskyky: Yrittäjämäisen orientaation mahdollistava vaikutus		
<b>Tiivistelmä</b> <p>Organisaation yrittäjämäisyyttä on tutkittu yli 30 vuotta. Vasta hiljattain tutkijat ovat kyseenalaistaneet yrittäjämäisyyden universaalien hyödyllisyyden. Sen sijaan, että yrittäjämäisyys parantaisi aina yrityksen suorituskykyä, sen on myös todettu lisäävän vaihtelua organisaation suorituskykymittareissa. Tämä väitöskirja esittelee neljä tutkimusartikkelia, joiden tulokset pohjautuvat suomalaisesta elintarviketeollisuudesta kerättyihin kysely-, haastattelu- ja taloustietokanta-aineistoihin lisätäkseen ymmärrystä siitä, ”mikä on yrittäjämäisen orientaation rooli yrityksen kasvun, kannattavuuden ja innovaatio- ja suorituskyvyn mahdollistajana”.</p> <p>Ensimmäinen artikkeli tutkii yrittäjämäisyyden ja kasvunopeuden välistä suhdetta sekä omaksumiskyvyyden ja taloudellisen pelivaran roolia tässä suhteessa. Toinen artikkeli esittelee kolme organisaatiotason mekanismeja, joiden avulla lisääntyneen yrittäjämäisyyden ja korkean omaksumiskyvyyden yhteisvaikutus mahdollistaa paremman kannattavuuden. Kolmannessa ja neljännessä artikkelissa tarkastellaan tuote- ja palveluportfolion kilpailuetua ja sitä, kuinka yrittäjämäisyyden vaikutus kannattavuuteen kanavoituu erityisesti yrityksen innovaatio- ja suorituskyvyn kautta.</p> <p>Tulokset osoittavat, että yrittäjämäisyyden lisääntyminen voi vaikuttaa positiivisesti yrityksen kasvunopeuteen, mutta kasvupotentiaalin täysi hyödyntäminen vaatii organisaatiolta myös omaksumiskyvyyttä ja riittäviä taloudellisia resursseja. Lisäksi kasvanut yrittäjämäisyys ja suuri omaksumiskyvyys yhdessä näyttäisivät saavan aikaan mekanismeja, joiden avulla yritys voi parantaa kannattavuuttaan. Tuloksista käy myös ilmi, että yrittäjämäisyyden kannattavuushyödyt realisoituvat erityisesti tuote- ja palvelukehitysprosessien kautta. Tutkimuksen keskeisin löydös on, että yrittäjämäisyyden rooli ja optimaalinen taso vaihtelevat sen mukaan, mitä suorituskyvyn ulottuvuutta yritys pyrkii parantamaan.</p>		
<b>Asiasanat</b> yrittäjämäinen orientaatio, omaksumiskyvykyys, taloudellinen pelivara, tuote- ja palveluportfolion kilpailuetu, suorituskyky, elintarviketeollisuus		



<b>Publisher</b> Vaasan yliopisto	<b>Date of publication</b> December 2017	
<b>Author(s)</b> Jesse Heimonen	<b>Type of publication</b> Doctoral thesis by publication	
<b>ORCID</b>	<b>Name and number of series</b> Acta Wasaensia, 394	
<b>Contact information</b> University of Vaasa Faculty of Business Studies Management P.O. Box 700 FI-65101 Vaasa Finland	<b>ISBN</b> 978-952-476-788-0 (print) 978-952-476-789-7 (online)	
	<b>ISSN</b> 0355-2667 (Acta Wasaensia 394, print) 2323-9123 (Acta Wasaensia 394, online)	
	<b>Number of pages</b> 162	<b>Language</b> English
<b>Title of publication</b> Growth, profitability, and innovation performance of a firm: The enabling role of entrepreneurial orientation		
<b>Abstract</b> For more than 30 years, scholars have investigated the potential benefits of a firm-level entrepreneurial strategic posture, entrepreneurial orientation (EO). Recently, they have begun to question the alleged universally advantageous role of that posture and suggest that instead of directly improving firm performance, EO may increase variability in performance outcomes. Consisting of four research papers and utilizing a quantitative survey data set of 108 Finnish food manufacturing companies complemented with objective financial data and interview data, this dissertation seeks to contribute to the ongoing discussion on “what is the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm?”. <p>The first article investigates the relationship between EO and sales growth and the role of slack resources (SR) and absorptive capacity (ACAP) in overcoming the limitations of increased EO. The second article identifies three organizational micro-level mechanisms through which the interplay between increased EO and high ACAP externalizes and drives high profitability. As EO has been argued to drive firm performance, especially through its impact on innovation outcomes, the third article conceptualizes and validates a construct to measure the desired innovation process outcome—new product and service portfolio (NPSP) advantage—and the fourth article investigates EO’s impact on this outcome variable.</p> <p>The results suggest that firms seeking entrepreneurial growth benefit from high EO complemented with business development resources and capabilities such as financial SR and ACAP. Further, the findings suggest that increased EO together with high ACAP enable firms to activate micro-level mechanisms that deliver higher profitability and that the profitability driving potential of EO appears to manifest particularly through EO’s impact on innovation performance. As a conclusion, the role of EO appears to vary based on the strategic goals of the firm in question.</p>		
<b>Keywords</b> Entrepreneurial orientation, absorptive capacity, slack resources, new product and service portfolio advantage, performance, food manufacturing industry		



## ACKNOWLEDGEMENT

I was a fifth grader when I engaged in entrepreneurial behavior by selling chewing gum to my classmates at the primary school in Suonenjoki. The business was blossoming until the local authorities (the rector) introduced some unfavorable regulations denying the sales of the cigarette look alike chewing gums and candies. This was the very first time I faced disruptive changes in the business environment that forced me as a young entrepreneur to reconsider the viability of the business. Despite the initial feeling of disappointment, I learned two valuable lessons. First and foremost, buying something with one unit of currency and selling it out for three units does not sound like a bad idea, and second, even though there is proven demand you can supply to, conditions in the operational environment, such as regulations, are subject to change and they can make or break a business. Ever since, the entrepreneurial mindset and deep passion to increase understanding of the factors affecting business success have guided all the initiatives I have pursued in my career. Writing this dissertation is one of those initiatives.

Another lesson I have learned during these 31 years is that all the tasks I have undertaken have been greatly influenced by other people. It appears evident that many of the projects like this doctoral thesis would not have had the same path nor the outcome without the amazing individuals, to whom I am very grateful. First, I want to show gratitude to my supervisor, Professor Marko Kohtamäki for his untiring guidance in completing this dissertation. Marko, without your passion and persistency in conducting research I would not have pushed my thinking to the level exhibited in this piece of research. I also want to thank two pre-examiners of this dissertation, Associate Professor Teemu Kautonen from Aalto University, and Research Director Pasi Malinen from the University of Turku, for their valuable comments to improve the manuscript.

In all the work communities I have had the opportunity to be part of, I feel privileged for having been surrounded by wonderful colleagues. From the times before enrolling on the master's program at the University of Vaasa, my former teachers and later my colleagues: Jari-Pekka Jääskeläinen, Antti Iire and Hilikka Lassila from the Savonia university of applied sciences, are worthy of mention. Thank you for your devotion to entrepreneurship education, your work is valuable. I want to thank all current and former colleagues at the Department of Management in the University of Vaasa. Thank you all for being there to make me a better researcher and making me laugh whenever we met in the corridor and coffee room. Anni, Susanna and Suvi, you in particular are able to create an atmosphere where sharing the feeling of joy and disappointment has been

welcome. Thank you for that. In addition, I am especially grateful to Professors, PhDs and soon to be PhDs Jukka Vesalainen, Henri Hakala, Tero Vuorinen, Juho Ylimäki, Charlotta Sirén, Seppo Luoto, Rodrigo Rabetino, Olivier Wurtz, Tuomas Huikkola and Mathias Hasselblatt; and Doctor of practice Jari Lehtineva for inspiring discussions and exercises regarding research, entrepreneurship, and business in general. From you I have learned a lot during these years and I feel honored to know you. I also want to thank Tiina Jokinen for providing all the support required to deal with the administrative issues.

There are several foundations and other organizations that I want to thank for enabling me to focus on writing this piece of research and present my work at international conferences around the world. Firstly, I want to express my gratitude to TEKES (the Finnish Innovation Funding Agency) for providing the basic funding to start this journey with an industry analysis on Finnish food manufacturing companies. Without the decision to fund the FoodIR (Food Industry Research) project, I would have never thought of entering academia. Further, I want to thank the doctoral school of Vaasa university (Vaasan yliopiston tohtorikoulu), the Foundation for Economic Education (Liikesivistysrahasto), the Nissi Foundation (Nissin säätiö), the Niilo Helander Foundation (Niilo Helanderin säätiö) and the Private Entrepreneur Foundation (Yksityisyrittäjien säätiö) for supporting me along the way. This has indeed been an amazing journey, and without your support, these past four years would not have been the same.

The greatest thanks I want to devote to my dearest friends and family. Markus, Janne and Tero: thank you for providing me a break from all the thoughts related to research and work whenever I needed it. Our trips inside and outside Finland have given me great joy all these years before and during my PhD studies and certainly will do so in the future as well. I want to thank my aunt Irmeli, being the first in our family to enter academia and showing me that it can be done. I want to thank my sister Jonna, brother Jani and my parents Helmi and Jukka for providing all the necessary support and the foundations to build upon my dreams. You have witnessed the major decisions I have made in my life and given me courage to choose my own path. Finally, I want to thank my love Elina and her family. Thank you welcoming me into your lives; I really do enjoy our time spent together. Especially you Elina, thank you for understanding my tendency to engage in projects that sometimes consume more time than is reasonable. Without your love and support, I would not be able to reach my full potential.

Vaasa, November 3, 2017

Jesse

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## Abbreviations

ACAP	Absorptive capacity
CFA	Confirmatory factor analysis
COMIN	Competitive intensity
EFA	Exploratory factor analysis
EO	Entrepreneurial orientation
ICT	Information and communication technology
NACE	European classification of economic activities
NPD	New product development
NPSP	New product and service portfolio
NSD	New service development
OLS	Ordinary least squares regressions
SME	Small and medium-sized enterprises
SR	Slack resources

## PART II: ARTICLES

- [1] Heimonen, J. & Kohtamäki, M. (under review). The non-linear relationship between entrepreneurial orientation and sales growth in mature markets and the moderating effects of slack resources and absorptive capacity. Paper under review with journal. An earlier version of the paper was presented at the Academy of Management Conference 2015, Vancouver, Canada.
- [2] Heimonen, J., Kohtamäki, M. & Heikkilä, V. (under review). Beneath the surface: Discovering the mechanisms that drive the profit outcomes from the interplay between entrepreneurial orientation and absorptive capacity. Paper under review with journal. An earlier version of the paper was presented at the Industrial Marketing and Purchasing Conference 2015, Kolding, Denmark.
- [3] Heimonen, J. (under review). Measuring new product and service portfolio advantage. Paper under review with journal. An earlier version of the paper was presented at the International Council of Small Business Conference 2016, New York, USA.
- [4] Heimonen, J. & Kohtamäki, M. Entrepreneurial orientation as a driver of firm profitability: The role of new product and service portfolio advantage and success. Paper under review with journal. An earlier version of the paper was presented at the International Council of Small Business Conference 2016, New York, USA.

# 1 INTRODUCTION

## 1.1 Background

In the search for higher performance, firms have been argued to benefit from different strategic postures that enable a firm to adapt to its changing operational environment and to renew itself (Noble, Sinha, & Kumar, 2002). Such postures are commonly referred to as strategic orientations and defined “*as principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance.*” (Hakala, 2011: 200). For more than 30 years, scholars have been investigating the possible positive effects of entrepreneurial orientation (EO), a strategic posture promoting proactive behavior toward new market opportunity recognition and capture. Miller, (1983) was the first to introduce the concept of organization-level entrepreneurship referring to the disposition toward proactiveness, innovativeness, and risk taking. Since then, entrepreneurial orientation (EO) has attracted considerable attention among entrepreneurship, strategy and innovation scholars owing to its role in explaining firm performance such as innovation, internationalization, growth, and profitability (Dai, Maksimov, Gilbert, & Fernhaber, 2014; Rauch, Wiklund, Lumpkin, & Frese, 2009; Wiklund & Shepherd, 2011).

Entrepreneurial firms are considered proactive and are thus suggested to enjoy competitive advantage by arriving early in emerging markets, skimming off notable profits before the competition, and staying ahead of their competitors due to their constant desire for improvement (Lumpkin & Dess, 1996). Further, an entrepreneurial willingness to experiment and introduce extraordinary products, services, and ways of operating may enable firms to differentiate the offering, better match the target customer needs, and create new markets (Lechner & Gudmundsson, 2012). In addition, a positive attitude to ideas with uncertain outcomes, typical to entrepreneurial firms, may enable firms to engage in opportunities with high growth or profitability potential that would have been neglected by strictly risk-averse firms (Engelen, Kube, Schmidt, & Flatten, 2014).

To fully capitalize on entrepreneurial willingness to proactively seek innovative market opportunities, it is also argued firms require other resources and capabilities (Rauch et al., 2009), but similarly, resources and capabilities are suggested to be more thoroughly utilized when a firm exhibits an entrepreneurial disposition toward new opportunity recognition and capture (Wales, Parida, & Patel, 2013). Previously, entrepreneurial firms have been found to benefit from

access to additional business development resources (slack resources) (Bradley, Wiklund, & Shepherd, 2011), intangible resources (Anderson & Eshima, 2013), and learning capabilities such as absorptive capacity (Engelen et al., 2014; Patel, Kohtamäki, Parida, & Wincent, 2015). Where slack resources provide entrepreneurial firms with a pool of rapidly deployable resources for experimentation and new innovative market entries (Wiklund & Shepherd, 2005), learning capabilities facilitate more efficient new opportunity recognition, risk evaluation, and control activities (Engelen et al., 2014; Patel et al., 2015). Therefore, EO complemented with appropriate resources and capabilities is considered a potential source for long-term prosperity (Kreiser, 2011).

Whereas an entrepreneurial strategic posture is considered to improve firm performance (Wiklund & Shepherd, 2011), EO has been argued to affect firm performance particularly through its impact on innovation outcomes (Alegre & Chiva, 2013). As firm performance is initially driven by successful products and services, the long-term success of a firm is dependent on the success of its new product and service innovations (Brown & Eisenhardt, 1995). For a firm building its strategy on organic expansion, success depends on the capability to introduce new products and services that are both desired by the markets, and capable of competing against the other products and services available (Papastathopoulou & Hultink, 2012). Further, as customer requirements have shown a tendency to increase over time, and because customer needs have become more complex, firms have begun to address the total value delivered to the customer and compete with not only singular products or services but with combinations of them (Gebauer, Gustafsson, & Witell, 2011). Accordingly, the potential of an entrepreneurial posture complemented with efficient knowledge processing capabilities and appropriate business development resources to drive firm performance is ultimately determined by the ability to develop an offering portfolio with advantageous characteristics that differ from those of the firm's competitors (Cooper, 1983), delivers high value to the target customers (Sethi, Smith, & Park, 2001), and offers a superior way to meet or exceed the target customer's needs (Rijsdijk, Langerak, & Hultink, 2011). Therefore, it is important not only to promote the entrepreneurial disposition, develop knowledge processing capabilities, and ensure access to adequate business development resources, but also to understand how a firm can deploy these factors to create new products, services, and combinations of products and services that facilitate the firm obtaining a competitive advantage.

## 1.2 Research gaps

Entrepreneurial orientation is one of the most widely studied concepts in the entrepreneurship and strategy research arena and is widely used to explain firm performance (Kollmann & Stöckmann, 2014). Although EO is commonly acknowledged to have a relationship with firm performance, recently the nature of the relationship has been the subject of intense debate (Rauch et al., 2009; Wiklund & Shepherd, 2011). Despite the majority of EO research arguing for positive linear firm performance effects, recent studies have begun to challenge the alleged universally advantageous role of EO (Wiklund & Shepherd, 2011), the linearity of the EO–performance relationship (Wales, Patel, Parida, & Kreiser, 2013), and suggested a need to address the contextual, mediating, and moderating factors that might affect the relationship between EO and firm performance (Rauch et al., 2009). Accordingly, EO still presents numerous interesting opportunities for further investigation.

First, rather than being universally advantageous (Wiklund & Shepherd, 2011), EO's positive impact on innovation and performance outcomes has been argued to have multiple possible limitations (Patel et al., 2015). Where prior research mainly suggests EO has a linear relationship with firm performance (Rauch et al., 2009), recent studies offer evidence of non-linear EO effects, suggesting EO has a positive impact up to a certain point, but at very high levels of EO the effect may become detrimental (Dai et al., 2014; Wales, Patel, et al., 2013). The explanation for such effects may be that when the marginal costs of increasing EO increases more quickly than marginal benefits, the return on investment becomes negative. The nonlinearity assumption provides interesting future research opportunities through the search for the contextual and other factors that enable a firm to enjoy the benefits of EO for longer periods of time, or that accelerate the EO–performance effects to a new level (Rauch et al., 2009).

Second, although prior studies have already begun to investigate the moderating effects of different resources such as intangible (Anderson & Eshima, 2013) and slack resources (Bradley et al., 2011), and various capabilities to overcome the limitations of increased EO such as absorptive (Engelen et al., 2014; Patel et al., 2015) ICT, and network capability (Wales, Patel, et al., 2013), studies rarely test complex two-way or three-way moderations that consider multiple moderators simultaneously. Given that EO is likely to benefit from the presence of various organizational resources and capabilities (Kollmann & Stöckmann, 2014), the examination of the possible positive interaction effects of multiple variables merits further scholarly attention. Actually, the possible presence of moderators that are particularly beneficial or detrimental to the EO–performance relationship is

suggested to represent “an area where substantial theoretical and empirical contributions can be made in future research” (Rauch et al., 2009: 781).

Third, although prior studies have shown EO to interact with various resources and capabilities to drive higher performance (Anderson & Eshima, 2013; Engelen et al., 2014) and presented numerous arguments for positive interaction effects, the actual mechanisms spurring the benefits of the interplay may not be revealed by quantitative tools. Further, whereas EO is argued to be important for expansion and growth (Lumpkin & Dess, 1996) and the majority of EO studies utilize subjective performance measures capturing a firm’s overall performance (Rauch et al., 2009), EO’s impact on well-specified types of performance such as firm profitability, a central dimension of overall performance has attracted less attention. Accordingly, in-depth analysis of the actual interplay mechanisms between EO and the different resources and capabilities through which the particular type of performance driving potential of EO can be captured represents an interesting research opportunity.

Fourth, EO is argued to affect firm performance particularly through its impact on innovation outcomes (Alegre & Chiva, 2013). Prior studies have found the EO–performance relationship to be mediated by for example organizational learning (Real, Roldán, & Leal, 2014) and innovation performance (Alegre & Chiva, 2013; Kollmann & Stöckmann, 2014), and EO has been suggested to affect new product characteristics such as novelty and meaningfulness, thus offering a firm an advantage over its competitors (Hong, Song, & Yoo, 2013). Considering that competition increasingly occurs at the level of total value delivered, meaning that firms compete not with singular products or services but rather with combinations of products and services (Gebauer et al., 2011), the existing EO research would benefit from investigations into EO’s impact on the overall advantage.

Finally, although new product development scholars have devoted considerable space to investigating desired innovation process outcomes, such as the advantageous characteristics of new products (Cooper, 1983; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally, Cavusgil, & Calantone, 2010; Rijdsdijk et al., 2011), the success-driving characteristics of new services have not been equally identified or conceptualized (Biemans, Griffin, & Moenaert, 2016). In addition, a recent review of new service development research suggests that future studies on the innovation process and desired innovation outcomes should deploy integrated an approach considering both products and services simultaneously (Papastathopoulou & Hultink, 2012). Accordingly, as the existing new product and service development literatures lack measures of new product and service portfolio advantage, the development of measures addressing those characteristics of new

products and services that confer advantage, and also of the combinations of new products and services represents an interesting research gap.

### 1.3 Study objectives, research questions and contribution

The main objective of this dissertation is to answer the following primary research question: *What is the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm?*

The primary research question is addressed through four more specific research questions in each article as follows:

**Q1.** *To what extent does entrepreneurial orientation affect firm sales growth and how do absorptive capacity and slack resources affect this relationship? (Article 1)*

**Q2.** *What are the organizational micro-level mechanisms through which the interplay between entrepreneurial orientation and absorptive capacity affect firm profitability? (Article 2)*

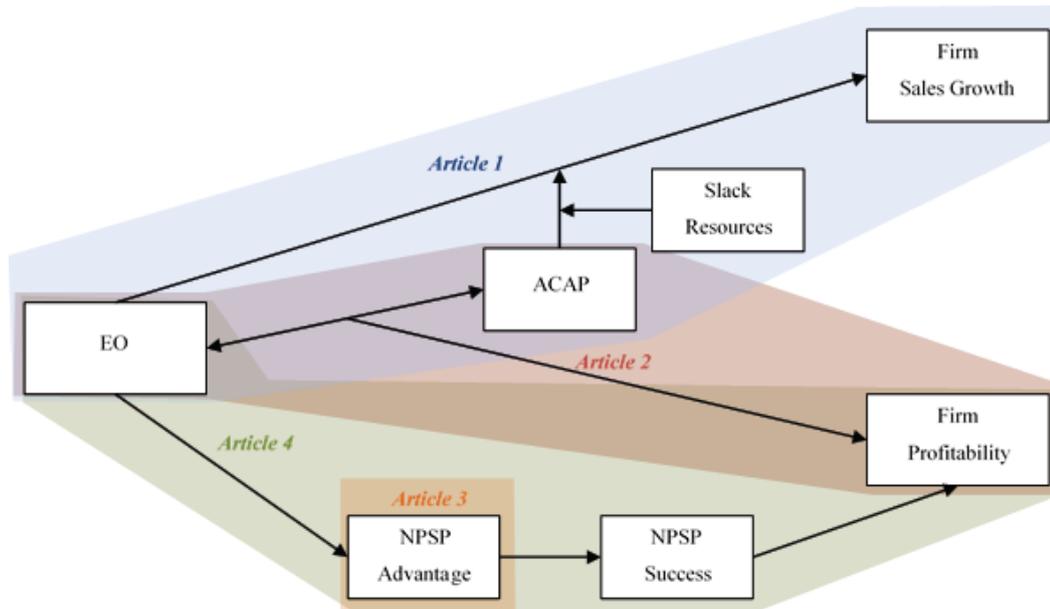
**Q3.** *How can the new product and service portfolio advantage be measured? (Article 3)*

**Q4.** *To what extent do the new product and service portfolio advantage and success mediate the relationship between entrepreneurial orientation and firm profitability? (Article 4)*

The first sub-question (*Q1*) is addressed in Article 1, which investigates and challenges the assumed linearity of the relationship between entrepreneurial orientation and firm performance, and in particular sales growth. It also investigates the possible positive moderating effects of absorptive capacity and financial slack resources on the EO–performance relationship. Accordingly, the first article contributes to the ongoing debate on the nature of the relationship between EO and firm performance (Wiklund & Shepherd, 2011) and joins the discussions on possible moderating variables that enable firms to overcome the limitations of increased EO (Rauch et al., 2009). Article 2 addresses the sub-question (*Q2*) by investigating the interplay mechanisms of increased entrepreneurial orientation and high absorptive capacity enabling a firm to enjoy above-average profitability. Although prior quantitative research has presented numerous possible reasons for the positive interaction effects between EO and

ACAP (Engelen et al., 2014; Patel et al., 2015; Sciascia, D’Oria, Bruni, & Larrañeta, 2014), but has not investigated the actual mechanisms through which the benefits of the interplay are delivered, the second article joins the discussion by providing novel in-depth knowledge on these micro-level mechanisms. The sub-question addressed in Article 3 (*Q3*) seeks to identify the composition of new product and service portfolio advantage, and the desired outcome of innovation process. The third article contributes to new product and service development literatures by developing and validating a construct to measure the desired innovation process outcome that considers both new products and services simultaneously (Biemans et al., 2016; Papastathopoulou & Hultink, 2012). By deploying the measures developed in Article 3, Article 4 addresses the sub-question of the possible mediating role of the desired innovation process outcomes, and new product and service portfolio advantage and success, in the relationship between entrepreneurial orientation and firm profitability (*Q4*). While EO is argued to affect firm performance particularly through its impact on innovation outcomes (Alegre & Chiva, 2013), and new product characteristics such as novelty and meaningfulness (Hong et al., 2013), the fourth article joins the discussion on the mediators through which EO can drive firm profitability (Rauch et al., 2009). Accordingly, the sub-questions addressed in each article serve the main objective of the dissertation: increasing the understanding of the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance.

Figure 1 illustrates the overall framework addressing the main research objective of the dissertation. Although the framework is not tested as such, it demonstrates the relationships of the concepts studied in the appended articles. The illustration is not an attempt to illustrate the whole existing body of knowledge on the relationship between entrepreneurial orientation and firm performance, but rather an attempt to illustrate the interrelation of some important concepts affecting that relationship and to show which appended articles investigate which concepts and which relations.



**Figure 1.** An integrated framework of the four studies of the dissertation

#### 1.4 Research context – Finnish food manufacturing

The dissertation is based on four studies all examining the Finnish food manufacturing industry. The studied industry is an important contributor to the Finnish economy, representing the fourth largest manufacturing industry in Finland with annual revenues of EUR 9.7 billion and around 30 000 employees (Official statistics of Finland, 2012). Given that the majority of companies are small (the average number of employees being 39) and entrepreneur led, and the industry is mature and considered a low- or medium-technology industry, food manufacturing companies are an attractive group through which to investigate the effects of entrepreneurial orientation. The context is particularly attractive as industry-wise homogeneous samples and industries that are not considered the high technology type have been suggested as an interesting context for further investigations on the EO–performance relationship as prior studies have mainly focused on high technology companies and samples drawn from multiple industries (Sciascia et al., 2014).

The Finnish food manufacturing industry is here defined as the group of companies reporting their primary industry to be food manufacturing (NACE10) that are registered in Finland. Accordingly, the studied group excludes the companies primarily producing drinks and beverages and does not include producers such as farms, or distributors or wholesalers. Therefore, the focus of the

dissertation is on the particular part of the value system where companies have their origins in the manufacture of their own food products.

The selected industry and the particular part of the value system is primarily characterized by rather heavy legal regulations, changing consumer trends, and a centralized industry structure. First, food manufacturing is tightly supervised and regulated by the Finnish Food Safety Authority (Evira). The mission of Evira is to ensure the quality and safety of food products sold in Finland by conducting research and supervising production (Heimonen & Kohtamäki, 2014). Second, consumer trends such as favoring products free from gluten, lactose, and carbohydrate, or organic food and the produce of local farms are driving the success of many businesses in the industry. In addition, the role of pets as de facto members of the family has created emerging business opportunities in the animal product and service markets.

Third, the distribution of groceries such as food products is highly centralized in Finland. After Ruokakesko Ltd, the subsidiary of Kesko Plc (K-group), bought the retail chains Siwa and Valintatalo from Suomen lähikauppa Ltd, there are now only three main operators (S-group, K-group, Lidl) responsible for 94% of the grocery business in Finland (Päivittäistavara-kauppa, 2016). As the centralized distribution channels greatly affect the profit margins and growth opportunities, food manufacturers have begun to seek other ways to reach consumers directly and introduce new service concepts to escape the trap of the centralized value system: Examples include the introduction of shop-in-shop concepts inside supermarkets, factory shops, separate sales points in farmers' markets or market halls, and online sales. In addition, new service concepts focusing on the needs of particular customer groups have been introduced: For example, an entrepreneur running a bar can buy an R-Menu Ltd all-inclusive service concept including everything from menu creation to the quick preparation and serving of a bar meal. Another example could be the *Dennis2go* concept by Dennis Pizzeria Ltd providing a concept for event organizers to market, prepare, and serve pizza slices easily, quickly, and cost efficiently at their events. Both examples demonstrate the growing trend of manufacturing companies infusing services into their offering portfolios to seek new market opportunities for growth and profitability. Adjusting the business model, that is, the means through which a firm creates and captures value, is said to increase the competitiveness of a firm (Pellikka & Malinen, 2014). Therefore, the Finnish food manufacturing industry may be seen to represent an interesting context for closing the research gaps on the EO–firm performance relationship.

## 1.5 Structure of the dissertation

The dissertation is structured in two parts. The first part includes the introductory chapter, chapters on the theoretical background, the methodology, a review of results, and its conclusions. The purpose of the first part is to provide a conceptual background on entrepreneurial orientation and other concepts studied in this dissertation and the summary of various decisions related to the appended articles. The second part consists of four dissertation articles. Articles 1 and 4 are co-authored by Heimonen and Kohtamäki. Article 2 is co-authored by Heimonen, Kohtamäki and Heikkilä. Article 3 is sole authored by Heimonen. Heimonen is the lead author in all the appended articles and has had the main responsibility for research design, data collection, analysis, and writing.

## 2 THEORETICAL BACKGROUND OF ENTREPRENEURIAL ORIENTATION

This chapter will summarize the prior research on the central aspects related to entrepreneurial orientation and EO's impact on firm performance. The chapter begins by discussing the roots of EO and how EO can be seen as a strategic orientation. Thereafter, the chapter continues by reviewing the existing research on the EO–firm performance relationship. Finally, EO is discussed in relation to other central concepts of this dissertation.

### 2.1 The origins of entrepreneurial orientation

Entrepreneurial orientation has become a central concept in the entrepreneurship and strategy literatures (Covin, Green, & Slevin, 2006) and unlike many other areas of entrepreneurship research, EO studies have been able to build a cumulative body of scientific knowledge. More than 100 studies have investigated EO, which illustrates the importance and wide acceptance of the concept (Rauch et al., 2009). Entrepreneurial orientation has its roots in entrepreneurship research (Miller, 1983) and strategic choice theory (Child, 1972). The core idea in strategic choice theory is that decisions made by individuals and groups inside an organization steer the development of the organization, rather than the constraints set by the operating environment. Entrepreneurship is seen to affect the decisions of individuals. Early research on entrepreneurship tried to define entrepreneurship through three dominant perspectives: personality factors of the leader, the structure of the organization, and strategy making. Studies investigating personality factors of the leader have approached entrepreneurship from the individual-level perspective, and treat the owner-manager as the central actor in the strategic renewal process (the aim of entrepreneurial behavior); however, renewal efforts often extend beyond one key actor. This means that entrepreneurial efforts tend to be collective, and the focus shifts from one key actor to the process through which a firm is able to recognize and capture emerging market opportunities and renew itself. Miller (1983) was the first to introduce entrepreneurship as a firm-level phenomenon in referring to the process by which a firm renews itself and the markets. Miller argues that entrepreneurial firms pursue renewal by way of pioneering, innovation, and risk taking. He suggests:

*An entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with "proactive" innovations, beating competitors to the punch. A nonentrepreneurial firm is one that innovates very little, is highly risk*

*averse, and imitates the moves of competitors instead of leading the way.  
(Miller, 1983: 771)*

Miller's conceptualization is often considered to reflect entrepreneurial decision-making styles that emphasize a willingness to seize new market opportunities, experiment with promising technologies, and a predisposition to take risks (Baker & Sinkula, 2009; Lumpkin & Dess, 1996). While EO has also been suggested as representing a disposition favoring entrepreneurial behavior rather than capturing actual realized entrepreneurial behavior (Kollmann & Stöckmann, 2014), recent studies have shown entrepreneurial intentions to predict the actualized entrepreneurial behavior (Kautonen, Van Gelderen, & Fink, 2015). Covin and Slevin (1989) operationalized entrepreneurial orientation based on Miller's conceptualization reflecting three core dimensions: proactiveness, innovativeness, and risk taking. In addition to these three most commonly deployed dimensions, autonomy and aggressiveness (Lumpkin & Dess, 1996), strategic renewal (Zahra, 1996), and assertiveness (Walter, Auer, & Ritter, 2006) have been suggested to demonstrate entrepreneurial behavior. However, the three-dimensional conceptualization and 9-item scale introduced by Covin and Slevin (1989) have been the approaches most widely adopted by entrepreneurship, strategy, and innovation scholars (Rauch et al., 2009).

Proactiveness refers to a firm's willingness to be at the forefront of identifying and capturing emerging market opportunities (Wales, Parida, et al., 2013). Anticipation of future demand is typical for proactive firms (Rauch et al., 2009). Proactive firms are active in product, service, and process development (Lumpkin & Dess, 1996). They tend to be first- or early-movers introducing unforeseen products and services before the competition (Wiklund & Shepherd, 2005). Innovativeness as the second dimension refers to a willingness to diverge from status quo, (Lumpkin & Dess, 1996) and reflects cultural openness to new ideas (Hult & Ketchen, 2001). Innovativeness is predisposition toward creativity and experimentation in the R&D activities of a firm (Rauch et al., 2009). It supports new technology adoption and the development of internal processes and procedures (Menguc & Auh, 2006). The third dimension of EO, risk taking, refers to a tendency to make investment decisions with uncertain outcomes (Lumpkin & Dess, 1996). It reflects a willingness on the part of owners or managers to commit a large portion of the firm's resources to new projects (Miller, 1983). As firms willing to take risks do not avoid taking on heavy debt in the pursuit of new opportunities with high potential returns, they are also exposed to high potential losses (Baker & Sinkula, 2009). As such, EO as a firm-level disposition toward entrepreneurial behavior represents an interesting conceptual avenue from which

to approach a firm's interaction with the external environment driving strategic renewal and possibly firm performance.

## 2.2 Entrepreneurial orientation as a strategic orientation

Strategic orientations as an organization level posture steer the activities executed in the organization. Orientations “*are seen as principles that direct and influence the activities of a firm and generate the behaviours intended to ensure its viability and performance.*” (Hakala, 2011: 200). Accordingly, an orientation may represent an adaptive mechanism affecting the interaction with the environment (Noble et al., 2002). Even though orientations may be seen to represent organizations' adaptive cultures, rather than equating to their culture, the strategic orientation can manifest in a company culture (Braunscheidel & Suresh, 2009). In addition to entrepreneurial orientation, the marketing, management, entrepreneurship, and innovation literatures have investigated the performance driving effects of other orientations such as a market orientation (Kirca, Jayachandran, & Bearden, 2005), technology orientation (Salavou, 2005), and a learning orientation (Baker & Sinkula, 1999). In addition, prior studies have operationalized other related concepts such as customer orientation, competitor orientation, marketing orientation, product orientation, and innovation orientation that in many cases are measured as part of market or technology orientations (Hakala, 2011).

Market orientation refers to generation and dissemination of market intelligence and responsiveness to market intelligence (Jaworski & Kohli, 1993). Technology orientation is seen as an aspiration to introduce and utilize new technologies, new products and innovations (Gatignon & Xuereb, 1997). Learning orientation refers to the tendency of creating and using knowledge (Sinkula, Baker, & Noordewier, 1997). Although market orientation concentrates on customer and competitor knowledge, technology orientation approach the customer value creation from a company's internal point of view. Learning orientation is more general reflection of open mindedness and commitment to learn. As EO represents a disposition toward proactive new opportunity recognition, a willingness to innovate, and a tendency to pursue opportunities with uncertain outcomes, despite sharing some similar aspirations with other orientations, EO aims to capture the inclination toward behavior typical of entrepreneurial firms, and it therefore represents a distinct domain (Slater & Narver, 1995). Accordingly, orientations are not exclusive but complementary and by balancing multiple orientations simultaneously can facilitate the creation of an advanced company culture that positively influences firm performance (Grinstein, 2008). For example, EO has

been found to affect firm performance in conjunction with market orientation (Zahra, 2008) and through learning orientation (Wang, 2008). The next chapter will discuss the EO–firm performance relationship and the moderating and mediating role of other organizational phenomena in greater detail.

### 2.3 Research on entrepreneurial orientation and firm performance

This chapter will review the key areas of prior research on the EO–performance relationship. Prior studies have mainly acknowledged the positive impact of EO on firm performance (Zahra & Covin, 1995) and suggested that the performance effects of EO tend to be long lasting, and perhaps even sustainable (Wiklund, 1999). However, some studies fail to provide empirical support for the positive relationship (Smart & Conant, 1994), and prior studies have argued EO to be more beneficial in different phases of industry (Lumpkin & Dess, 2001) and firm lifecycles (Anderson & Eshima, 2013). Similarly, EO is suggested to be particularly beneficial for firms operating in highly dynamic competitive environments (Covin & Slevin, 1989). Further, some scholars have raised the issue that different dimensions of EO may vary in terms of their performance effects (Dai et al., 2014; Kollmann & Stöckmann, 2014). Recently, studies have begun to emphasize these possible limitations of EO (Patel et al., 2015; Wiklund & Shepherd, 2011) and instead of treating EO as an universally advantageous strategic posture, EO has been suggested to increase the variability of business outcomes. For example, Wiklund and Shepherd (2011) argue that the majority of prior EO research treats EO as an advantage but there may be another approach, one viewing EO as experimentation. The latter approach suggests EO may actually be associated with greater outcome variance, thus increasing the probability of both failure and success. Studies finding EO to be advantageous may be affected by survival bias, meaning that the samples used to test the EO–performance hypotheses do not include companies that have already gone bankrupt. While entrepreneurial proactiveness, innovativeness, and risk taking at very high levels may lead to more opportunities, a willingness to experiment and engage in risky endeavors may not necessarily lead to stronger performance. In distinguishing between these two views, Wiklund and Shepherd argue that it is possible to gain a deeper understanding of the underlying mechanisms affecting the business outcomes.

A recent meta-analysis by Rauch et al. (2009) suggests that the limitations and recognized complexity of the EO–performance relationship means that EO research would benefit from investigations into the circumstances under which EO is particularly beneficial or detrimental. Accordingly, the most recent research has

focused on three particular domains: 1) the linearity, 2) moderators, and 3) mediators. In addition, as different types of performance can vary based on the performance drivers, increased accuracy in defining performance has become one of the main issues. Therefore, the next sub-chapters will discuss the linearity assumption of the EO–performance relationship, the moderators and mediators affecting the relationship, and finally EO’s effects on different types of performance.

### 2.3.1 The non-linear relationship between entrepreneurial orientation and firm performance

One possible explanation for the mixed findings on the EO–performance relationship may be that although a majority of studies anticipate a linear relationship between EO and performance, recent studies have begun to argue for possible non-linear EO–performance effects (Dai et al., 2014; Wales, Patel, et al., 2013; Zhao, Li, Lee, & Chen, 2011). For example Wales, Patel, et al. (2013) found that EO has a curvilinear inverted U-shaped relationship with sales growth, profit growth, and return on assets (ROA) growth. Similarly, Zhao, Li, Lee, and Chen (2011) found that EO has a curvilinear relationship with acquisitive learning. These findings are also supported by the findings of Dai et al. (2014) that different dimensions of EO have a non-linear relationship with the internationalization of a firm. Such a non-linear relationship might be explained by firms making extensive investments in entrepreneurial activities that ultimately outweigh the benefits they accrue. This means that marginal benefits tend to decrease at very high levels of EO and may even become negative. Higher levels of EO increase the opportunities for new market entry identified (Lumpkin & Dess, 1996) and the eagerness to pursue those opportunities (Wiklund & Shepherd, 2003). Further, entrepreneurial firms do not avoid risks related to highly innovative new market entries with uncertain outcomes. However, as firm resources tend to be limited, the experimental pursuit of all opportunities can lead a firm to overconsume available resources, and thus diminish its performance (Wiklund & Shepherd, 2011).

The above studies suggest that researchers should also test for possible non-linear effects, not only to investigate whether there is a relationship between EO and performance or other performance driving phenomena, but also to ensure that the relationship is interpreted correctly, meaning if a statistically significant curvilinear relationship is found and it shares a greater amount of variance with a dependent variable (e.g., performance), the analysis should be performed by treating the relationship as having been found. Therefore, the findings of prior studies suggest that in some contexts or under particular circumstances, EO may

exhibit a linear or non-linear relationship with different types of firm performance, and therefore the linearity assumption should be tested.

### 2.3.2 The interaction effects of firm resources and capabilities on the relationship between entrepreneurial orientation and firm performance

As EO represents a disposition toward entrepreneurial behavior possibly increasing variation in performance outcomes (Wiklund & Shepherd, 2011), research suggests the positive outcomes flowing from EO can be bolstered by the presence of various resources and capabilities, which can also help control the risks related to entrepreneurial initiatives (Rauch et al., 2009). Although different dimensions of EO are suggested to produce differing performance effects (Lechner & Gudmundsson, 2012), various resources and capabilities may facilitate different forms of entrepreneurial behavior. Given that the primary goal of entrepreneurial firms is the effective utilization of their resources for new market opportunity recognition and capture (Wales, Patel, et al., 2013), prior studies have investigated how different resources such as knowledge-based resources (Anderson & Eshima, 2013; Wiklund & Shepherd, 2003), and financial resources (Wiklund & Shepherd, 2005) interact with EO and together drive performance. Knowledge-based resources enable entrepreneurial firms to more accurately evaluate the nature and commercial potential of changes in the business environment (Cohen & Levinthal, 1990). Slack resources—referring to quickly deployable resources, such as financial resources, for experimentation (see the more detailed discussion in section 2.4.1)—provide a pool of resources enabling firms to engage in entrepreneurial behavior (George, 2005). Further, interaction with organizational capabilities has been found to affect the EO–performance relationship. Certain capabilities, such as ICT capability and network capability, enable entrepreneurial firms to orchestrate their resources (Wales, Patel, et al., 2013) and others like absorptive capacity can benefit knowledge processing (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014).

In addition to resources and capabilities, external factors have been found to interact with EO to catalyze higher performance. For example, the EO–performance relationship is also affected by the characteristics of the business environment, such as market dynamism (Boso, Cadogan, & Story, 2012; Wiklund & Shepherd, 2005) and market turbulence (Engelen et al., 2014). Further, national cultural and economical contexts have been found to moderate the relationship (Saeed, Yousafzai, & Engelen, 2014). Similarly, a firm’s position in its inter-organizational network can affect the EO–learning relationship (Kreiser, 2011), firm performance (Boso, Story, & Cadogan, 2013), and new venture performance

(Stam & Elfring, 2008). Accordingly, it appears evident that the EO–performance relationship may be affected by various resources, capabilities, and environmental factors.

### 2.3.3 The indirect relationship between entrepreneurial orientation and firm performance

Although the performance driving potential of EO has been found to benefit from various resources and capabilities, it has also been found to have a positive impact on firm performance, particularly through various learning processes and capabilities. EO has been found to positively affect firm performance through knowledge creation processes (Li, Huang, & Tsai, 2009), intellectual property management capability (Hong et al., 2013), experimental and acquisitive learning (Zhao et al., 2011), learning orientation (Wang, 2008), organizational learning capability (Alegre & Chiva, 2013), and learning from both domestic and international markets (Sapienza, De Clercq, & Sandberg, 2005). EO's positive impact on learning is suggested not to be limited to the organizational level, but to affect individual and group level learning as well (Brettel & Rottenberger, 2013). Although EO inherently endorses learning and innovativeness, it appears to affect firm performance particularly through innovation performance (Alegre & Chiva, 2013). The next chapter will discuss EO's impact on innovation and innovation performance in more detail.

### 2.3.4 Entrepreneurial orientation and innovation performance

Prior research has found EO to directly and positively affect innovation performance (Alegre & Chiva, 2013), both exploitative and exploratory innovations (Kollmann & Stöckmann, 2014), export product innovation success (Boso et al., 2012), new product characteristics and success (Hong et al., 2013), and new product speed to market (Clausen & Korneliusen, 2012). In addition, as entrepreneurial orientation has been found to affect firm performance through its impact on organizational learning (Real et al., 2014), learning orientation (Wang, 2008), learning capabilities (Zhao et al., 2011), and product development capabilities (Lisboa, Skarmeas, & Lages, 2011), EO plays an important role in creating innovations, which are defined as “a novel creation that produces value” (Nagji & Tuff, 2012: 68). Novelty refers to the uniqueness of the creation and thus its difference to the existing creations. A creation can be novel by being new to the company, new to the market, or new to the world (Sethi, Iqbal, & Sethi, 2012). A novel creation can relate to products, services, technologies, processes, or even entire business models (Bucherer, Eisert, & Gassmann, 2012). It can produce value

to the customers, the focal company, or stakeholders who are important to the focal company. Further, innovations can be classified based on their capability to change the world. For example, an innovation can be incremental, meaning it makes rather little difference to the existing creations, or it can be radical meaning it sparks huge or even disruptive change (Story, Hart, & O'Malley, 2009). Innovations can also be exploitative or exploratory in nature. Whereas exploitative innovations respond to refinement, efficiency, and execution, and tend to be incremental in nature (Gupta, Smith, Shalley, & Smith, 2006), exploratory innovations respond to experimentation, variation, discovery, and the search for unconventional ideas the company or the markets have not yet seen (March, 1991). From a resource perspective, exploitation refers to a tendency to utilize the existing resources to spur higher efficiency whereas exploration refers to a tendency to seek to create novel resource bundles for to create extraordinary value (Lumpkin & Dess, 2001).

Alegre and Chiva (2013) found EO to have a positive impact on innovation performance reflecting product innovation effectiveness, process innovation effectiveness, and innovation efficiency. To capture product innovation effectiveness, the above-mentioned study measured to what extent a firm has been able to extend the product range, introduce new product categories, and expand to new domestic and export markets. It also measured process effectiveness through firms' ability to reduce production costs. As the third measure, the same study used innovation efficiency, indicating the amount of resources used to execute innovation projects. The results suggest EO has a positive impact on all three areas of innovation performance. Similarly, a recent study by Kollmann and Stöckmann (2014) suggests that EO can affect exploratory innovations by introducing creative ways to satisfy emerging customer and market needs. In addition, the study argues that EO may facilitate exploitative innovations by responding to market needs through advancing processes and technologies. In general, entrepreneurial proactiveness, innovativeness and risk taking have been suggested to affect innovation creation in multiple ways. First, entrepreneurial proactiveness have been suggested to increase the alertness to new market opportunities (Wales, Parida, et al., 2013) and the number of opportunities addressed (Engelen et al., 2014). As recognized opportunities feed ideas into the innovation process, EO can facilitate innovation. Second, EO emphasizes innovativeness and as "innovativeness is universally perceived as exploring something new that not existed before" (Cho & Pucik, 2005: 556), EO represents a favorable disposition toward experimentation and decreases the resistance to unconventional ideas inside the organization. Third, entrepreneurial firms tend to engage in ideas and opportunities with uncertain outcomes (Miller, 1983). As innovations require investments to be made in advance of financial returns, a willingness to take risks

enables firms to experiment. The more extraordinary and risky the idea, the more entrepreneurial risk taking tends to be required (Lumpkin & Dess, 1996). Accordingly, the existing research on EO appears unanimous in acknowledging EO's impact on innovation and innovation performance.

### 2.3.5 Entrepreneurial orientation and sales-growth performance

Prior studies have found both a direct linear (Covin et al., 2006) and non-linear (Wales, Patel, et al., 2013) relationship between EO and sales growth. High-EO firms have also been found to benefit from capabilities such as ACAP in the search for higher sales-growth performance (Patel et al., 2015; Wales, Patel, et al., 2013). EO is considered a particularly important strategic posture for firms aiming for growth through new market entries (Wiklund & Shepherd, 2011). EO allows a firm to capture early signals from its external environment increasing the number of opportunities identified (Lumpkin & Dess, 1996). A broader pool of new market entry opportunities may secure the strategic positioning of a firm when pursuing growth (Ireland, Covin, & Kuratko, 2009). The risk of not being early or the first mover is that high-growth-potential opportunities are not identified, and being too slow to address an opportunity can mean the opportunity disappears or loses its attraction (Covin et al., 2006). Further, firms that are willing to experiment renew their practices and deploy unconventional ideas to create novel products and services. They are therefore more likely to introduce more radical ideas that have the potential to disrupt entire markets or create completely new ones (Lumpkin & Dess, 1996). As radical innovations are considered a source of faster growth, high levels of EO can facilitate strong sales-growth performance (Troilo, De Luca, & Atuahene-Gima, 2014). In contrast, firms with a low level of innovativeness are likely to pursue opportunities providing only incremental improvements to products and processes and may be determined to imitate the competitors (Zhao et al., 2011). Given that innovation efforts tend to generate costs before returns, firms benefit from an entrepreneurial ability to take risks with high-growth opportunities. The more innovative the idea, the greater the business risk tends to be, usually because customers find it difficult to comprehend the value of new creation and the financial risk, meaning that executing the idea requires heavy ex ante investments (Lumpkin & Dess, 2001). Risk-averse firms with low levels of EO might therefore easily neglect such high-growth opportunities (Neck & Manz, 1996).

However, as EO increases experimentation, it also increases the probability of failure (Wiklund & Shepherd, 2011). Prior studies have found that entrepreneurial firms can control the unwanted outcomes of high EO (Patel et al., 2015), foster

EO's impact on firm sales growth (Engelen et al., 2014), and maintain the positive growth effect of EO for longer (Wales, Patel, et al., 2013) by deploying complementary capabilities such as absorptive capacity, network capability, and ICT capability. Therefore, by taking into consideration the limitations of very high levels of EO in particular, entrepreneurial proactiveness, innovativeness, and risk taking can be anticipated to have a positive impact on sales growth.

### 2.3.6 Entrepreneurial orientation and profitability performance

Some studies have presented evidence on EO's direct impact on profit growth, even while acknowledging that the impact can diminish in the presence of very high levels of EO (Wales, Parida, et al., 2013). It is argued that proactive firms that are early to market may be able to enjoy higher profit margins by avoiding competition and developing a competitive edge over the follower type of firm (Lumpkin & Dess, 2001). Similarly, prior research suggests the innovativeness typical of entrepreneurial firms affects differentiation, and that customers tend to be less price sensitive with differentiated products (Boulding, Lee, & Staelin, 1994). Moreover, differentiated products have been argued to positively influence customer purchasing behavior (Song & Parry, 1997).

Despite the fact that a majority of EO–performance studies utilizing subjective firm performance measures have presented evidence of a direct EO–performance relationship, the relationship with profitability may be more complex (Rauch et al., 2009). Because entrepreneurial firms pursuing risky ventures with a high level of committed financial resources are exposed to the risk of significant financial losses, in the case of failure, EO can negatively affect firm profitability. Further, a proactive stance to seeking and capturing new market opportunities, and a willingness to experiment with new products, services and technologies generate immediate costs, and the return on investments made in entrepreneurial endeavors eventually determine the financial success. Therefore, it is suggested that the effects of EO capable of driving profitability may manifest indirectly through EO's impact on the innovation process, and particularly through innovation success (Baker & Sinkula, 2009). Although EO is linked to an enhanced alertness to new market opportunities that increases the number of opportunities identified in general (Wales, Parida, et al., 2013), it also increases the probability of finding more opportunities of higher quality (Engelen et al., 2014). EO is also suggested to enable firms to develop new products, and so enjoy an advantage over their competitors that drives new product success (Hong et al., 2013). Accordingly, when EO is channeled to drive innovation success, a firm may experience stronger profitability performance. Finally, aligned with the findings of studies

investigating the EO–sales growth performance relationship (Patel et al., 2015), entrepreneurial firms benefit from complementary capabilities when searching for highly profitable market opportunities (Wales, Parida, et al., 2013). Appropriate organizational capabilities can enable firms to, if not overcome the limitations of EO completely, to stretch the performance driving potential of EO. Therefore, EO possesses the potential to positively affect profitability.

## 2.4 Entrepreneurial orientation in relation to the other concepts in this study

In this chapter, EO is discussed in relation to the other central concepts of the dissertation. Article 1 investigates the concept of slack resources as a moderator in the relationship between EO and sales growth. In both Articles 1 and 2, the interaction and interplay effects of absorptive capacity and EO are recognized as drivers of sales growth and profitability. Article 3 develops the concept of NPSP advantage and Article 4 investigates the role of NPSP advantage and success in the EO–firm profitability relationship. Therefore, slack resources, absorptive capacity and NPSP advantage are defined and briefly discussed in relation to EO in the following sections.

### 2.4.1 Slack resources

Slack resources are defined as “potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals” (George, 2005: 661). Slack resources can vary in type, but might for example refer to additional available financial resources or human resources (Vanacker, Collewaert, & Paeleman, 2013). For example, financial slack, gained through investments in equity or prior profits (Kim, Kim, & Lee, 2008), enables a firm to engage in opportunities in advance of seeing returns on investment. Slack in human resources refers to people not necessarily required to run daily operations (Mellahi & Wilkinson, 2010). As such, slack resources represent an important enabler for experimentation, innovation, and business development that can facilitate growth and profitability (Wiklund & Shepherd, 2005).

Recently, studies have begun to investigate exactly where and how slack resources can affect firm performance (Vanacker et al., 2013). It is suggested that slack resources alone are not likely to drive firm performance (Sirmon, Hitt, & Ireland, 2007). Instead performance enhancement requires an appropriate strategic posture, such as EO, to steer the utilization of available business development resources to improve business performance. EO increases the alertness to new

market opportunities (Wales, Parida, et al., 2013) and raises the number of opportunities encountered (Engelen et al., 2014). EO therefore positively affects the possibility to utilize slack resources for expansion and renewal. Similarly, managers' ability to be sensitive to changes in the business environment is found to affect the allocation of slack resources to entrepreneurial actions (Simsek, Veiga, & Lubatkin, 2007). Further, as a strategic posture, EO facilitates the creation of valuable resource bundles addressing the market opportunities identified (Wiklund & Shepherd, 2003). Firms with high EO levels tend to seek the highest return from the resources available to them (Stevenson & Gumpert, 1985; Wales, Parida, et al., 2013). Moreover, as innovative new market opportunities identified through proactive behavior are likely to require ex ante investments, slack resources represent a necessary pool of resources for capturing the value potential of the opportunity (Wiklund & Shepherd, 2005). Therefore, although slack resources facilitate the engagement in entrepreneurial activities, EO provides the means to effectively capture the value potential of available resources.

Finally, entrepreneurial firms are commonly characterized as being hampered by scarce resources (Vanacker et al., 2013), which limits the number and characteristics of the opportunities they can pursue; however, the resources available to entrepreneurial firms vary significantly (Shane & Stuart, 2002). Furthermore, few firms optimize the deployment of their resources, meaning there is usually some slack available (Bradley et al., 2011). Accordingly, scholars have addressed the need to investigate which additional organizational characteristics or capabilities can facilitate the selection and success of entrepreneurial endeavors ultimately determining the business performance (Rauch et al., 2009).

#### 2.4.2 Absorptive capacity

Absorptive capacity, a capability facilitating the adoption of changes in the business environment through efficient external knowledge acquisition and utilization (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997), has its roots in organizational learning literature (Cohen & Levinthal, 1990). As such, ACAP is suggested to facilitate innovation and the creation of competitive advantage (Jansen, Van Den Bosch, & Volberda, 2005). In general, capabilities that are dynamic are suggested to enable a firm to command above industry average rents, which boosts firm performance (Barney, 1991). More specifically, high ACAP has been found to have a positive impact on innovation and firm performance, particularly when a firm is at the center of its organization network (Tsai, 2001). Similarly, firms with international ventures have been found to benefit from high ACAP and to enjoy faster growth and higher profitability (Zahra

& Hayton, 2008). Although ACAP is a capability reflecting advanced knowledge acquisition and utilization processes, firms are argued to benefit from an appropriate organizational posture, such as EO, and prior studies have found ACAP and EO to have positive interaction effects on firm performance such as sales growth, profit growth, and ROA growth (Wales, Parida, et al., 2013).

Cohen and Leventhal (1990) introduced the concept of ACAP, referring to the ability to recognize the value of external knowledge, to assimilate it, and to apply it commercially. Scholars have since suggested their own conceptualizations of absorptive capacity. For example Van den Bosch, Volberda, and de Boer (1999) conceptualized ACAP as the evaluation, acquisition, integration, and commercial utilization of knowledge. Despite the lively discussion on defining and outlining the concept (Andersén & Kask, 2012; Camisón & Forés, 2010; Flatten, Engelen, Zahra, & Brettel, 2011; Lane, Koka, & Pathak, 2006; Todorova & Durisin, 2007), the most commonly deployed conceptualization of ACAP refers to knowledge acquisition, assimilation, transformation, and exploitation (Zahra & George, 2002). That last reconceptualization divides the concept into two subsets, potential and realized ACAP. Zahra and George suggest the first two dimensions, —acquisition and assimilation—capture the strategic processes through which a firm exposes itself to external knowledge comprising potential ACAP, whereas the latter two dimensions—transformation and exploitation—reflect the practices and processes enabling the firm to realize the potential value of the external knowledge.

Knowledge acquisition facilitates the identification and capture of external knowledge that is potentially valuable to the organization. Acquisition activities affect the speed and efficiency in capturing emerging market opportunities (Todorova & Durisin, 2007). The role of acquisition is to provide those last activities of ACAP, and it thus affects firm performance through other dimensions (Lane, Salk, & Lyles, 2001). Knowledge assimilation is an ability to interpret, understand, and internalize knowledge acquired through acquisition activities (Engelen et al., 2014). Assimilation is embedded in the interaction between individuals; where opinions, beliefs, and experiences are discussed and challenged (Zollo & Winter, 2002). Similarly, to knowledge acquisition, assimilation serves the latter dimensions of ACAP by integrating new acquired knowledge with the existing knowledge base. Transformation refers to activities changing the characteristics of acquired and assimilated knowledge that enable firms to transform new knowledge into valuable insights (Jansen et al., 2005). Transformed knowledge enables a firm to recognize new market opportunities, reposition the firm in the competitive landscape, and develop or refine organizational routines to deliver stronger performance (Zahra & George, 2002). Transformation enables firms to create applications that can be commercialized.

Finally, exploitation reflects organizational routines that serve a firm in the application of the transformed knowledge into operations (Cohen & Levinthal, 1990). Systematic exploitation activities can lead to new goods, processes, systems, knowledge and organizational forms (Spender, 1996). Accordingly, in helping to realize the benefits of acquired, assimilated, and transformed knowledge, exploitation plays the central role. Therefore, entrepreneurial firms are likely to benefit from absorptive capacity.

#### 2.4.3 New product and service portfolio advantage

The NPSP advantage concept introduced and developed in Article 3 builds on prior new product development literature and the concept of new product advantage. Although the prior NPD research identified and investigated the role of the advantageous characteristics of new products in achieving stronger new product performance (Cooper, 1983; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011), the advantageous characteristics of new services have not been similarly identified nor conceptualized (Biemans et al., 2016). However, due to the universal nature of advantageous characteristics utilized by NPD research, it is argued that the same characteristics apply to new services as well (Cooper & de Brentani, 1991). Further, it has recently been suggested that scholars investigating the innovation process and desired innovation process outcomes should consider both products and services simultaneously (Papastathopoulou & Hultink, 2012). Therefore, prior NPD and NSD research benefit from conceptualizing and developing measures to capture NPSP advantage.

NPD studies define advantage as “the extent to which a new product offers unique benefits and to which it is superior to competing products” (Rijdsdijk et al., 2011, 35). The definition relates to three distinct advantage constituting characteristics: novelty (unique), meaningfulness (benefits), and superiority (superior). Novelty refers to the extent to which the new products and services are unique in comparison to competing products and services (Cooper, 1983). Meaningfulness indicates the degree to which the new products and services are perceived to be useful and valuable by target customers (Hong et al., 2013). Superiority measures the extent to which new products and services outperform the competing products and services in terms of delivering value (Rijdsdijk et al., 2011). Although the characteristics of singular products and services aggregate to the portfolio level affecting NPSP advantage, NPSP advantage can be also gained through novel combinations of products and services and relevant complementary products and

services that can enable a firm to differentiate itself from its competitors and increase the level of total value.

Although EO has been found to represent a disposition positively affecting innovation process outcomes (Alegre & Chiva, 2013; Kollmann & Stöckmann, 2014), NPSP advantage may be considered the desired outcome of the innovation process. Therefore, the relationship between EO and NPSP advantage represents an interesting avenue to initially investigate the antecedents of advantageous characteristics of new product and service portfolio, and then the possible mediating role of NPSP advantage on the EO–performance relationship.

### 3 METHODOLOGY

The following chapter describes the research methodology applied in this study. The chapter begins with an explanation of the scientific premises and continues with a description of the research design, data collection process, measurement details, analysis methods, and quality assessment.

#### 3.1 Scientific premises

When studying organizations, a researcher approaches the subject through implicit or explicit assumptions about the world and how to get to know the world (Burrell & Morgan, 1979). According to Burrell and Morgan, these philosophical assumptions can be categorized into four subsets: *ontology*, *epistemology*, *human nature*, and *methodology*, and are commonly approached through a subjectivist or objectivist perspective, or from somewhere between those two perspectives. *Ontological* assumptions refer to the existence of phenomena without an individual's consciousness of them, and answer the question: is the reality given in the world (objectivist) or is it a product of a mind (subjectivist). *Epistemological* assumptions consider whether knowledge can be acquired (objectivist) or if it is something that must be experienced (subjectivist). Assumptions on human nature refer to a view of whether humans and their experiences are products of their environment (objectivist) or if the experienced environment is a creation of a human mind (subjectivist). Finally, methodological assumptions refer to the means through which a researcher attempts to obtain knowledge on the research subject. The first three sets of underlying philosophical assumptions directly affect the *methodological* assumptions outlining the appropriate options to acquire the knowledge.

The philosophical assumptions of this dissertation build on a rather objectivist perspective. The *ontology* of this study relies on the assumption that the world and the phenomenon under investigation, such as entrepreneurial orientation, exists beyond the consciousness of an individual. Accordingly, similarly to the majority of EO studies accepting that the reality exists prior to consciousness of the informants of the study, this study can be considered to emphasize *realism*. The opposite *ontological* assumption, often termed the nominalist position, would be that the world would not have any structures or *hard* objects if it were not for the intervention of human consciousness, and approaching EO through this position, EO would be created in the minds of survey informants. As this study considers reality to exist beyond the consciousness of individuals, the *epistemological* assumptions build on the view that knowledge can be externalized and obtained

with appropriate methods without necessarily interpreting the experiences of individuals. However, in this study, the experiences and observations of individuals that are collected via survey questionnaires and personal interviews are utilized to externalize and capture knowledge on the status of the objective reality. Although acknowledging that individual perceptions of the surrounding environment may vary, this study views *human nature* in such a way that an individual's experienced reality is heavily influenced by the environment, and thus in most circumstances reflects the objective reality. In other words, in this dissertation the perceptions of the informants are considered true or very close to true.

The set of basic beliefs reflecting these philosophical assumptions are referred as paradigms. Modern science acknowledges four, to some extent competing, paradigms that guide knowledge inquiry: *positivism*, *post positivism*, *critical theory*, and *constructivism* (Guba & Lincoln, 1994). As the appended papers investigate *how things really are and work*, and are searching for regularities and causal relationships between constituent elements, the philosophical assumptions underlying this study may be considered to correspond most closely to the *positivist* paradigm (Burrell & Morgan, 1979). Similarly to the vast majority of prior EO studies (Rauch et al., 2009), three of the appended papers (Articles 1, 3, and 4) are searching for the truth through hypothesis testing by investigating the shared covariance. These articles seek to explain the relationship between EO and sales growth, profitability, and innovation performance. In addition, Article 2 utilizes quantitative data in identifying high-performing companies but the actual knowledge on which the findings of the paper are based derives from interpretations of personal interviews. The approach is selected to address the second sub-question (Q2) requiring human interpretation of the mechanisms through which two theoretical concepts (EO and ACAP) interplay to prompt higher performance. As the aim of this paper is to identify the actual interplay mechanisms, not to investigate the causalities between concepts. In Article 2, interviewees' descriptions of the processes, practices, and routines deployed by their organizations are used as a data source, which is thereafter interpreted by the researchers. The applied qualitative case study approach here facilitates the ability to understand the reality of the organizations with these particular characteristics (moderate EO, high ACAP, and high profitability) and reflect the informants' descriptions against the selected theoretical framework; as Hatch and Cunliffe (2006: 8) put it: "*Concepts as empty baskets to be filled with experience.*"

Although the second article may be considered to lean toward *constructivism* by acknowledging that knowledge is extracted in an interaction between investigator and respondents (Guba & Lincoln, 1994), diminishing the human influence on the

results has been the top priority. By utilizing different methods to increase the objectivity of the findings and the transparency of the research process (see the next chapters for a detailed description), the second article also assumes the researcher and the research object are independent entities that do not influence each other in a way that compromises the truth. In conclusion, all the appended articles aim to meet what is often a primary goal of researchers with positivist beliefs, that is, to provide findings that are both replicable and true in similar contextual settings (see also Table 1, the summary of methodological choices in chapter 3.7).

From a scientific reasoning perspective, the researcher has three possible options (Perry, 1998). *Deduction* as the first option builds on former theories and aspires to create testable hypotheses. The second option is *induction*, where an empirical phenomenon is the starting point and theory is built on the findings. Both *deduction* and *induction* in their purest forms have their limitations: The purest form of deduction hinders theory development through empirical findings, and the pure form of induction prevents the researcher from benefiting from prior theories (Perry, 1998). *Abduction* is the third choice of reasoning and refers to the continuous interplay between theory and empirical findings. Articles 1, 3 and 4 of the dissertation follow *deductive* reasoning in general by building on the existing theories and testing hypotheses. In Article 2, the reasoning may be considered to lean toward *abduction*, because the dialogue between the predefined theoretical concepts and the empirical findings is built on each aspect to extend the theory.

## 3.2 Research design

The research design of this dissertation is based on four articles directly linked to each other through the main objective, “*what is the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm.*” As prior studies have suggested that variation in industry characteristics can explain up to one fifth of the overall performance variation (Powell, 1996), and studies utilizing samples from multiple industries have produced mixed EO–performance results (Wiklund & Shepherd, 2011), building a research project on a single industry sample was identified as an attractive opportunity contribute to the existing EO research. In 2013, TEKES (the Finnish Funding Agency for Innovation) opted to fund a research project suggested by the University of Vaasa aiming to investigate the success drivers behind the high-performing companies in the food manufacturing industry. Food manufacturing is the fourth largest manufacturing industry in Finland, and is therefore a mainstay of the Finnish

economy, but it is arguably even more important to the region of Ostrobothnia, where Vaasa is located.

Owing to the public availability of the financial information of its private limited companies, Finland represents an attractive research context. By analyzing the product portfolios and operations of high-performing firms based on publicly-available information, the authors identified possible performance drivers in the industry. One of the notions was that many of the high-performing companies were proactively engaging the business opportunities presented by the changing trends in consumer preferences and buying behavior. It appeared obvious that successful firms are somehow more responsive to the changes in the surrounding business environment. To confirm the selection of the central concepts, the authors found that prior studies on firm-level proactive behavior and external knowledge absorption had found EO and ACAP to represent a beneficial organizational mindset and capabilities that drive the adoption of changes in the business environment and firm performance (Engelen et al., 2014; Wales, Patel, et al., 2013). Those concepts had however rarely been investigated in low and medium technology industries (Sciascia et al., 2014) and there was a need for further investigations into additional mediators and moderators (Rauch et al., 2009). For the above reasons especially, the single industry focus utilizing data on Finnish food manufacturing companies offers a productive research avenue through which to study EO and ACAP.

The research gaps identified from prior EO and ACAP literature indicated that although some of the gaps could be closed through hypothesis testing with quantitative research approach, some require a more detailed approach and qualitative data. For example, recent EO studies have challenged the assumed linearity of EO–performance effects (Dai et al., 2014; Wales, Patel, et al., 2013) and invited further investigations into the circumstances under which EO is particularly beneficial or detrimental (Rauch et al., 2009), an inquiry that would require quantitative data. However, at the same time all of the studies investigating interaction between EO and ACAP (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014; Wales, Parida, et al., 2013; Wales, Patel, et al., 2013) utilize quantitative data, and therefore offer no in-depth knowledge on the actual interplay mechanisms between these concepts, a situation that also suggests the need for a qualitative research approach. Therefore, the authors decided to collect both primary quantitative and primary qualitative data.

Another point the researcher noticed from the product portfolio and operations analysis was that some of the high performers were not selling products alone, but similarly to companies in many other manufacturing industries, had started

providing services and product- service combinations. Searching for possible measures for product and service portfolio characteristics and success to include the dissertation articles' quantitative data collection revealed that prior research had studied new product characteristics, advantage and success (Cooper, 1983; Cooper & Kleinschmidt, 1987; Rijdsdijk et al., 2011), but no measures existed to capture the characteristics of new products and services simultaneously. Actually, a call for a transparent distinction between advantageous new product characteristics (Im & Workman, 2004; Rijdsdijk et al., 2011; Szymanski, Kroff, & Troy, 2007), and the means to approach the innovation process considering both products and services was identified (Biemans et al., 2016; Papastathopoulou & Hultink, 2012). Accordingly, before the actual data collection the author of this dissertation studied prior new product development literature on new product characteristics, advantage, and success and conceptualized and built a scale that captures the advantageous characteristics of new products and services simultaneously through a new product and service portfolio advantage measure.

In autumn 2013, the author was involved in developing an online survey questionnaire including the measures used to test research models reported in the appended articles. The sampling for data collection was outlined to Finnish food manufacturing companies (NACE10) employing more than five employees according to the suggestions contained in prior studies (Siren, 2014) on the grounds that to capture an organizational learning related firm-level phenomenon such as ACAP, very small companies should be excluded from the sample. In addition, the authors decided to focus on private limited companies employing fewer than 500 people, small and medium-sized enterprises (SMEs), as there are only a few food manufacturing companies in Finland that can be considered large by international standards. Furthermore, SMEs are commonly considered an attractive group of companies to study organizational-level entrepreneurial strategic posture (Wiklund & Shepherd, 2005). The quantitative data captured through an online questionnaire together with objective financial data were used to answer the research questions posed in Articles 1, 3, and 4. In Article 2, survey data and objective financial data were utilized to identify attractive high performing companies in which to conduct personal interviews, and the interview data represent the primary source of the empirical findings in that article.

### 3.3 Data collection

The appended articles utilize three types of data: objective financial database data (ORBIS), primary quantitative survey data, and primary qualitative interview data. The quantitative data collection started in late 2013 and continued through to the

beginning of 2014. The qualitative interview data collection began directly after closing the online survey questionnaire. The ORBIS database identified 343 companies employing at least five but less than 500 people. Telephone calls to the firms identified were successfully connected in 293 cases, and led to CEOs and managers from 255 companies agreeing to accept a link to the online questionnaire. After two email reminders, the authors ended up with 118 answers of which 108 were complete. A response rate of above 30% can be considered acceptable in the context of EO studies (Brettel & Rottenberger, 2013; Covin et al., 2006). To ensure the respondents' companies did not differ significantly from the sample of companies identified through the ORBIS database, the authors ran a t-test with three variables: turnover, profitability, and number of employees from the year 2012. The results identified no statistically significant difference ( $p < .05$ ) between the companies that did and did not respond and thus indicate that the data sample was free from non-respondent bias.

In Article 1, the authors managed to link 87 answers to the objective financial data and to the companies that had the required financial data available (turnover, current ratio, number of employees, and firm age). The authors removed one outlier representing an average annual sales growth rate of 325% (the highest sales growth) leaving us with 86 observations in total. The results in Article 3 build on all 108 fully-filled answers as there was no need to link the data back to financial data. In Article 4, of 108 online questionnaire answers, 95 had both a company reference and the required financial data available (EBIT %, number of employees, and firm age).

In Article 2, the authors first ran a K-means cluster analysis on the combined online survey and objective financial dataset to identify high-performing companies in terms of profitability. The analysis produced three clusters representing high values in ACAP, above-average values in EO, and very high profitability (EBIT %). Of 26 companies belonging to this high-performing cluster, the authors chose six companies with above-average values in all three variables (ACAP, EO, and EBIT %). Next they conducted a short phone interview with the CEOs and managers of those six companies to verify the findings of the cluster analysis and to schedule personal interviews conducted by two researchers with those CEOs and managers. The interviewees were chosen based on their familiarity with the knowledge acquisition and utilization practices in the new product development activities of their companies. Eventually, one of the 12 scheduled interviews was cancelled. Accordingly, the interview data comprise six phone interviews and 11 personal interviews comprising 17 interviews in total.

### 3.4 Measures and operationalization

This section describes the central measures and the operationalization of each measure to clarify the difference between the studied concepts. The variables utilized in this dissertation are based on established measures deployed by prior studies. Entrepreneurial orientation, absorptive capacity, and competitive intensity are borrowed directly from prior studies as such, whereas new product and service portfolio advantage and success are developed based on prior NPD research for purposes of this study. It was necessary to develop the NPSP advantage measure because prior research had investigated the advantageous characteristics of new products but neglected to investigate the characteristics of services or product–service combinations that drive success. All measures captured through the online survey utilize retrospective approach suggested by prior studies (Kumar, Petersen, & Leone, 2013; Miller, Cardinal, & Glick, 1997) to reflect the same time period with objective financial data from years 2010, 2011, and 2012. The items deployed by measures are presented in the appended articles in the second part of this dissertation. Sales growth, profitability, slack resources, firm age, and firm size are actual values for each company obtained from the ORBIS database.

**Sales growth** was calculated as the average annual change in turnover between 2009 and 2012. Turnover information was adapted from ORBIS database and thus represents the real values. Although objective financial measures are argued to be misleading in multi-industry samples (Covin, Slevin, & Schultz, 1994) because different industries tend to differ in terms of growth and profitability, objective performance measures can offer an accurate way to capture firm performance as they are free from the respondents' perceptions and opinions. Article 1 investigates the EO–sales growth relationship.

**Profitability (EBIT %)** refers to the average EBIT percentage rate from the years 2010, 2011, and 2012. Profitability was also adapted from data drawn from the ORBIS database. The EBIT percentage was selected as the profitability measure because it is not affected by national taxation, so enabling comparison between studies using samples from other countries. Articles 2 and 4 utilize the profitability measure.

**Entrepreneurial orientation (EO)** was adapted from a recent study by Patel et al. (2015), which builds on the most commonly deployed operationalization of a 9-item scale devised by Covin and Slevin (1989) (Rauch et al., 2009). The EO measure is deployed in Articles 1, 2 and 4. By following the suggestions in prior EO studies (Lumpkin & Dess, 2001; Richard, Barnett, Dwyer, & Chadwick, 2004), the

authors deployed a multidimensional construct structure reflecting three dimensions: proactiveness, innovativeness, and risk taking. It may be worth mentioning that a unidimensional measure reflecting the same three dimensions has also been used by EO researchers (Covin et al., 1994; Stam & Elfring, 2008; Wiklund & Shepherd, 2005) and that both structures are widely accepted.

**Absorptive capacity (ACAP)** was captured through the 22-item scale developed by Jansen et al. (2005) that is built on the 7-point scale devised by Zahra and George (2002) reflecting four dimensions: knowledge acquisition, assimilation, transformation, and exploitation. Knowledge acquisition captures a firm's ability to acquire potentially valuable external knowledge. Assimilation refers to the practices and processes through which the acquired knowledge is internalized. The transformation dimension captures organizational practices turning assimilated knowledge into a utilizable format. The fourth dimension, exploitation, refers to a firm's ability to apply the transformed knowledge for commercial ends. Accordingly, whereas EO is a disposition toward entrepreneurial behavior, ACAP can be considered a capability facilitating knowledge processing and utilization that assists in the execution of entrepreneurial initiatives. The ACAP measure is used in Articles 1 and 2.

**Slack resources (SR)** were measured through the current ratio average of the years 2010, 2011, and 2012 as drawn from the ORBIS database. Accordingly, the measure reflects the financial slack resources that could be deployed to support the development of an organization. Whereas EO is considered an organizational strategic posture and mindset affecting responsiveness to new market opportunity identification and capture, slack resources provide the required pool of potential utilizable resources to engage in innovative and risky entrepreneurial endeavors. The slack resources variable is used as a moderator in Article 1.

**New product and service portfolio (NPSP) advantage** was built on the new product advantage scales deployed in prior studies (Atuahene-Gima, 1995; Chen, Reilly, & Lynn, 2012; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011). Article 3 reports the development of NPSP advantage in detail and Article 4 investigates the role of NPSP advantage in the EO–profitability relationship. As NPSP advantage may be considered a desired innovation outcome, the development of the NPSP advantage measure and the study (Article 4) investigating EO's impact on NPSP advantage was particularly important to ensure the main objective of this dissertation was met. Based on the established measures, a 15-item scale was built to reflect three dimensions: the novelty, meaningfulness, and superiority of new products and services introduced in the past three years (2010, 2011, and 2012). The three-dimensional construct

structure was found to offer the best fit with the data, indicating that these three advantageous characteristics are distinct from each other but together constitute the NPSP advantage.

***New product and service portfolio (NPSP) success*** was built on the measure of five new product success items introduced by Cooper and Kleinschmidt (1987). The original items were rephrased to reflect the success of both new products and services and then revalidated. NPSP success indicates the perceived success of new products and services introduced within a three-year period (2010, 2011, and 2012) in terms of sales, market share, return on investment, profitability, and senior management satisfaction.

***Competitive intensity (COMIN)***, a 5-item scale, was adapted from a prior study by Jaworski and Kohli (1993). Competitive intensity is used in Articles 1 and 4 as a control variable. Competitive intensity refers to the characteristics of the business environment reflecting to what extent the competition is perceived as fierce and aggressive. Despite the single-industry sample, the authors wanted to control for possible differences in the competitive environment of food manufacturers because the companies serve customers in different geographical areas, which can directly affect the competitive environment. In addition, the food manufacturing industry consists of nine sub-industry classes, so for example, manufacturers of dairy products and pet food producers represent distinct sub-industries and serve completely different customer groups; meaning the producers are operating in a dissimilar competitive environment. Finally, as the EO–performance relationship is apparently influenced by the nature of the business environment (Rauch et al., 2009), even in single industry studies it is wise to control for the possible differences in environmental characteristics within the industry.

***Firm age (AGE)*** is used in Articles 1 and 4 as a control variable and was derived from the ORBIS database by calculating the difference between the year of establishment and the year 2012. In investigations of firm performance, age is commonly used to control the results (Kollmann & Stöckmann, 2014) as younger companies can enjoy above-average sales-growth performance in some samples. Prior studies have found EO and firm age to have a negative correlation (Engelen et al., 2014). This could mean that companies are more likely to lose their proactive, innovative, and risk-taking attitude toward new market opportunities as they age. The results of this study offer no exception to that notion, as reported in Article 1; in the data, EO has a minor statistically significant negative correlation with firm age ( $p < .05$ ).

**Firm size (SIZE)** was derived from the ORBIS database by calculating the average number of employees in the years 2010, 2011, and 2012. Size was used as a control variable in Articles 1 and 4. Similarly to age, firm size is also often controlled for when investigating the performance effects of EO (Kollmann & Stöckmann, 2014).

### 3.5 Data analysis

All the appended articles utilize survey data as their primary source for analysis (Articles 1, 3, and 4), or as a means to identify particularly interesting cases for further investigations (Article 2). Each article builds on the particular dataset determined by the availability of objective financial data. The analysis methods are briefly discussed in the following paragraphs, and a more detailed description is provided in each article.

The results of Article 1 build on a dataset of 86 observations mixing survey and objective financial data that included all EO, ACAP, COMIN, slack resources, sales growth, firm size, and firm age information. The authors used STATA 13.1 software to run the analysis. As the measurement scales were adopted from prior studies, the authors first validated the constructs (EO, ACAP and COMIN) through confirmatory factor analysis (CFA). After finding satisfactory factor solutions, they tested correlations between all dependent (sales growth), independent (EO), moderating (ACAP, slack resources) and control variables (COMIN, age, size). The results suggest a positive relationship between EO and sales-growth performance. The results also suggest positive correlations between EO and ACAP and between ACAP and competitive intensity. In addition, a minor negative correlation between EO and firm age was found. To test for possible multicollinearity, the authors ran a variation inflation factor (VIF) test, which indicated that the data were not likely to be tainted by multicollinearity. Thereafter, they ran ordinary least square (OLS) regression with mean-centered constructs to investigate the first hypothesis. The results indicated that even though a direct linear relationship between EO and sales growth existed, a non-linear J-curved relationship was found to match the data statistically significantly and better ( $\Delta$  Adjusted  $R^2 = 0.06$ ,  $F = 4.24$ , d.f. = 7, 78,  $p < 0.01$ ). The next step involved testing the possible moderating effects of ACAP and slack resources, which revealed that a two-way moderation provided the best fit to the data (Adjusted  $R^2 = 0.38$ ,  $F = 4.78$ , d.f. = 14, 71,  $p < 0.001$ ). In conclusion, the findings support all three hypotheses, H1, H2a, and H2b (see Article 1 for the detailed hypotheses).

The empirical results in Article 2 were elicited through a multiple case study approach. The starting point for the case selection was a K-means cluster analysis exploiting EO, ACAP, and profitability measures to identify interesting case companies for further investigation. Although a majority of prior EO research argues for linear EO–performance effects (Rauch et al., 2009), recent studies have found diminishing benefits at a very high level of EO (Dai et al., 2014; Wales, Patel et al., 2013). Through cluster analysis the authors were able to confirm the finding from prior studies that the group with the highest level of EO is not the most profitable group of companies. Cluster analysis suggested a three-cluster solution to the data, enabling us to identify a cluster of highly profitable companies which had an above-average level of EO and a high level of ACAP (the best performing cluster). This systematic case selection method, which has not been utilized in prior EO research, is suggested to increase the reliability of the results by confirming the existence of the phenomenon under investigation and thus justifying the selection of particular cases (Piekkari, Plakoyiannaki, & Welch, 2010). From the high-performing group of 26 companies, the authors selected six for the case study. After data collection, all 11 personal interviews were fully transcribed by an agency specializing in that process. In the first analysis phase, two researchers built matrices reflecting the dimensions of both ACAP and EO to identify mechanisms reflecting the interplay between different dimensions of these two concepts. The matrices were then cross-checked by the researchers as suggested by Eisenhardt (1989). The next step involved conducting a within case analysis on each company case based on the interview data matrices, which was followed by a cross-case analysis to find factors common to the high performers. During the analysis process, researchers discussed possible practices and activities driving high performance where the interplay between EO and ACAP was manifested (Huberman & Miles, 1994). The results were organized and reported with the help of the Gioia method to clearly explicate how the observations contributed to the findings (Gioia, Corley, & Hamilton, 2012). Finally, the findings were confirmed through a data auditing technique where two researchers reviewed the transcripts thoroughly.

Article 3 utilizes the entire data set of 108 completed online survey responses to develop and validate the NPSP advantage construct. The findings build on a three-step process: 1) item identification, 2) content validity evaluation, and 3) statistical analysis. In the first phase, prior NPD research on new product advantage was thoroughly investigated to build a theoretically valid conceptualization of advantage at the portfolio level. In addition to items used in the existing new product advantage scales (Atuahene-Gima, 1995; Chen et al., 2012; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011), some complementary items were devised, resulting in 15 items in total. In

the second phase, I followed the suggestion by Polit, Beck, and Owen (2007) to investigate the extent to which each item responds to the given definition of the main factor, and executed a content validity index (CVI) test with eight professional researchers. After two CVI evaluation rounds, all 15 items recorded satisfactory evaluation scores ( $>.8$ ) suggesting that each item reflects the intended definition. Subsequently, the survey data were collected, resulting in 108 full responses. In the third phase, the actual analysis was started with the help of SPSS 23.0.0. software. I started the analysis with exploratory factor analysis (EFA) by using maximum likelihood and Oblimin with Kaiser normalization rotation. The results indicated a three-factor solution supporting the theoretical conceptualization of three-dimensional construct reflecting novelty, meaningfulness, and superiority. One of the 15 items failed to load to any primary factor ( $<.5$ ) and was therefore removed. To ensure internal consistency, Cronbach's alpha, composite reliability (CR), and average variation extracted (AVE) tests were run on each of the three factors. I also tested KMO value and found it significant in Bartlett's test of sphericity. All the results indicated satisfactory levels (for details see Article 3). Finally, I ran a CFA on the remaining 14 items with SPSS AMOS. The results indicated that although a one-factor solution was not found to fit the data, a three-factor solution fit the data statistically significantly. Accordingly, the results supported both hypotheses indicating novelty, meaningfulness, and superiority; the first to represent distinct characteristics and the second to constitute the concept of NPSP advantage.

The fourth article builds on 95 observations on online survey questionnaire data and objective financial data from the ORBIS database. The authors used STATA version 13.1 to run the analysis. After construct validation with CFA, they ran a correlation matrix with all the dependent (profitability), independent (EO), mediating (NPSP advantage and NPSP success) and control variables (COMIN, firm age, firm size). Correlation analysis showed that only NPSP success had a statistically significant ( $p<.05$ ) correlation with a dependent variable (profitability). In addition, the results indicated that although EO has a positive relationship with NPSP advantage, both EO and NPSP advantage have a positive correlation with NPSP success. In general, the findings suggest there may be a possible mediated relationship between EO and profitability. To test the possible mediation, the authors deployed structural equation modeling (SEM). The results suggest that EO does not have a direct relationship with profitability or with NPSP success. Despite the *prima facie* correlation between EO and NPSP success, the SEM results suggest that EO has a statistically significant relationship only with NPSP advantage, through which it affects NPSP success, which has a positive impact on profitability. Accordingly, the analysis indicates support for the article's

hypotheses suggesting the EO–profitability relationship can be mediated through NPSP advantage and NPSP success.

### 3.6 Quality assessments

In terms of quality assessment, the main concerns are to evaluate the quality, reliability, and validity of the study in question. Reliability refers to the repeatability of the results; meaning that the same conclusions can be drawn by other research using the same research design and tools (Cortina, 1993). Validity indicates whether the research instruments, scales, and measures are suitable to capture the phenomenon that it is intended to capture (Calder, Phillips, & Tybout, 1982). Even if the results can be repeated and the measures are internally reliable, the scales may not necessarily fulfill the validity standards; therefore, evaluating both the reliability and the validity of a study is important. In the following chapter, the reliability and validity of this study are discussed.

#### 3.6.1 Reliability

Reliability evaluates the possible influence of any random factor causing a measurement error and jeopardizing the repeatability of the results. In quantitative research, the stability of measures or internal consistency are considered to indicate reliability. Internal consistency refers to the extent to which a scale of multiple items measures a single phenomenon or interrelated concepts (Cortina, 1993). The most commonly used internal reliability measure is Cronbach's alpha. In all the quantitative papers of this dissertation (Articles 1, 3 and 4), Cronbach alpha analysis is performed and reported. Article 2 also utilizes measures tested with Cronbach alpha, albeit the values are not reported in the paper.

All measures used in the articles of this dissertation clearly exceed the suggested threshold alpha value of 0.50 (Peterson, 1994), and can thus be considered reliable. Articles 1, 2, and 4 utilize the EO measure ( $\alpha = 0.89$ ) and its three sub-dimensions: proactiveness ( $\alpha = 0.87$ ), innovativeness ( $\alpha = 0.79$ ), risk taking ( $\alpha = 0.79$ ). Articles 1 and 2 deploy the ACAP measure ( $\alpha = 0.86$ ) and its four dimensions: acquisition ( $\alpha = 0.86$ ), assimilation ( $\alpha = 0.64$ ), transformation ( $\alpha = 0.74$ ), exploitation ( $\alpha = 0.78$ ). Articles 3 and 4 use the NPSP advantage measure ( $\alpha = 0.93$ ) consisting of three dimensions: novelty ( $\alpha = 0.91$ ), meaningfulness ( $\alpha = 0.89$ ), superiority ( $\alpha = 0.94$ ). Article 4 utilizes the NPSP success measure ( $\alpha = 0.95$ ). The competitive intensity measure ( $\alpha = 0.76$ ) is used as a control variable in Articles 1 and 4.

The empirical results of Article 2 are built on the multiple case study approach. In qualitative research, reliability can be achieved by controlling for the possible human factors influencing the results and describing the research process as transparently as possible (Eisenhardt, 1989). To increase the reliability, researchers collecting interview data used the same interview template to ensure that interviews were executed in the same manner. They also built the analysis on fully transcribed interview data, organized the preliminary findings into theoretically justified matrices, and arranged multiple meetings to discuss the findings within the research group. The results were subsequently structured by deploying the Gioian method to improve the transparency of the interpretation logic behind the actual results (Gioia et al., 2012). Finally, the authors used a data auditing technique (Eisenhardt, 1989) to ensure that the findings were interpreted correctly and that all relevant information was addressed.

### 3.6.2 Validity

In quantitative research, there are multiple means available with which to evaluate the measures deployed, the generalizability of the results, and the correctness of the statistical conclusions to safeguard the validity of the study. **Construct validity** refers to the degree to which the operationalization of a measure captures the conceptual definition (Calder et al., 1982). To ensure the construct validity, theoretical concepts recognized by an extensive body of prior research with validated and tested measures (EO and ACAP), were selected as the main concepts. As a part of validity check, the authors considered face validity and content validity. **Face validity** indicates whether a measurement scale is able to cover the phenomenon it intends to capture (Price, 1997). To ensure the face validity of the main constructs, EO and ACAP, well established measures from prior studies were borrowed. In addition, in Article 3, “Measuring new product and service portfolio advantage,” although NPSP advantage is conceptualized and a three-dimensional measure developed, the authors checked *prima facie* validity through commissioning subjective evaluations by a panel of eight research professionals (Polit et al., 2007). Similarly, **content validity**, the ability of a singular item to precisely measure the phenomenon it should measure (Price, 1997), was addressed by asking the panelists to evaluate how well each item matched the given definition (to learn more about the process, see Article 3).

Factor analysis is considered a good indicator of a construct validity (Bagozzi, Yi, & Phillips, 1991). All the constructs used in the appended articles were validated through confirmatory factor analysis (CFA). In addition, in Article 3, a completely new measure was developed, and exploratory factor analysis (EFA) was also

deployed. The test results indicated that all items and all dimensions of all constructs loaded onto their latent variable statistically significantly. In addition, in Article 3, average variance extracted (AVE), explaining how much variance of an item is explained by the latent factor, was calculated. The results of both factor analysis and AVE calculations suggest satisfactory **convergent validity**, indicating that items forming a subscale correlate with each other (Price, 1997). To confirm the **discriminant validity** of the constructs, meaning that the constructs measure a distinct phenomenon (Price, 1997), first the authors checked correlations between independent variables and found no statistically significant correlations. In Article 4, investigating the role of NPSP advantage and success in the relationship between EO and profitability, the authors ran additional an EFA to ensure that none of the items used to measure EO, NPSP advantage, or NPSP success loaded onto the main factors of other variables. As no significant cross-loadings ( $>.4$ ) emerged, the results indicate satisfactory discriminant validity.

**External validity** refers to the extent to which the sample represents the target population and the sampling method is appropriate (Calder et al., 1982). As the tests between respondents and non-respondents did not represent statistically significantly different groups based on turnover, profitability, or number of employees, the results can be considered to represent the population of private limited companies in the Finnish food manufacturing industry. However, due to the national context and single industry sample, the findings may not be generalizable beyond that particular domain. Similarly, the selection criteria for sampling focusing on companies employing five or more but less than 500 employees limit the extent to which the results might be directly generalizable to either micro-sized or large firms.

**Statistical conclusion validity** indicates whether the results have sufficient statistical power to explain the relationships between the studied concepts (Calder et al., 1982). First, all constructs used in the appended articles were validated through the factor analysis method, and the construct structures applied were found to fit the data statistically significantly. Second, in Article 1, multiple regression analysis was conducted by testing the statistically significant difference between the studied models indicating that the model on which the results build is statistically significantly better in explaining the dependent variable (sales growth), as indicated by measuring the change in the adjusted R<sup>2</sup> result. Third, in Article 3, the unidimensional and multidimensional construct structures were tested and the results indicate that the multidimensional construct structure fits the data better than a unidimensional one, which supports the findings of the article. Fourth, in Article 4, the structural equation model was found to fit the data

statistically significantly. To improve the validity of the results, in Articles 1 and 4, additional control variables were deployed.

**Common method variance** referring to the shared variance between measured variables caused by the method rather than the actual phenomena, can be problem in studies and particularly those measuring independent and dependent variables in the same survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Accordingly, common method variance can represent a threat to the results when studying causalities. Articles 1 and 4, testing the causal relationship between EO and firm performance (sales growth and profitability), may be considered free from common method bias as the independent variable (EO) and dependent variables (sales growth and profitability) are collected from different sources. Therefore, the findings this dissertation may be considered free from common method bias.

In qualitative research, the main validity determinant is the extent to which the chosen data collection and analysis methods are appropriate to answer the research question (Eisenhardt, 1989). Given that “hypotheses are concise statements about what is expected to occur, not why it is expected to occur” (Sutton & Staw, 1995: 337), qualitative methods are more appropriate to investigate why questions. The results of Article 3 build on qualitative interview data. Because the article’s research question (*Q2*) (“*What are the organizational micro-level mechanisms through which the interplay between entrepreneurial orientation and absorptive capacity affect firm profitability?*”) seeks answers that might not available through hypotheses testing, a qualitative research design providing in depth knowledge on interplay mechanisms can be considered appropriate. The article adopts a case study as its main research method because the approach is suitable for investigating firm-level phenomena in multiple companies to search for commonalities and differences when the knowledge cannot be acquired through quantitative methods. However, to validate the case selection, the authors deployed a cluster analysis method that enables the identification of highly profitable companies with high ACAP and above-average EO values (Piekkari et al., 2010). Purposeful sampling is suggested to increase external validity also in studies utilizing qualitative data as the primary data source (Storbacka, 2011), so enabling the researcher to claim results apply to the particular group of companies. Further, the interview template was designed by three researchers to ensure that it was capable of capturing the studied concepts in the particular research context (new product development). The analysis was conducted in a systematic manner by two researchers using the same findings matrices, and results were organized with the help of the Gioian method to increase transparency in terms of the logics behind the results (Gioia et al., 2012). Finally, the findings were cross-checked with a data auditing technique (Eisenhardt, 1989).

### 3.7 Summary of methodological choices

For Articles 1, 3, and 4, the data collection methodology is deductive, meaning that the hypotheses and assumptions are theory driven. In Article 2, the methodology can be considered abductive, as prior theory bounds the empirical analysis, but the findings extend the theory through active dialogue with theory and empirical findings. The methodological choices made in each appended article are presented in Table 1.

**Table 1.** The summary of methodological choices

Article	Main method	Software	Data	Constructs	Controls
Article 1	Ordinary least squares regressions (OLS)	STATA 13.1	Database+ survey (n=86)	IV= EO DV= Sales growth <sup>1</sup> Moderators= ACAP, SR	Competitive intensity, size, age
Article 2	Cluster analysis, ANOVA, Multiple case study	SPSS 23	Database+ survey (n=98), Interviews (n=17)	EO, ACAP, EBIT% <sup>1</sup>	n.a.
Article 3	Exploratory factor analysis (EFA), Confirmatory factor analysis (CFA)	SPSS 23, AMOS	Survey (n=108)	NPSP advantage and its dimensions (novelty, meaningfulness, superiority)	n.a.
Article 4	Structural Equation Modeling (SEM)	STATA 13.1	Database+ survey (n=95),	IV=EO, DV=EBIT% <sup>1</sup> , Mediators= NPSP advantage, NPSP success,	Competitive intensity, size, age

<sup>1</sup> From secondary database (Orbis); IV=Independent variable; DV=Dependent variable

## 4 SUMMARY OF THE RESULTS

The dissertation consists of four essays investigating the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm. All four articles have already been sent to international journals for peer review. This chapter summarizes the findings of each essay and explains the contribution to the main objective of this dissertation. The articles are appended in the second part of the dissertation.

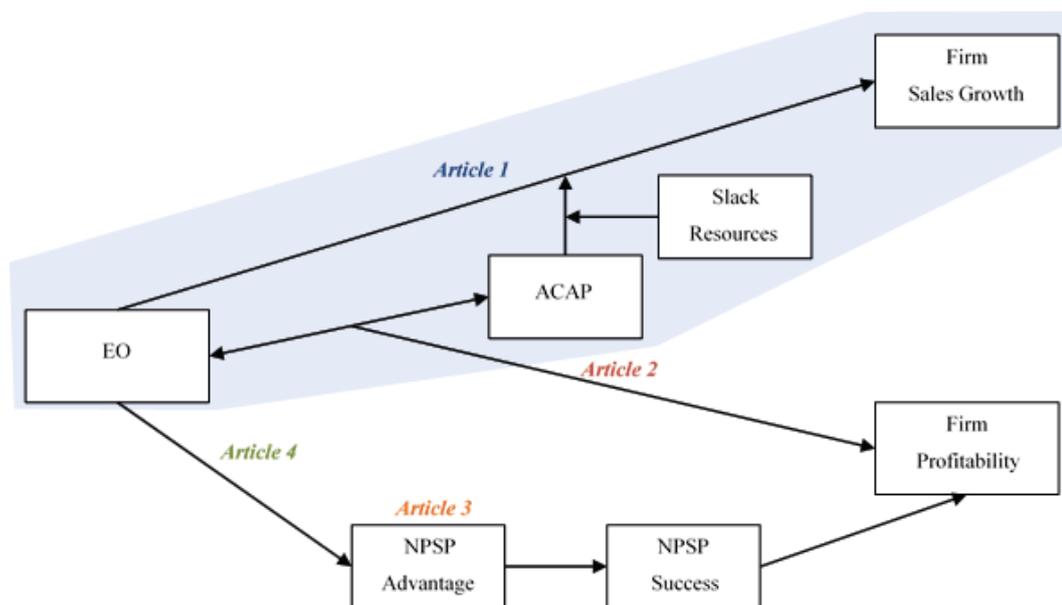
### 4.1 The non-linear relationship between entrepreneurial orientation and sales growth in mature markets and the moderating effects of slack resources and absorptive capacity

Article 1, “The non-linear relationship between entrepreneurial orientation and sales growth in mature markets and the moderating effects of slack resources and absorptive capacity”, investigates the linearity of the EO–performance relationship and two possible moderators, ACAP and slack resources that might potentially affect the relationship. Although a majority of prior studies have argued for a linear EO–performance relationship, seminal reviews and meta-analysis have found several shortcomings around the assumption of direct linear effects (Rauch et al., 2009; Wiklund & Shepherd, 2011). The findings of this article suggest EO has J-curve shaped relationship with firm sales growth, which suggests that to realize the growth potential of EO, entrepreneurial firms should be more than moderately entrepreneurially oriented. Second, to fully capitalize on high levels of EO, high levels of ACAP and slack resources are required as well. As the article utilizes a sample of 86 small and medium-sized companies operating in the same mature industry, the findings increase the understanding of the circumstances under which EO is particularly beneficial or detrimental.

In the managerial context, the findings suggest that highly entrepreneurial firms that particularly focus on the introduction of new product and service concepts and new market entries, should also invest in developing efficient knowledge processing capabilities and ensure they maintain access to adequate financial business development resources. Although slack resources provide the necessary business development resources for experimentation and innovation efforts, learning capabilities facilitate the identification of new opportunities, risk evaluation, and successful concept development efforts. A lack of learning capabilities can even lead to negative performance outcomes when a highly entrepreneurial firm is not able to efficiently capture initial market reactions and

take prompt corrective action. In addition, the results indicate that firms building their growth efforts on their existing products and services may benefit from ACAP and slack resources, but do not require equally high levels of EO to pursue strong sales growth. Actually, minor increases in EO can lead to incremental improvements in the existing products and services, and potentially have a positive impact on a firm's overall performance through enhanced profitability, but simultaneously may hinder sales growth.

These theoretical and managerial implications answer the first sub-question (*Q1*): “*To what extent does entrepreneurial orientation affect firm sales growth and how do absorptive capacity and slack resources affect this relationship?*”. As a conclusion, Article 1 contributes to the overall framework (see Figure 2) of this dissertation by suggesting that the EO–sales growth relationship appears to be non-linear rather than linear and applying findings in other studies (Wales, Patel, et al., 2013) leads to the conclusion that it may be expected to be affected by context. Second, although ACAP and slack resources may be expected to benefit a firm, the optimal level of EO appears to be dependent on the chosen strategy the growth efforts are built upon.



**Figure 2.** Article 1 in relation to the other studies of the dissertation

## 4.2 Beneath the surface: Discovering the mechanisms that drive the profit outcomes from the interplay between entrepreneurial orientation and absorptive capacity

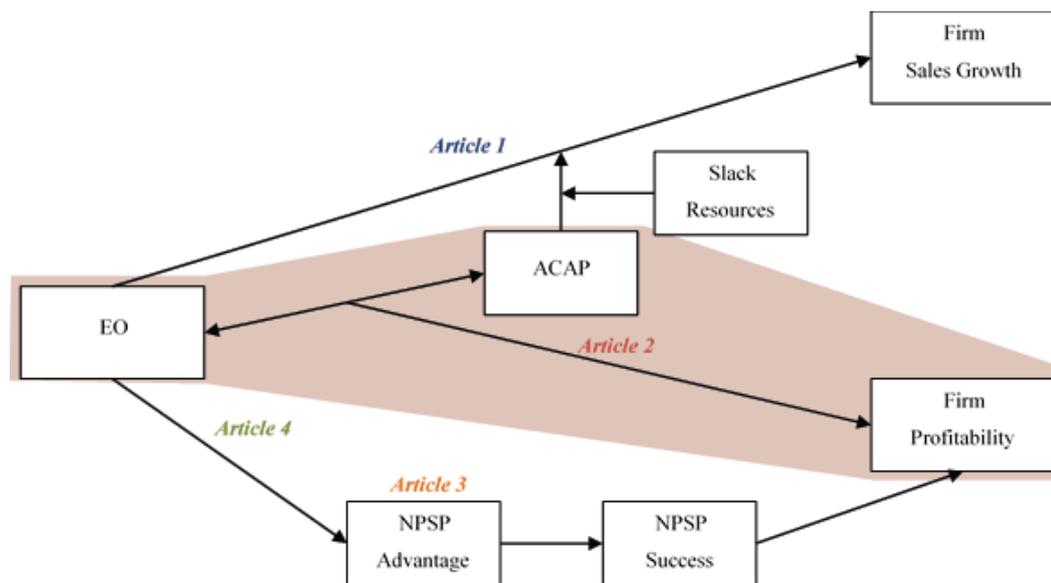
Article 2, “Beneath the surface: Discovering the mechanisms that drive the profit outcomes from the interplay between entrepreneurial orientation and absorptive capacity,” investigates the mechanisms through which the interplay between EO and ACAP affect successful new product development activities that eventually influence firm profitability. Although prior EO–performance studies have mainly been quantitative—presenting possible reasons for positive interaction effects (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014)—there are no studies analyzing the actual processes and practices where the interplay manifests.

By utilizing quantitative survey and objective financial database data, the second article deploys a purposeful cluster analysis method for case selection to facilitate the in-depth analysis of companies that exhibit increased levels of EO, high ACAP, and high profitability. The study introduces three interplay mechanisms of increased EO and high ACAP identified through a cross-case analysis based on qualitative interview data: 1) cross-organizational proactive idea generation, 2) cost- and customer-value-driven opportunity screening, and 3) feedback fueled new opportunity testing and capture. By demonstrating how a moderate level of EO determines the characteristics of new market opportunities that highly profitable SME firms seek and address, the analysis improves the understanding of the effects of increased entrepreneurial posture on the innovation process and firm profitability (Alegre & Chiva, 2013; Baker & Sinkula, 2009; Kollmann & Stöckmann, 2014). The findings suggest first that firms with moderate EO and high ACAP benefit from efficient new-idea generation practices that cross traditional organizational boundaries. Second, profitability performance appears to be driven by new product development activities combined with an enthusiasm for delivering end-customer value and an appropriate cost structure that considers all the participants in the value system including the focal company, wholesaler, retailer, and the end-customer. Third, the interplay between EO and ACAP facilitates the validation of customer preferences and demand through an agile customer feedback gathering and processing mechanism.

Finally, the findings suggest that a firm seeking ideas for original products, but which does not attempt to reinvent an industry, benefits from having a sophisticated knowledge processing capability, but does not necessarily require the highest levels of EO. This is mainly due to the diminished requirements for risk taking and favoring rather incremental innovations that together lower the

required levels of EO. These findings are aligned with the results of Article 1 suggesting that an increase in EO may improve profitability, while at the same time undermining sales-growth performance. Furthermore, prior studies have suggested that incremental innovations can improve profitability but might be a root cause of slower growth (Troilo et al., 2014).

Accordingly, Article 2 contributes to the overall framework (see Figure 3) by answering the second sub-question (Q2): “What are the organizational micro-level mechanisms through which the interplay between entrepreneurial orientation and absorptive capacity affect firm profitability?”



**Figure 3.** Article 2 in relation to the other studies of the dissertation

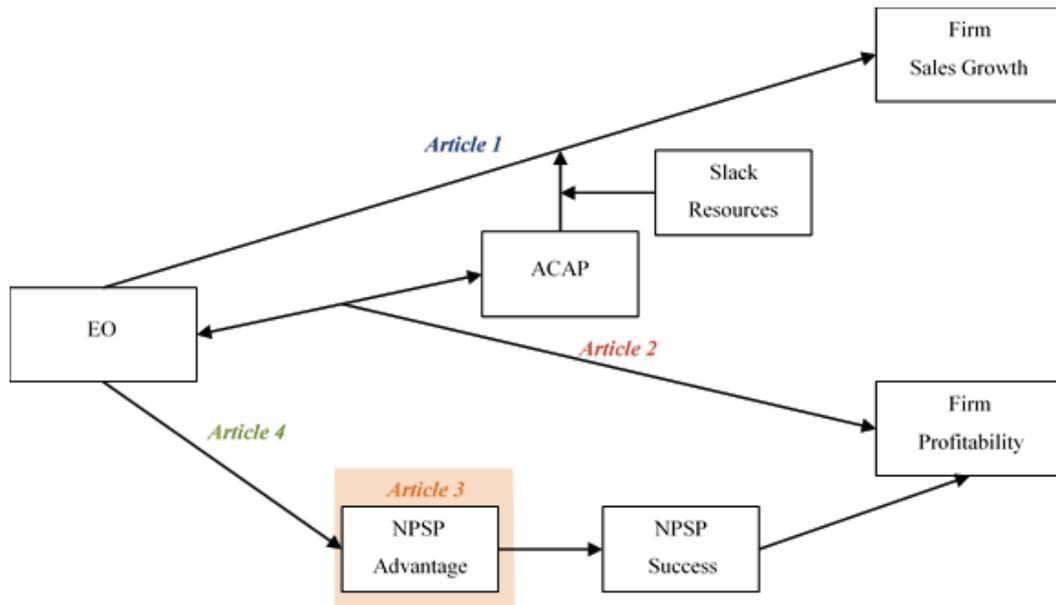
### 4.3 Measuring new product and service portfolio advantage

Article 3, “Measuring new product and service portfolio advantage,” introduces the concept of new product and service portfolio (NPSP) advantage by conceptualizing and developing measures and validating a three-dimensional NPSP advantage construct. Prior NPD literature has focused on the advantageous characteristics of introducing new products—such as the novelty, meaningfulness, and superiority of those products—and studied the concept of new product advantage (Atuahene-Gima & Li, 2004; Cooper, 1979; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011; Slotegraaf & Atuahene-gima, 2011; Song & Parry, 1997), but less attention has been directed to the characteristics of services that drive success (Biemans et al., 2016). Recently, Papastathopoulou and

Hultink (2012) suggested in their review article on new service development (NSD) that future studies should approach the innovation process by focusing on the total customer value created considering both products and services simultaneously.

The findings of Article 3 add to the discussion on distinguishing between advantageous characteristics (Hong et al., 2013; Im & Workman, 2004; Rijdsdijk et al., 2011) and suggests that while novelty, meaningfulness, and superiority represent distinct characteristics that can be measured separately, together they constitute the three-dimensional concept of advantage. Second, the findings contribute to the prior research on both NPD and NSD by introducing the concept of NPSP advantage, the desired outcome of an innovation process covering both products and services (Papastathopoulou & Hultink, 2012). Accordingly, the third article makes two theoretical contributions and answers the third sub-question (Q3): *“How can new product and service portfolio advantage be measured?”* By offering means to measure NPSP advantage, Article 3 contributes to the overall framework of this dissertation that seeks to facilitate the investigation of the relationship between EO and the desired innovation outcome, NPSP advantage (Article 4).

In contributing to the discussion on the advantageous new product and service portfolio characteristics, the article provides an interesting managerial insight as well. The study suggests that although characteristics such as novelty, meaningfulness, and superiority of a singular product or service can provide a source for competitive advantage, novel combinations of products and services can provide an additional opportunity to better match the customer needs and deliver superior value. Recognizing the advantageous characteristics of NPSP and promoting them when engaging in new product and service development activities can facilitate the creation of successful products and services. In conclusion, novelty, meaningfulness, and superiority are distinct characteristics that together constitute the advantage of a singular product and service but also the new product and service portfolio.



**Figure 4.** Article 3 in relation to the other studies of the dissertation

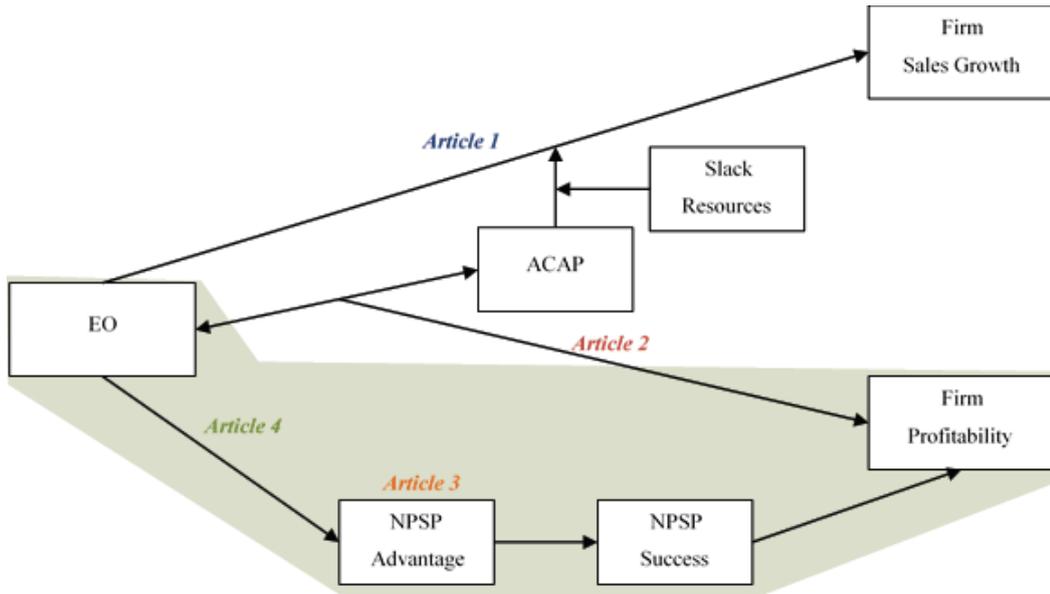
#### 4.4 Entrepreneurial orientation as a driver of firm profitability: The role of new product and service portfolio advantage and success

Article 4, “Entrepreneurial orientation as a driver of firm profitability: The role of new product and service portfolio advantage and success,” investigates the EO–profit performance relationship and the possible mediating role of NPSP advantage and NPSP success. While a majority of EO–performance studies have found EO to have a positive impact on performance, rather than having direct performance effects, EO is also suggested to affect firm success through other performance driving variables (Rauch et al., 2009). For example, EO has been found to affect performance through organizational learning (Real et al., 2014) and innovation outcomes (Anderson & Eshima, 2013; Kollmann & Stöckmann, 2014). Recently, EO has also been found to have a positive impact on new product success through advantageous new product characteristics (Hong et al., 2013).

The findings of this article add to existing literature on possible EO–performance mediators by introducing two variables, NPSP advantage and NPSP success, through which the potential of EO to drive profit performance may be extracted. The results indicate that EO has no direct impact on firm profitability but affects NPSP success through NPSP advantage and that NPSP success affect firm profitability. By joining the discussion on EO–performance mediators (Rauch et al., 2009) and the antecedents and desired outcomes of innovation process

considering both product and service development simultaneously (Biemans et al., 2016; Papastathopoulou & Hultink, 2012), this article makes two main theoretical contributions.

By utilizing the NPSP advantage construct developed in Article 3, this fourth article seeks to answer the final sub-question of the dissertation (Q4): *“To what extent do new product and service portfolio advantage and success mediate the relationship between entrepreneurial orientation and firm profitability?”* Our study suggests that first, EO affects the creation of novel products, services and the combinations of products and services by increasing the number of opportunities addressed and positively affecting the attitude toward experimentation. Second, entrepreneurial proactiveness increases the activeness in seeking and introducing complementary products and services increasing the total customer value delivered at the portfolio level. Third, as radically different products and services and product–service combinations with superior value tend to require ex ante investments, the risk taking typical of entrepreneurial firms is likely to benefit a firm by enabling engagement in risky high-value opportunities. Finally, as the characteristics of products and services aggregate to the portfolio level and advantageous characteristics of new products have been found to affect new product success, NPSP advantage may be expected to drive NPSP success, which positively affects firm performance measures such as profitability. Accordingly, the article suggests NPSP advantage affecting NPSP success and firm profitability is driven by EO. In conclusion, Article 4 contributes to the overall framework (see Figure 5) by testing the impact of EO on certain desired innovation outcomes, NPSP advantage and success, and identifies variables through which firm profitability can be improved.



**Figure 5.** Article 4 in relation to the other studies of the dissertation

## 5 DISCUSSION AND CONCLUSIONS

This chapter summarizes the theoretical contributions and managerial implications of the appended four articles. In addition, the limitations and interesting future research opportunities are discussed.

### 5.1 Theoretical contribution

The main objective of this dissertation is to improve the understanding of how entrepreneurial orientation facilitates firm performance by answering the primary research question: *What is the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm?* Each of the four appended articles approach the primary research question through a distinct sub-question.

Article 1 seeks to answer the question: *To what extent does entrepreneurial orientation affect firm sales growth and how do absorptive capacity and slack resources affect this relationship?* Whereas a majority of prior EO studies have assumed a linear relationship between EO and firm performance (Rauch et al., 2009), recent research has questioned that linearity assumption, and provided evidence of a curvilinear relationship (Dai et al., 2014; Wales, Patel, et al., 2013). In addition, as EO represents a disposition toward entrepreneurial behavior and is likely to benefit from other organizational resources and capabilities, there have been calls for the further investigation of possible moderators (Rauch et al., 2009). The first article joins the discussion first by finding a J-curved non-linear relationship between EO and sales growth. The article's findings support the argument that an incremental increase in EO may be more related to relatively minor changes to products, services, and processes, possibly leading to higher profitability (Covin & Slevin, 1989). However, to attain the necessary visibility as a strategic choice to build growth efforts upon, and generate innovative product market entries, high levels of EO may have the desired sales-growth performance impact. Especially firms operating in mature industries are likely to be forced to be highly proactive and innovative in seeking unconventional opportunities to achieve fast growth, suggesting the need for high levels of EO. Second, the results indicate that ACAP and financial slack resources moderate the relationship. The findings suggest that slack resources are required to support any above-average sales growth and that firms with high levels of slack benefit from increasing EO from low to moderate levels, but in order to fully capitalize on high levels of EO, high ACAP is also required. Although slack resources provide the necessary pool of resources for experimentation and risk taking (Wiklund & Shepherd, 2005),

ACAP facilitates the utilization of internal and external knowledge bases to increase the efficiency of new opportunity recognition, evaluation, and capture (Engelen et al., 2014). Finally, the results show that firms with high ACAP and resource slack do not necessarily require high levels of EO to achieve strong sales-growth performance. This may be due to the strategic choice of exploiting and scaling existing resources where the need for increased alertness to new market opportunities and innovative product and service market entries is not the focus. Therefore, this article contributes directly to the existing EO literature by joining the discussion on the assumption of linearity and identifying two moderating variables affecting the EO–sales growth relationship. The findings of the article are also important in answering the primary research question of this dissertation investigating the role of EO from the sales-growth performance perspective.

The second article addresses the sub-question: *What are the organizational micro-level mechanisms through which the interplay between entrepreneurial orientation and absorptive capacity affect firm profitability?* Prior EO studies have investigated the interaction effects of EO and ACAP by deploying quantitative research methods (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014), but have not been able to provide detailed knowledge on the actual mechanisms through which the benefits of the interplay between EO and ACAP affect firm performance. Article 2 aspires to provide the missing evidence through its quantitative case-study approach. The results derive from interview data from six case companies identified through a cluster analysis method representing highly profitable companies with heightened EO and high ACAP levels. The findings suggest three influential interplay mechanisms: 1) cross-organizational proactive idea generation, 2) cost- and customer-value-driven opportunity screening, and 3) feedback fueled new opportunity testing and capture. First, aligned with the findings of prior ACAP studies (Jansen et al., 2005), advanced knowledge processing capabilities enable firms to utilize both internal and external knowledge bases in the idea generation phase. The interplay with ACAP allows firms with heightened EO to activate both internal and external stakeholders to proactively seek ideas for product improvement. However, moderate levels of EO often appear to lead to incremental improvement initiatives. Second, new ideas are evaluated against the potential value to all parties in the value system. This means that in addition to considering the value delivered to the end customer (often a consumer), the end-customer price point, and profit margins for retailers and the focal company are central to the idea screening phase. Third, the findings suggest that the case companies utilize customer feedback on new-idea testing efficiently. Building on quick prototypes and testing them with real customers as soon as possible decreases the level of risk taking required. Therefore, the findings make two main contributions to the existing literature. By identifying three interplay

mechanisms of EO and ACAP that occur during the early stages of the new product development process and drive firm profitability, the findings add to the existing body of knowledge on how knowledge processing capabilities can facilitate the innovation efforts of increasingly entrepreneurial firms (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014). Second, the article adds to the discussion on the optimal level of EO (Dai et al., 2014; Wales, Patel, et al., 2013). Its findings contribute to the main objective of the dissertation by adding knowledge on how increased levels of EO affect the innovation process and firm profitability.

Article 3 answers the sub-question: *How can the new product and service portfolio advantage be measured?* Whereas prior NPD literature has focused on the advantageous characteristics of new products (Im & Workman, 2004; Rijdsdijk et al., 2011), little attention has been directed to the characteristics of new services that drive success (Biemans et al., 2016; Papastathopoulou & Hultink, 2012). In addition, even though novel combinations of products and services have been suggested to enable firms to differentiate their products and services from competing offerings and better match the target customer needs (Gebauer et al., 2011), prior studies have not identified advantageous new product and service portfolio characteristics or conceptualized advantage at the portfolio level. By following the suggestion by Papastathopoulou and Hultink (2012), Article 3 integrates the NPD and NSD literatures to conceptualize and develop a measure to capture a three-dimensional NPSP advantage construct reflecting novelty, meaningfulness, and superiority. The study suggests that whereas the uniqueness of new products and services can enable firms to differentiate themselves, novel combinations of new products and services can provide an additional source to differentiate the product and service portfolio from competitors. Similarly, by adding complementary products and services, firms can increase the total potential value delivered to the customer. Firms able to better match customer desires and solve unique customer problems can offer superior value than their competitors can. Therefore, the findings contribute to the existing NPD and NSD literatures simultaneously (Biemans et al., 2016; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; Papastathopoulou & Hultink, 2012; Rijdsdijk et al., 2011; Szymanski et al., 2007) by suggesting that novelty, meaningfulness, and superiority represent distinct characteristics at the new product and service portfolio level and together constitute the concept of NPSP advantage. As NPSP advantage may be considered a desired innovation process outcome, the development of an NPSP advantage measure is important because it facilitates investigations of how EO affects innovation performance. Accordingly, conceptualizing and operationalizing the NPSP measure is of great benefit in answering the primary research question of this dissertation.

To investigate how EO affects innovation and profitability performance, the fourth Article seeks answer the sub-question: *To what extent do the new product and service portfolio advantage and success mediate the relationship between entrepreneurial orientation and firm profitability?* Prior EO research has found a positive relationship between EO and various innovation outcomes such as exploitative and exploratory innovations (Kollmann & Stöckmann, 2014) and advantageous characteristics of new products (Hong et al., 2013). The NPSP advantage construct developed in Article 3 is utilized in the fourth article examining the role of NPSP advantage and NPSP success as possible mediators in the relationship between EO and profitability. The findings suggest that EO has no direct impact on firm profitability, but has positive impact on NPSP advantage which has positive effect on the success of new products and services that affect profitability. This means that EO drives novelty, meaningfulness and superiority of new product and service portfolio eventually affecting NPSP success, which affects firm profitability. The findings contribute to the prior EO literature by identifying two new variables through which EO may affect firm profitability (Rauch et al., 2009). In addition, the study opens up interesting future research opportunities by taking a step toward a more holistic approach to studying innovation process outcomes, one that considers both products and services simultaneously (Biemans et al., 2016; Papastathopoulou & Hultink, 2012).

Finally, in addition to the findings presented in each article, the study highlights the importance of precisely defining the term *performance* when searching for the antecedents of success. Each of the appended articles focuses on investigating a particular type of performance: innovation, sales growth, and profitability. Therefore, this dissertation contributes to the EO–performance research by providing novel findings on how EO affects a particular type of performance in the context of small and medium-sized companies operating in a mature industry.

## 5.2 Managerial implications

The findings of this dissertation provide some interesting practical implications. The results suggest that firms operating in mature industries and wishing to benefit from an entrepreneurial mindset in the form of high sales-growth performance, should focus on developing strong EO. When a firm builds its growth efforts on innovative products and services, EO provides the necessary visible organizational support for proactive new opportunity identification and capture. However, when the level of innovativeness required to engage with the opportunity increases, the associated risks tend to increase as well. This means that markets may not be able to recognize the potential value of unique and extraordinary

product or service concepts, but also that the development of innovative ideas may require heavy ex ante investments before initial profits. The results indicate that on such occasions, entrepreneurial firms should ensure access to additional business development resources (financial slack) and focus on developing its knowledge processing practices (ACAP). Although slack resources provide a pool of resources that can be quickly deployed to serve innovation efforts, knowledge acquisition, assimilation, transformation, and exploitation capabilities enable entrepreneurial firms first to address a higher number of new opportunities, and second to evaluate and refine the opportunity and manage the associated risks. Through efficient knowledge processing practices, entrepreneurial firms can leverage both the internal and external knowledge bases, something that is particularly important when new innovative ideas do not match customer desires, as doing so enables a firm to react quickly to the situation.

The findings also suggest that firms building their growth efforts on leveraging existing products, services, and resources may not require an entrepreneurial willingness to seek new innovative product and service concepts in equal measure. When exploitation dictates the chosen strategy, an increase in EO may actually lead to diminishing sales-growth performance. This may be due to incremental improvements in product and service concepts and engagement in new market opportunities that are executable with the existing resources. While an increase in EO can on occasion hinder sales growth, incremental improvement efforts can deliver higher profitability for a firm. The results suggest that moderately entrepreneurially-oriented firms with advanced knowledge processing capabilities appear to be able to motivate internal and external parties to generate ideas for product and service improvement. They are also capable of creating attractive product and service modifications, so better matching end-customer needs that can simultaneously be produced with a cost structure that ensures attractive profit margins for both the reseller and the focal company. Together these findings indicate that the development of advanced knowledge processing practices should be a top priority of firms with all levels of EO regardless of the primary organizational goal, to deliver the highest possible growth or profitability.

From the innovation performance perspective, the findings of the current research suggest that an entrepreneurial mindset positively affects a firm's ability to develop a product and service portfolio that delivers an advantage over that of the firm's competitors. Those firms that are proactive, willing to innovate, and not averse to taking risks appear to be more likely to create novel products and services and the novel product-service combinations that provide meaningful value attributes that are superior to the competing alternatives in the market. As the advantageous characteristics of new product and service portfolio are found to drive the success

of these products and services, and to influence firm profitability, EO's positive impact on innovation performance can lead to higher profitability. These findings suggest that managers in entrepreneurial firms should not only focus on endorsing entrepreneurial behavior per se, but also on channeling the behavior to create value propositions with advantageous characteristics.

### 5.3 Limitations and suggestions for future research

Despite a solid execution, this study has its limitations. First, as the data of this dissertation are collected from the Finnish food manufacturing industry, the generalizability of results may be limited to an extent. Future studies could verify the results by investigating similar research models in other industries and cultural contexts. Although EO is often studied in dynamic industries, the novel results of this study derive from a more stable and mature industry, indicating that the performance effect of EO may vary from one industry to another. Second, as the first article found a non-linear relationship between EO and sales growth, future studies arguing for a linear relationship should test for a possible curvilinear relationship to maintain the credibility of the findings. Third, as EO is also found here to benefit from other organizational resources and capabilities and appears to affect firm performance through other variables driving performance, future research should continue the work on finding additional moderators and mediators of the EO–performance relationship. The list of possible concepts includes other types of slack such as slack in human resources, other capabilities such as internationalization and network management capabilities, and other strategic orientations such as market, technology, and learning orientations. In addition, as a majority of EO research is quantitative in nature, a qualitative approach could be utilized in future studies to better understand the actual mechanisms through which EO affects firm performance. The second article of this dissertation examined the interplay mechanisms of EO and ACAP and how they affect the early stages of the new product development process and firm profitability. Studying the interplay mechanisms using other variables and measuring their impact on different performance indicators represents additional interesting research areas.

The concept of new product and service portfolio advantage that was developed in Article 3 and tested in Article 4 provides multiple research opportunities. First, future studies could search for other antecedents of NPSP advantage. For example, other orientations and the proficiency in executing NPD and NSD processes are possible enablers for achieving NPSP advantage. It appears rather likely that firms would benefit from competitor and customer orientations but also a technology

orientation in increasing uniqueness and the level of customer value produced. Second, interesting research opportunities exist for searching for other moderators and mediators between NPSP advantage and firm performance. For example, the innovativeness of marketing initiatives and distribution channel management capability could moderate the relationship between the NPSP advantage and firm sales growth.

Finally, to continue building a cumulative body of knowledge on the EO–performance relationship, future research would benefit from being more accurate in defining the performance measures capturing an exact type of performance. The bulk of the existing EO research deploys subjective firm performance measures bundling multiple performance indicators such as sales growth, market share, profitability, return on investment, and senior management satisfaction with results (Rauch et al., 2009). Using such measures may be argued to indicate perceived overall firm performance, however, the approach provides little information on actual outcomes of the phenomena in question like EO. Being more precise with the outcome measures would increase the understanding of how and when EO is particularly beneficial or detrimental. For example, sales growth and profitability are not the same outcome, nor do they necessarily have the same drivers (Troilo et al., 2014). Instead, they are likely to have different antecedents and possibly different mediators and moderators too. By using subjective measures bundling all the possible performance outcomes, studies continue to produce contradictory results or exhibit biased support to the universally advantageous perspective on EO. Accordingly, future EO research would benefit from studies with precisely defined measures that better outline the desired outcome and utilize objective rather than subjective data.

## 5.4 Conclusions

The essential purpose of this dissertation was to investigate the role of entrepreneurial orientation in improving the growth, profitability, and innovation performance of a firm. The key finding of this study is that EO's role appears to vary depending on the strategic goals of a firm. When a firm builds its drive for growth on new products and services, an entrepreneurial strategic posture can provide favorable conditions to recognize and capture emerging market opportunities with high growth potential. However, the results also suggest it is possible that when a firm builds its growth on its existing offerings, high levels of EO may not be equally important. This study confirms the findings of prior research that entrepreneurial firms benefit from various resources and capabilities, such as financial SR and ACAP, to decrease uncertainty related to

entrepreneurial strategies. Similarly, the results support the claim that an advanced learning capability facilitates profit outcomes for increasingly entrepreneurial firms, but also that the highest levels of EO may not be necessary to attain high profitability. The profitability driving effects of EO appear to manifest particularly through its impact on the innovation process and the desired innovation process outcomes such as new product and service portfolio advantage and success. Therefore, this study argues that the required level and role of EO is dependent on the desired performance outcome. In addition, entrepreneurial firms evidently require appropriate business development resources and capabilities to fully capitalize on the potential of EO to drive performance. This claim highlights the importance of clearly defining the strategic goals of a firm and emphasizing the level of entrepreneurial disposition accordingly.

Finally, this study leaves the reader with multiple *what if*, *what else*, and most importantly *how* questions. This research has provided some interesting, and to an extent divergent, results on the EO–sales growth relationship that may be related to its contextual setting. By deploying an industry-wide homogeneous sample this study has raised the need to consider the nature of the industry and the operational environment in general when interpreting EO's relationship with different performance measures. Second, as the findings show that complementary resources and capabilities may be required simultaneously, future research would benefit from investigating the other resource and capability combinations available to an entrepreneurial firm seeking to attain even higher levels of performance. Further, utilizing a mixed method research design applied in this study for the first time in EO research could enable future studies to better address the actual mechanisms through which EO and other strategic constructs interplay to prompt strong performance. Finally, a million-dollar question raised in this study is that of how to adjust the level of EO to serve the strategic objectives of a firm. This is a tough question to answer because the strategic objectives of a firm tend to change over time, leaving numerous future research opportunities to investigate the implementation of an entrepreneurial strategic posture that may need adjustment according to changes in industry and firm lifecycles. To conclude, although this dissertation has provided some interesting insight into the benefits and limitations related to organization level entrepreneurship, there are still many research opportunities to make substantial theoretical and managerial contributions in the future.

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## THE NON-LINEAR RELATIONSHIP BETWEEN ENTREPRENEURIAL ORIENTATION AND SALES GROWTH IN MATURE MARKETS AND THE MODERATING EFFECTS OF SLACK RESOURCES AND ABSORPTIVE CAPACITY

Jesse Heimonen

Project researcher

University of Vaasa, Department of Management

Marko Kohtamäki

Professor / Visiting Professor

University of Vaasa, Department of Management /

Entrepreneurship and Innovation, Luleå University of Technology

**Acknowledgements:** An earlier version of this manuscript was presented at the 2015 Academy of Management conference in Vancouver, Canada. We are grateful to the anonymous reviewers for their constructive comments, which helped us to further develop the manuscript. We are also grateful to Professor Joakim Wincent from Luleå University of Technology (Sweden) for his valuable comments. This study was financially supported by TEKES (Finnish Innovation Funding Agency), the doctoral school of Vaasa university, Foundation for Economic Education, Nissi Foundation Niilo Helander Foundation and Private Entrepreneur Foundation. Thank you for American Journal Experts for proof reading this article.

**Abstract:** To advance the understanding of the relationship between entrepreneurial orientation (EO) and firm sales growth, this study investigates the linearity assumption and assesses the moderating role of financial slack resources and absorptive capacity. An analysis based on a dataset of 86 companies operating in a mature industry (food manufacturing) suggests that EO has a J-shaped relationship with sales growth. Moreover, the results suggest that in companies with high levels of slack resources, an increase in EO from low to moderate levels accelerates sales growth; however, to capitalize on the sales growth potential of high EO, high absorptive capacity is also required.

**Keywords:** Entrepreneurial orientation, absorptive capacity, sales growth, financial slack resources, non-linear model, moderators

## 1. Introduction

Entrepreneurial orientation (EO) has an important role in firm growth and competitive advantage. EO may be particularly significant for firms focused on high growth and expansion in contrast to those who exploit current resources for higher profits (Covin & Slevin, 1991; Kollmann & Stöckmann, 2014). EO is a strategic posture and organizational mindset that generates entrepreneurial proactiveness, innovativeness, and risk taking (Wiklund & Shepherd, 2003). EO requires resources, such as slack resources (Wiklund & Shepherd, 2005), and capabilities, such as absorptive capacity (ACAP) (Engelen et al., 2014), to facilitate strategic entrepreneurial actions that drive higher performance, such as the introduction of new products and entry into new markets. Thus, the interaction among EO, slack resources, and ACAP is crucial for companies aiming for entrepreneurial growth.

Although the majority of research on the EO–performance relationship suggests a positive direct linear effect, which has generally been found to be significantly positive (Wiklund & Shepherd, 2011), previous studies report significant variations between path coefficients, suggesting the potential for a non–linear relationship between EO and performance and a potential effect of moderating variables (Rauch et al., 2009). The nature of the EO–performance relationship has recently been proven to be affected by external environmental conditions, which suggests the need for increased contextual awareness when interpreting findings on EO (Saeed, Yousafzai, & Engelen, 2014). Internally, EO is thought to affect firm success mainly through its impact on innovation performance (Alegre & Chiva, 2013; Baker & Sinkula, 2009; Kollmann & Stöckmann, 2014). It has been suggested that EO is not universally advantageous; rather, because EO increases experimentation within the company, it increases the variance in innovation outcomes, which means that there is a higher probability not only of high returns but also of high failure costs (Patel et al., 2015; Wiklund & Shepherd, 2011). In this vein, recent studies on the non–linearity of the EO–performance relationship present evidence of diminishing marginal benefits at high levels of EO (Dai et al., 2014; Wales et al., 2013b). Considering the possible limitations of increased EO, prior research suggests that financial resources (Wiklund & Shepherd, 2005), intangible resources (Anderson & Eshima, 2013), capabilities such as resource orchestration capability (Wales et al., 2013b), and learning capabilities such as ACAP (Engelen et al., 2014; Patel et al., 2015) can enhance the EO–performance relationship. Given the existing evidence on the EO–performance relationship and its potential moderators, Rauch et al. (2009: 781) note that a ‘detailed examination of the conditions under which EO is particularly beneficial (or detrimental) to performance is an area where substantial theoretical and empirical contributions

can be made in future research'. Thus, the EO literature would benefit from studies on the EO–performance relationship that test possible non–linearities and complex two–way moderations in well–specified contextual settings, because it is likely that different combinations of resources and capabilities create conditions that facilitate a company's adaptation to its external environment and enhance a company's ability to overcome internal limitations on its entrepreneurial strategic posture.

To extend the existing literature on the relationship between EO and growth performance, the present study endeavors to make two contributions in particular. Because EO is considered important for companies aiming for growth and expansion (Covin & Slevin, 1991), especially in well–established industries and mature markets (Lee, Lee, & Pennings, 2001), the first contribution is challenging the linearity assumption of the EO–sales growth performance relationship for smaller companies operating in mature industries. An analysis of quantitative data on 86 Finnish food manufacturing companies yields results that suggest a J–shaped non–linear relationship between EO and sales growth. These results diverge somewhat from those of Wales et al. (2013b) and thus add knowledge about the EO–growth relationship in this particular context. The second major contribution of this study is testing the role of a two–way moderation effect wherein ACAP and slack resources moderate the non–linear relationship between EO and sales growth. The finding of two–way moderation in this study highlights the importance of simultaneously possessing adequate levels of both slack resources and ACAP to obtain a positive impact of EO on sales growth.

## 2. Theory and hypotheses

### 2.1. *The direct non–linear effect of entrepreneurial orientation on sales growth*

According to the vast amount of prior research, EO positively affects firm sales growth. Whereas the correlation between EO and sales growth has been credibly demonstrated, some studies have presented doubts regarding the linearity of the relationship (Wales et al., 2013b). In particular, several seminal reviews and a meta–analysis have found a variety of shortcomings in the existing empirical research (Rauch et al., 2009; Wiklund & Shepherd, 2011) and suggest that the nature of the relationship may be affected by the contextual setting (Saeed et al., 2014). Thus, researchers are beginning to recognize problems with the linear effect argument and have started to test for non–linear effects (Dai et al., 2014; Wales et al., 2013b). In such studies, it is crucial to consider the contextual setting.

The existing literature defines EO as an entrepreneurial strategic posture strongly characterized by a willingness to observe and capture new market opportunities (Wales, Parida, & Patel, 2013a). Proactive firms benefit from being early to market; active with regards to product, service, and process development; and effective in searching for new opportunities in other industries (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). With low to moderate levels, proactiveness is almost non-existent, and firms operating in mature markets may lack the necessary posture to engage in rare new market opportunities, enabling competitors to take the early-mover advantage. Thus, especially for smaller firms with limited resources, it is vitally important to be on the frontier of the market, as they are forced to be even more selective with opportunities in which they invest. With moderate to high levels of proactiveness, firms may be expected to have the mindset necessary to create new services, products, and markets to accelerate sales growth (Dai et al., 2014).

The effect of EO on innovation and sales growth is inherently based on a firm's willingness to experiment, renew its organizational practices, and deploy unordinary ideas to create novel product and service offerings (Lumpkin & Dess, 1996). Firms with low to moderate levels of EO and innovativeness are limited in terms of their ability to expand the scope of their products and services and instead focus on incrementally improving their offerings, which generates slower growth than more innovative new market introductions (Troilo, De Luca, & Atuahene-Gima, 2014). Without the capacity to combine resources and experiment to create attractive new products or services, firms with low to moderate levels of innovativeness operating in mature markets may be limited to incremental improvements or forced to imitate their competitors (Zhao et al., 2011).

Considering that the costs of innovation are created ex-ante to market entry and financial returns, risk taking is needed to capture the sales growth potential of new product opportunities. Risk-averse firms focusing on exploitation of their existing product and service portfolio may enjoy high performance for short periods of time but may be unable to exploit highly innovative business opportunities that could drive higher growth. Instead, the realization of sales growth effects from EO and risk taking requires moderate to high levels of risk taking to implement the needed investments. Because risk-taking firms tend to be more positive about new business opportunities and their potential, firms with high levels of risk taking and EO are likely to engage with opportunities whereas firms with low to moderate levels of risk-taking orientation may be risk-averse and neglect new opportunities for sales growth (Neck & Manz, 1996).

Finally, firms with a moderate to high level of EO may have a greater tendency to diversify their businesses (Sapienza, De Clercq, & Sandberg, 2005). A high level of EO is likely to be associated with highly explorative strategies (Kollmann & Stöckmann, 2014), where the capacity to diversify business leads to new attractive sales growth opportunities for firms operating in mature markets. Thus, firms with a moderate to high level of EO are likely to benefit from broadening their product scope to accelerate sales growth. Consistent with studies on strategy implementation (Wooldridge & Floyd, 1990), the effective implementation of EO requires emphasis on and visibility of the chosen EO to ensure that this EO continuously influences organizational culture and structures and affects investment decisions. Therefore, higher levels of EO are more likely to transform entrepreneurial attitudes into concrete actions. Especially in smaller firms, where resources tend to be scarce, if the level of EO is insufficient, i.e., low to moderate, then managerial activities may remain hidden and inadequate to facilitate growth. In Porter's words, the firm may be 'stuck in the middle' if it has a low to moderate level of EO. The non-linear effect of EO becomes understandable in the context of a mature industry, wherein significant growth effects may be more difficult to achieve than in rapidly developing, dynamic industries. Hence, to achieve significant sales growth driven by entrepreneurial endeavors in mature markets, firms need moderate to high levels of EO.

**Hypothesis 1:** In a mature industry, a firm's EO exhibits a non-linear and J-shaped relationship with the firm's sales growth.

## *2.2. The moderating role of slack resources and absorptive capacity*

Prior research has found that entrepreneurial firms benefit from a broad scope of resources and capabilities (Rauch et al., 2009). Referring to 'potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals' (George, 2005: 661), slack resources are an important enabler for firm growth. Slack resources are defined as the necessary pool of resources required for experimentation, innovation, diversification, and growth (Wiklund & Shepherd, 2005). For instance, financial slack, which may be created by initial capital or prior profits (George, 2005; Kim, Kim, & Lee, 2008), enables a firm to utilize complementary external resources from the market (Baker, Miner, & Eesley, 2003; Garud & Karnøe, 2003). Thus, it is also important for smaller firms to possess an adequate level of slack resources to be able to engage in selected growth opportunities. However, it is likely that an appropriate level of slack resources alone would be insufficient to facilitate growth (Sirmon, Hitt, & Ireland, 2007; Vanacker, Collewaert, & Paeleman, 2013). Instead, firms need an entrepreneurial

mindset (EO) (Simsek, Veiga, & Lubatkin, 2007) and effective knowledge creation and utilization practices (ACAP) (Nohria & Gulati, 1996) to fully capitalize on slack and generate firm sales growth (Long & Vickers–Koch, 1995).

Firms that build their growth efforts by broadening their scope of products, services, and customer markets are likely to benefit from EO, reflecting a willingness to engage in entrepreneurial behavior (Kollmann & Stöckmann, 2014), as increases in EO facilitate the identification and capture of new market opportunities. Whereas EO leads to increased alertness regarding market opportunities (Wales et al., 2013a), slack resources can provide the flexibility to develop new products and services for the observed opportunities. However, in firms with moderate to high levels of EO, in which they tend to explore increasingly unconventional and risky opportunities, EO, even if accompanied with slack resources, may not be enough to ensure the success of the growth efforts. On these occasions, i.e., when highly innovative new products and services require the introduction of completely new processes, technologies or distribution channels or entail the targeting of unfamiliar customer segments – EO and slack would benefit from efficient knowledge processing capability, which is related to ACAP.

A lack of learning resources has been argued to potentially inhibit the capitalization of new market opportunities (Grimpe & Sofka, 2009). Ventures characterized by significant uncertainty would benefit from quick trial–and–error practices (Covin, Green, & Slevin, 2006; McGrath, 1995) and from the capacity to adapt and adjust (Sirén, Kohtamäki, & Kuckertz, 2012). Moreover, the information–processing approach suggests that ACAP can provide a means to decrease the time–to–market, thereby facilitating renewal and growth (Sinkula, 1994; Song, Van Der Bij, & Weggeman, 2005). High ACAP facilitates the experimentation process by efficiently capturing marketplace reactions when innovative new market entries do not satisfy customer preferences; the firm can then convert these observations into prompt corrective actions (Liao, Welsch, & Stoica, 2003). Failure to respond appropriately to market reactions – especially in projects characterized by the high failure costs that are typical of entrepreneurial endeavors – may lead to negative performance outcomes. Thus, firms without high levels of ACAP may not be able to fully leverage prior experiences and existing knowledge to take advantage of innovative high-growth potential market opportunities identified through entrepreneurial proactivity (Anderson & Eshima, 2013). Therefore, especially for smaller firms where failure in selected ventures could drain limited slack resources, ACAP may be even more important.

In addition, ACAP can facilitate a transparent and participative new opportunity evaluation and implementation process that allows managers and employees with different functions to contribute; this approach can enhance the quality of the opportunity, the visibility of the effort, and the commitment to required actions that mitigate the resistance to change that is often related to risky entrepreneurial ventures (Engelen et al., 2014). Further, high-risk opportunities, even those with attractive growth potential, might be more easily dismissed if a firm does not have access to resources and to the competence of partners, both of which are facilitated by high ACAP (Lane, Salk, & Lyles, 2001; Rothaermel & Alexandre, 2009). Hence, regarding growth opportunities that involve uncertainty due to customer segments, products, services, processes, or technologies that are new to the company, ACAP may lower the barriers to pursuing these opportunities and may facilitate sales growth success by leveraging the existing knowledge base of the focal company and its partners. Thus, in conditions where slack resources provide a platform for firm development, EO and ACAP can provide the necessary combination of entrepreneurial tendencies and valuable knowledge-utilization capabilities to drive sales growth. Together with slack, ACAP facilitates efforts to overcome the constraints of EO (Covin & Slevin, 1991; Hornsby et al., 1993).

In summary, companies that emphasize the diversification and introduction of new products and services would benefit from high slack resources and an increase in EO; however, at moderate to high levels of EO, it appears likely that EO and slack resources must accompany ACAP to further enhance sales growth performance. A positive effect, at its core, is created by proactive and innovative risk taking and is supported by improved knowledge utilization and business development resources, leading to high sales growth.

**Hypothesis 2a:** An increase in EO along with high levels of slack resources enhances sales growth performance up to a certain point, but capturing the full sales growth potential of high EO requires interaction with both high ACAP and high levels of slack resources.

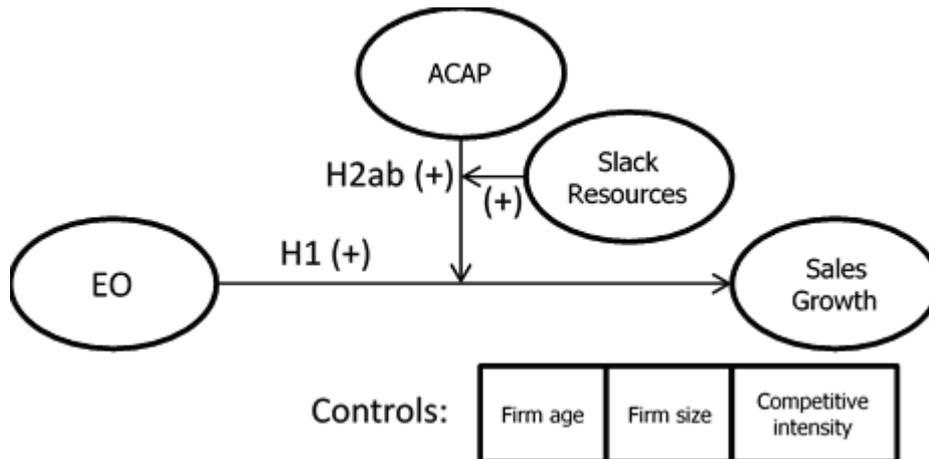
Whereas slack resources enable firms to develop operations towards firm growth, the optimal combination of EO and ACAP may vary based on the strategy upon which growth efforts are built. Because low-EO firms do not rely on the exploration of new product or service innovations, EO (proactiveness, innovativeness, and risk taking) is not as important as it is for high-EO firms that explore markets in search of more radical renewal. Thus, firms with low to moderate levels of EO, in which the exploitation of the current product and service portfolio appears to be the strategy of choice, may not necessarily need increased

levels of EO to achieve growth because in these firms, growth is mainly driven by upscaling the existing capacity.

Indeed, in companies implementing an exploitation strategy, modest increases in EO might lead to incremental improvements in existing products and processes (Raisch & Birkinshaw, 2008) and thereby enhance firm profitability rather than sales growth (Benner & Tushman, 2003; March, 1991). In addition, the replacement of existing products and services with options that offer incremental improvements in customer experience may be considered a source of slower growth than radical new product or market innovations (Troilo et al., 2014). Therefore, modest increases in EO may slow sales growth while simultaneously positively affecting overall company performance. Slack resources, however, are equally important, as upscaling requires additional resources for investments.

Despite the uncertainty involved in upscaling current production, the required level of risk taking is reasonably low compared with ventures in which the business model is changed. Thus, firms utilizing an innovation strategy based on exploitation may benefit from the organizational capability to acquire, assimilate, transform, and exploit knowledge (Zahra & George, 2002), providing the required capacity to enhance risk recognition, evaluation, and control through a more efficient exploitation of intra- and inter-organizational knowledge bases (Jansen, Van Den Bosch, & Volberda, 2005). Thus, by improving the knowledge-processing capacity of low-EO firms, ACAP may facilitate growth. Therefore, exploitative firms may benefit from high ACAP and slack resources (Keh, Nguyen, & Ng, 2007). In summary, smaller companies that concentrate on their existing product and service offerings should benefit from high ACAP and slack resources, whereas entrepreneurial proactiveness in recognizing highly innovative new market opportunities and willingness to take risks is not equally required.

**Hypothesis 2b:** Firms with high ACAP and high slack resources may exhibit a decrease in sales growth performance when employing low to moderate levels of EO.



**Figure 1.** Research Model.

### 3. Methods

#### 3.1. Data collection, response pattern, and respondents

The study deploys two sources of data – primary survey data and secondary financial data – from Finnish food manufacturing companies. The food manufacturing industry was selected for this study because we wanted to investigate the phenomena of interest in a traditional product industry that is relatively stable but characterized by the emergence of new products and in which companies must continuously absorb new knowledge. Because EO and ACAP have typically been studied in high-tech sectors, we considered that the food industry might be an interesting alternative sector to study these phenomena, recognizing that financial slack should play a particularly important role in hostile and stable industries (Bradley, Wiklund, & Shepherd, 2011). The sample was selected by gathering financial data from the ORBIS database of companies that report their primary industry class to be NACE10 (Food Manufacturing) and employ more than five people. Then, we called all 343 companies, 293 of which we spoke with. Thereafter, the CEOs and managers from 255 companies agreed to provide their email for a survey questionnaire. After two email reminders, we received 118 answers, 108 of which had been fully completed and had names on them, enabling us to identify the company and link it to the financial data. Of these companies, 87 had all of the required financial information available to measure sales growth, size, age, and slack resources between 2009 and 2012. Finally, we removed one outlier, representing an average annual sales growth of 325 %, which was the highest value in the data, leaving us with a data set of 86 observations in total.

### 3.2. Analysis method and measurements

The constructs and questions were adapted from prior studies. To ensure the translation equivalence, items were translated into Finnish and then back-translated into English by another researcher (Brislin, 1970). For the independent variables, controls, and moderators, a retrospective measurement approach was applied that considered 2010, 2011, and 2012, as suggested by prior studies (Kumar, Petersen, & Leone, 2013; Miller, Cardinal, & Glick, 1997).

**Sales growth.** We operationalized the sales growth percentage by calculating the average annual change in turnover between 2009 and 2012. Company turnover information was obtained from the ORBIS database.

**Entrepreneurial orientation.** Our study defined EO as a strategic posture towards growth and renewal through innovativeness, proactiveness, and risk taking. To measure these three dimensions, we employed a 9-item measure used in a recent study by Patel et al. (2015) and originally drawn from Covin and Slevin (1989). Each dimension was measured based on respondents' agreement or disagreement with three statements ('To what extent do the following statements represent your organization? 1 = fully disagree, 7 = fully agree'). The structural model for the three-dimensional construct demonstrated a good model fit:  $\chi^2 = 36.97$ , degree of freedom (d.f.) = 23,  $p = 0.033$ ,  $\chi^2/\text{d.f.} = 1.61$ , RMSEA = 0.075, and CFI = 0.973 (Bollen, 1989; Hu & Bentler, 1999). We released two error variance relationships within the main factors. The loadings for both the first- and second-order factors ranged from 0.611 to 0.998.

**Absorptive capacity.** ACAP was defined 'as a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability' (Zahra & George, 2002: 186). To measure ACAP, we used a well-established, 22-item, 7-point scale from Zahra and George (2002) that was further developed by Jansen et al. (2005). Four items were dropped due to low loadings (<0.225) on their main factors. The rest of the 18 items, representing the four factors of knowledge acquisition, assimilation, transformation, and exploitation, indicated a good model fit:  $\chi^2 = 184.74$ , d.f. = 126,  $p = 0.001$ ,  $\chi^2/\text{d.f.} = 1.47$ , RMSEA = 0.066, and CFI = 0.914 (Bollen, 1989; Hu & Bentler, 1999). We released six error variance relationships within the main factors. The loadings for both first- and second-order factors ranged from 0.429 to 0.993, with the exception of two items that loaded 0.332 and 0.360 on their first-order factors. Similarly, the factor representing the first dimension of the construct loaded 0.232 on the second-order factor. As all of the loadings represented statistically significant values ( $p < 0.05$ ), we decided not to remove any additional items to maintain the content validity of the construct. To ensure the

robustness of our 18-item construct, we ran the same regression models with a 16-item construct with loadings for the first-order factors between 0.434 and 0.868 and loadings for the second-order factors of 0.337, 0.700, 0.880 and 0.942, with no impact on the results. In addition, complete removal of the first dimension did not significantly change the results.

**Slack resources.** As Bradley et al. (2011: 544) state, 'financial slack... is highly discretionary and can be rapidly absorbed into new uses'. The current ratio was utilized to indicate a firm's redundant reconfigurable financial slack resources that could be used for the achievement of organizational goals (George, 2005). The current ratio was calculated as an annual average of years 2010, 2011, and 2012. Current ratio information was accessed through the ORBIS database.

**Control variables.** The effects of firm age, firm size and competitive intensity on the dependent variable were controlled. Firm age represents the number of years from the firm's establishment until the year 2012. Firm size indicates the average number of employees in years 2010, 2011, and 2012. Both firm age and size were calculated directly from values in the ORBIS database. For competitive intensity, we deployed a 5-item, 5-point scale borrowed from Jaworski and Kohli (1993). CFA indicated a good model fit:  $\chi^2 = 1.99$ , d.f. = 4,  $p = 0.74$ ,  $\chi^2/\text{d.f.} = 0.49$ , RMSEA = 0.000, and CFI = 1.000 (Bollen, 1989; Hu & Bentler, 1999). The loadings for the single factor solution ranged from 0.476 to 0.870, with the exception of one result (0.340). We released one error variance relationship inside a single factor. Despite one item's slightly low loading, we decided to keep it because removing it did not influence the results.

## 4. Results

In this section, we present the results in two tables and two plotted graphs. First, we describe the observations in a correlation matrix of dependent, independent, and control variables (table 1). Then, we interpret the regression models (table 2) and plotted results (figures 1 and 2). The plotted results represent the data range of the actual observations to ensure the correct interpretation of the findings (Haans, Pieters, & He, 2016; Lind & Mehlum, 2010).

The correlations presented in table 1 indicate that EO is the only variable with a statistically significant correlation with dependent variable sales growth (0.33;  $<0.05$ ). Although there are no major correlations between independent variables, we decided to test the data for multicollinearity. Test scores between all constructs were present under a threshold value of 10 in a variation inflation factor (VIF) test. However, given that the statistically significant correlation between EO and ACAP

has a VIF value of 2.09, the test suggests that our model is free from multicollinearity.

**Table 1.** Correlations among the constructs and control variables.

		Mean	SD	1.	2.	3.	4.	5.	6.
1.	Sales Growth	12.28	19.89	1.00					
2.	Entrepreneurial orientation (EO)	4.41	1.09	0.33*	1.00				
3.	Absorptive capacity (ACAP)	4.83	0.70	0.14	0.29*	1.00			
4.	Slack resources (SR)	1.65	1.56	0.06	0.13	0.06	1.00		
5.	Firm age	27.94	22.93	-0.21	-0.25*	-0.01	0.00	1.00	
6.	Firm size (Number of employees)	37.90	45.99	-0.19	0.05	-0.10	-0.09	0.00	1.00
7.	Competitive intensity	3.88	0.66	-0.13	0.16	0.31*	-0.05	0.06	-0.06

Notes: \* indicates that  $p < 0.05$  (in two-tailed tests);  
SD stands for Standard Deviation

We used STATA 13.1 software to test our hypothesis with mean-centered constructs through an ordinary least squares regression (Aiken & West, 1991; Gefen, Straub, & Boudreau, 2000). In table 2, we present the six models studied in this paper. The first model tests the effects of control variables, and the second model adds the independent variables. The third model tests the first hypothesis of a non-linear relationship between EO and sales growth. The fourth model examines the moderation effect of ACAP, whereas the fifth model does the same for slack resources. Finally, the sixth model tests the second hypothesis by investigating the interaction effects of ACAP and slack resources on the EO and sales growth relationship. To confirm the relative importance of individual effects, we tested the changes in effect sizes with Cohen's effect size ( $f^2$ ) test upon the removal of direct EO, EO squared, and EO squared moderated by ACAP and slack resources. All changes in effect size were statistically significant, suggesting that individually, direct EO ( $f^2 = 0.11$ ) and EO squared ( $f^2 = 0.10$ ) effects make weak ( $0.02 < f^2 < 0.15$ ) contributions to explaining the variance of an endogenous variable (sales growth), whereas when taken together ( $f^2 = 0.22$ ), they collectively make a medium ( $0.35 < f^2 < 0.15$ ) contribution. The individual size effect of EO squared moderated with ACAP and slack resources ( $f^2 = 0.41$ ) shows a large ( $f^2 > 0.35$ ) contribution (Wales et al., 2013b).

**Table 2.** The results of hierarchical regression analyses.

<b>Dependent variable:</b> Sales Growth	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<i>Controlled effects:</i>						
Firm age	-0.20	-0.11	-0.15	-0.17	-0.14	-0.20*
Firm size (Number of employees)	-0.19	-0.20*	-0.17	-0.19	-0.17	-0.18
Competitive intensity	-0.12	-0.21	-0.15	-0.13	-0.15	-0.18
<i>Main effects:</i>						
Entrepreneurial orientation (EO)		0.32**	0.40***	0.34**	0.38***	0.15
Absorptive capacity (ACAP)		0.09	0.04	-0.09	0.05	-0.13
Slack resources (SR)		-0.02	-0.03	-0.03	-0.27	0.13
EO squared			0.29**	0.27*	0.33**	0.18
<i>Moderation effects:</i>						
EO * ACAP				-0.01	-	0.03
EO * SR				-	0.05	-0.32
EO * ACAP * SR				-	-	0.17
ACAP * SR				-	-	-0.35*
EO squared * ACAP				0.22	-	0.44**
EO squared * SR					0.25	-0.10
EO squared * ACAP * SR						0.66***
$\Delta R^2$ adj.		0.09*,a	0.06**,b	0.01,c	0.00,c	0.17***,c
$R^2$	0.09	0.21	0.28	0.30	0.29	0.49
Adjusted $R^2$	0.06	0.15	0.21	0.22	0.21	0.38
$F$	2.77*	3.40**	4.24***	3.59***	3.51**	4.78***

Notes: Standardized coefficients are reported.

<sup>a</sup> Compared to Model 1.

<sup>b</sup> Compared to Model 2.

<sup>c</sup> Compared to Model 3.

\* $p < 0.05$ .

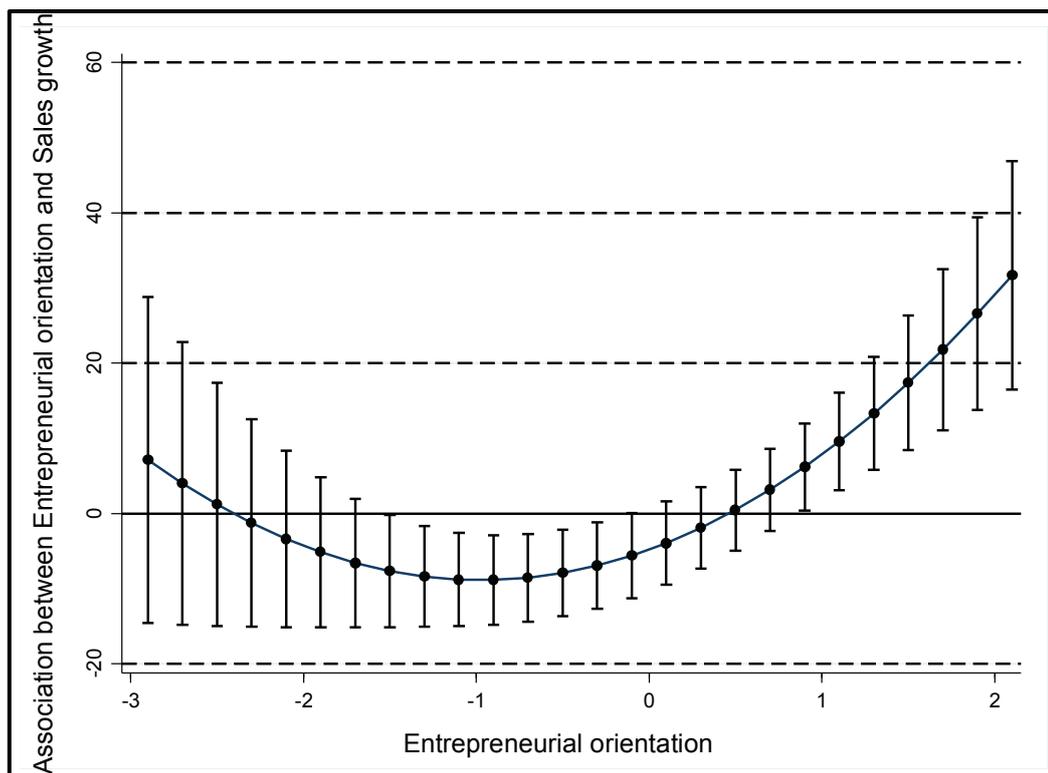
\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

In the first model, we test the effects of control variables on sales growth. None of the control variables – firm age ( $\beta = -0.20$ ; n.s.), firm size ( $\beta = -0.19$ ; n.s.) and competitive intensity ( $\beta = -0.12$ ; n.s.) – produce a statistically significant effect. Model 1 explains only 6 % of the adjusted variation in sales growth.

Model 2 presents the effects of independent variables, EO, ACAP, and slack resources on sales growth. An analysis demonstrates the statistically significant impact of EO on sales growth ( $\beta = 0.32$ ;  $p \leq 0.01$ ). The effects of ACAP ( $\beta = -0.09$ ; n.s.) and slack resources ( $\beta = -0.02$ ; n.s.) on sales growth were not statistically significant. Model 2 predicts 15 % of sales growth and is statistically significantly different from the baseline model ( $\Delta$  Adjusted  $R^2 = 0.09$ ,  $F = 3.40$ , d.f. = 6, 79,  $p < 0.05$ ).

Model 3 tests the non-linearity of EO and shows the statistically significant non-linear effect of EO on sales growth ( $\beta = 0.29$ ;  $p \leq 0.01$ ). Figure 2 show the plotted results, which indicate that the non-linear relationship is not statistically significant from low to early moderate levels but is statistically significant from early moderate to high levels. The plotted results suggest that the relationship is J-shaped. Model 3 explains 21 % of adjusted variation in sales growth and shows a statistically significantly improved prediction for sales growth compared to model 2 ( $\Delta$  Adjusted  $R^2 = 0.06$ ,  $F = 4.24$ , d.f. = 7, 78,  $p < 0.01$ ). The possible non-linearity of ACAP and slack resources was also tested, but no statistically significant effects were found. This analysis supports our first hypothesis.

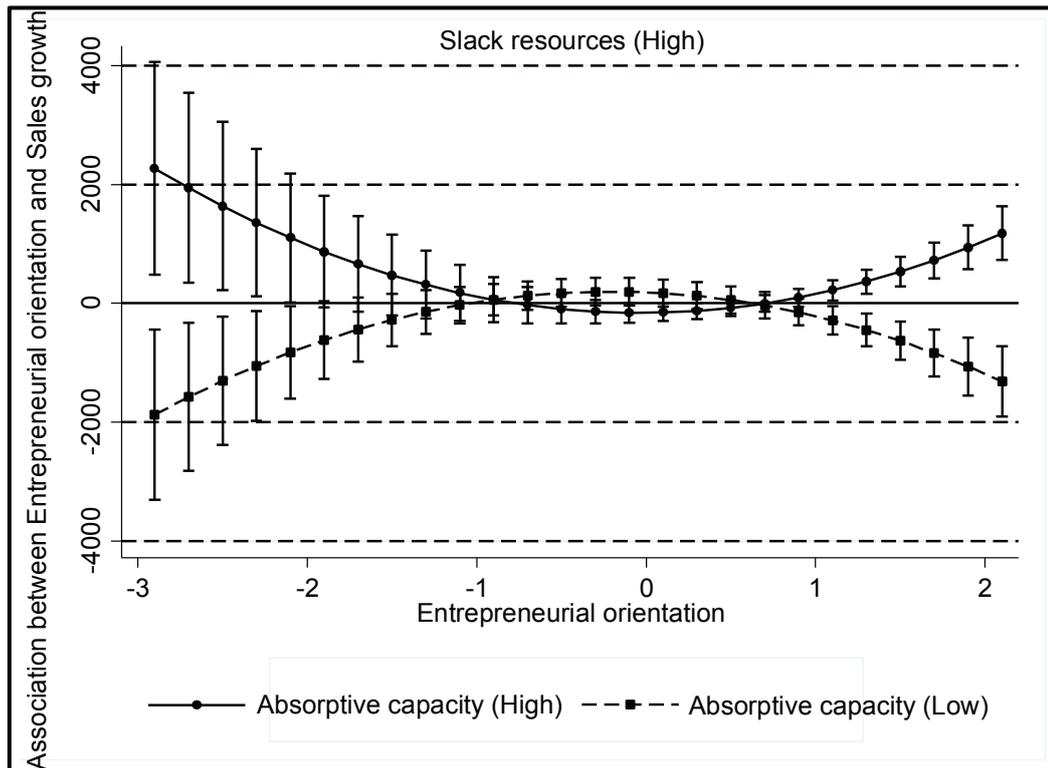


**Figure 2.** The non-linear effect of entrepreneurial orientation on sales growth (95 % confidence intervals).

Model 4 tests the interaction effect of ACAP and squared EO on sales growth. An analysis indicates that the interaction effect is not statistically significant ( $\beta = 0.22$ ; n.s.). Although model 4 shows a marginally higher shared adjusted variance in sales growth compared with model 3, the improvement is not statistically significant ( $\Delta$  Adjusted  $R^2 = 0.01$ ,  $F = 3.59$ , d.f. = 9, 76, n.s.).

Model 5 examines the possible interaction effect of slack resources and squared EO on sales growth. No statistically significant moderation effect is found ( $\beta = 0.25$ ; n.s.). Compared to the best model so far (model 3), model 5 presents no statistically significant enhancement in explaining the adjusted variance in sales growth ( $\Delta$  Adjusted  $R^2 = 0.00$ ,  $F = 3.51$ , d.f. = 9, 76, n.s.).

Model 6 adds the simultaneous interaction effects of ACAP, slack resources, and squared EO on sales growth. An analysis shows that a major statistically significant simultaneous interaction effect exists ( $\beta = 0.66$ ;  $p \leq .001$ ). The plotted results indicate that when slack resources are low, squared EO, ACAP, and slack resources have no statistically significant interaction effect on sales growth. In contrast, when slack resources are high, squared EO, ACAP, and slack resources interact to influence sales growth (figure 3). The interaction between squared EO, high slack resources, and low ACAP presents a statistically significant converted U-shaped effect on sales growth, whereas the interaction between squared EO, high slack resources, and high ACAP presents a U-shaped effect on sales growth (figure 3). Model 6 explains 38 % of the adjusted variance in sales growth and represents statistically significant and highly improved predictors compared with model 3 ( $\Delta$  Adjusted  $R^2 = 0.17$ ,  $F = 4.78$ , d.f. = 14, 71,  $p < 0.001$ ).



**Figure 3.** The non-linear interaction of entrepreneurial orientation, absorptive capacity, and slack resources on sales growth when slack resources are high (95 % confidence intervals).

The results from model 6 suggest that slack resource interaction is necessary for any above- or below-average sales growth. In addition, an increase of EO in firms possessing slack resources but a low level of ACAP can enhance sales growth performance up to a certain point. Whether a firm reaches its full sales growth potential when employing very high EO appears to be dependent on a high level of ACAP. The results indicate that high EO and high slack resources together with a high ACAP have a positive interaction effect on sales growth, whereas with a low level of ACAP, the interaction is negative. Moreover, the results suggest that if a firm possesses a high level of ACAP and slack resources, a high level of EO is not required to attain high sales growth performance. Indeed, an increase in EO from low to moderate levels, when ACAP and slack are high, appears to hinder sales growth performance. In summary, the results support hypothesis 1, indicating a non-linear relationship between EO and sales growth. Furthermore, the findings support hypothesis 2a by showing that the simultaneous existence of high ACAP and slack resources is necessary to fully capture the sales growth potential of high EO. In addition, the results support hypothesis 2b, which posits that high EO is not required to achieve high sales growth when a company simultaneously possesses high ACAP and slack resources; in fact, modest increases in EO decrease sales growth.

## 5. Discussion and implications

### 5.1. *Theoretical contribution*

The present study was conducted to extend the existing research on the EO–firm growth relationship by investigating the potential direct non–linear effect of EO on sales growth in the context of mature markets and assessing the assumed positive moderating effects of financial slack resources and ACAP. Thus, this study makes two main contributions to address the shortcomings of prior empirical research (Rauch et al., 2009; Wiklund & Shepherd, 2011). The first contribution of the study is that it challenges the linearity of the EO–performance relationship (Dai et al., 2014; Wales et al., 2013b). Finding the J–shaped relationship between EO and sales growth is an important contribution because it increases the understanding of the nature of EO in an industry–wide homogeneous sample of smaller firms operating in a mature market. Whereas prior studies have mainly argued that the EO–performance relationship is linear (Rauch et al., 2009; Wiklund & Shepherd, 2011) and less often suggested an inverted U–shaped relationship (Dai et al., 2014; Wales et al., 2013b), our results show that the nature of the relationship may vary based on the contextual setting (Saeed et al., 2014). Based on our empirical analysis on small firms operating in mature markets, the findings suggest that at lower levels of EO, EO alone does not explain the increase in sales growth. Instead, it seems that that with moderate to high EO levels, the effect of EO becomes positive and statistically significant with increasing strength. Given that EO indicates a tendency towards entrepreneurial behavior (Kollmann & Stöckmann, 2014) and that the chosen strategy requires a commitment and visibility to enable efficient execution of entrepreneurial endeavors (Wooldridge & Floyd, 1990), higher levels of EO are more likely to generate the required emphasis on growth efforts based on innovative new product and service entries. With low to moderate levels of EO, organizations may be in danger of being stuck in the middle, which results when a firm invests in proactive, innovative, and risk–taking behaviors but fails to implement the necessary actions to enable rapid sales growth. In addition, to achieve fast growth, firms operating in mature industries are likely to be forced to be highly proactive and innovative in seeking unconventional opportunities, suggesting the need for high levels of EO. Thus, because an increase in EO tends to involve increasingly costly and risky investment decisions and the resources of small firms are likely to be scarce, the choice of EO as a strategic posture requires dedication and commitment to capturing the sales growth potential of those few carefully selected opportunities.

As the second main contribution, the study demonstrates the moderating impact of financial slack resources and ACAP on the non-linear EO-sales growth relationship. The findings indicate that slack resources are required to promote high sales growth; however, as suggested by prior studies (George, 2005; Sirmon et al., 2007), slack will not benefit a firm that does not possess adequate capabilities to exploit slack for growth purposes. Whereas slack provides a platform to build on growth efforts, a disposition towards entrepreneurial behavior and advanced knowledge-processing capabilities such as ACAP enable firms to capitalize on slack. Firms exploiting their current product and service portfolios for growth purposes may benefit from high ACAP and slack resources that facilitate increased utilization and upscale existing capacity. However, as these firms do not rely on innovations related to entirely new product or service ideas identified through proactive entrepreneurial behavior, EO may not be equally required to reach high sales growth performance. In fact, our findings suggest that when ACAP and slack resources are high, low to moderate levels of EO may even hinder sales growth performance. This effect may be due to incremental product and service modifications and cost efficiency-driven business development, which may improve overall firm performance through enhanced profitability; these factors could explain claims by prior studies that EO is universally advantageous (Patel et al., 2015; Wiklund & Shepherd, 2011). However, our findings also support the idea that when a firm builds its growth efforts on innovative experimentation and new market entries, increases in EO under the impact of slack resources can enhance sales growth performance to a certain extent, but to fully capture the growth potential of high EO, high ACAP is also required. With moderate to high levels of EO, ACAP becomes increasingly important, as these firms become more active in exploring new business opportunities involving highly innovative and increasingly risky endeavors in which advanced knowledge processing is required. These findings contribute directly to the existing research on the EO-performance relationship by answering the call for investigation into possible moderators and the circumstances in which EO is especially beneficial or detrimental (Rauch et al., 2009).

## 5.2. *Managerial contribution*

The present study provides some interesting managerial implications as well. The relationship between EO and sales growth was found to be non-linear, and above-average industry sales growth performance appears to be realized only with moderate to high levels of EO. Thus, the results suggest that if firms operating in mature industries want to gain the benefits of EO in the form of sales growth, they

should aim to develop a strong entrepreneurial mindset. This may take a long time and require a vast amount of effort, considering how difficult it is to develop an organizational culture and structures in which EO is embedded. However, building growth efforts on new product and service opportunities, especially in mature industries, requires visibility and commitment to a chosen entrepreneurial strategy to facilitate strategy implementation and capture full sales growth potential.

Regarding the second main contribution, the positive moderating effect of ACAP and financial slack resources on the EO–sales growth relationship suggests that these complementary resources and capabilities benefit firms that are striving to achieve the maximum sales growth effect of EO. These results suggest that firms with aggressive entrepreneurial growth strategies should pay attention to the development of learning capabilities as well as ensure the availability of necessary financial resources, as these resources and capabilities, together with moderate to high levels of EO, facilitate sales growth. Complementary resources and capabilities may be especially important to smaller firms that are able to engage in a limited number of opportunities, and failure in entrepreneurial endeavors may directly lead to outcomes of negative firm performance. In addition, our findings suggest that for growth efforts that exploit existing product and service portfolios, in which EO is not necessarily required to achieve growth, slack resources and learning capabilities appear to be beneficial.

### *5.3. Limitations and suggestions for further research*

Despite its solid execution, the present study is not without limitations. First, the results emerge from the context of the food industry and Finnish national culture, which may be unique to an extent. This well-specified contextual setting enables the first main contribution of the study, which is showing that the nature of the EO–performance relationship may vary based on context. Moreover, these results open avenues for future studies in other industries and cultural contexts. Whereas many prior studies concentrate on the effects of EO in dynamic industries, the novel results of this study suggest that the effects of EO may vary between stable and dynamic industries. Second, this study analyzes the non–linear relationship between EO and sales growth with the application of ACAP and slack resources as moderating variables. Future studies should continue to test the non–linearity of the effects of EO on innovation, internationalization, profit, profit growth, and firm market value. The effect on different types of performance variables is likely to vary between different types of performance dimensions. Moreover, the impact of the moderating variables on the non–linear effects of EO need further research.

We suggest adding other moderating variables, such as internationalization capabilities, market orientation, network capability, and learning orientations, amongst many other potential moderators.

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BENEATH THE SURFACE: DISCOVERING THE MECHANISMS  
THAT DRIVE THE PROFIT OUTCOMES FROM THE  
INTERPLAY BETWEEN ENTREPRENEURIAL ORIENTATION  
AND ABSORPTIVE CAPACITY

Jesse Heimonen  
Project researcher  
University of Vaasa, Department of Management

Marko Kohtamäki  
Professor / Visiting Professor  
University of Vaasa, Department of Management /  
Entrepreneurship and Innovation, Luleå University of Technology

Vili Heikkilä  
Research assistant  
University of Vaasa, Department of Management

**Acknowledgements:** An earlier version of this manuscript was presented at the 2015 Industrial Marketing and Purchasing conference in Kolding, Denmark. We are grateful to the anonymous reviewers for their constructive comments, which helped us to further develop the manuscript. This study was financially supported by TEKES (Finnish Innovation Funding Agency), the doctoral school of Vaasa university, Foundation for Economic Education, Nissi Foundation Niilo Helander Foundation and Private Entrepreneur Foundation. Thank you for American Journal Experts for proof reading this article.

**Abstract:** Entrepreneurial orientation (EO) and absorptive capacity (ACAP) have been suggested to interact to improve firm performance. While prior research has provided statistical support for this claim, the actual mechanisms have remained undiscovered. This study analyzes six highly profitable company cases selected based on generalizable quantitative data and a cluster analysis. We identify three organizational micro-level mechanisms through which the interplay between moderate EO and high ACAP drives firm profitability: cross-organizational proactive idea generation, cost- and customer value-driven opportunity screening, and feedback-fueled new opportunity testing and capture.

**Keywords:** Entrepreneurial orientation, Absorptive capacity, Micro-level mechanisms, Interplay, Profitability

## 1. Introduction

In search of higher performance, firms have been argued to benefit from the innovation-driving strategic posture of entrepreneurial orientation (EO) (Miller, 1983; Rauch, Wiklund, Lumpkin & Frese, 2009) and organizational capabilities, such as absorptive capacity (ACAP), that facilitate the implementation of strategic initiatives (Cohen & Levinthal, 1990; Zahra & George, 2002). Where these organizational phenomena have been found to affect organizational performance separately, studies suggest that firms achieve even higher performance when a strategic posture is complemented with appropriate capabilities and vice versa (Wiklund & Shepherd, 2003). By creating a combination of activating entrepreneurial behavior and using organizational knowledge, EO and ACAP have been observed to create a potential combination for long-term prosperity (Kreiser, 2011).

Recently, scholars have addressed possible limitations for very high levels of EO (Dai, Maksimov, Gilbert & Fernhaber, 2014; Patel, Kohtamäki, Parida & Wincent, 2015; Wales, Patel, Parida & Kreiser, 2013b; Wiklund & Shepherd, 2011) and investigated the role of different resources and capabilities, such as financial resources (Wiklund & Shepherd, 2005), intangible resources (Anderson & Eshima, 2013), inter-organizational networks (Boso, Story & Cadogan, 2013; Kreiser, 2011), product development capabilities (Lisboa, Skarmeas & Lages, 2011) and resource orchestration capabilities (Wales, Patel et al., 2013), as potential means to overcome the limitations of increased EO. As the benefits of EO have been argued to manifest especially through EO's impact on innovation performance (Alegre & Chiva, 2013; Baker & Sinkula, 2009; Kollmann & Stöckmann, 2014), learning and knowledge-processing capabilities, such as ACAP, have been suggested to be critical for increasingly entrepreneurial firms (Keh, Nguyen & Ng, 2007; Wang, 2008; Zhao, Li, Lee & Chen, 2011) to increase efficiency (Engelen, Kube, Schmidt & Flatten, 2014) and to decrease uncertainty related to innovation efforts (Patel et al., 2015). While EO is suggested to increase proactiveness in search of new innovative market opportunities and tendency to take risks (Wiklund & Shepherd, 2005), ACAP provides an entrepreneurial firm "an ability to recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990, p. 128). In return, it is argued that "EO represents an important means through which firms can increase the financial benefits of their ACAP" (Wales, Parida & Patel, 2013a, p. 630). Therefore, recent studies have investigated possible positive interaction effects between EO and ACAP and found positive impacts on firm performance in contextual settings, such as turbulent environments (Engelen et al., 2014), low- and medium-technology industries (Sciascia, D'Oria, Bruni & Larrañeta, 2014) and small and medium-sized

enterprise (SME) contexts (Wales, Parida et al., 2013). However, where the existing quantitative research has suggested that EO is particularly important for expansion and growth (Lumpkin & Dess, 1996) and presented numerous potential reasons for the positive interaction effects of EO and ACAP (Engelen et al., 2014; Patel et al., 2015), the current literature lacks in-depth evidence on the actual mechanisms through which the interplay between increased EO and ACAP affects firm profitability, a central dimension of overall firm performance. Hence, there is a call for a qualitative case study to investigate the organizational micro-level mechanisms through which the profit performance-driving potential of the interplay between EO and ACAP can be realized.

To address this call, the present study deploys a qualitative multiple-case study utilizing data from six highly profitable companies identified based on a quantitative cluster analysis from a single mature industry sample (food manufacturing industry). This study contributes to the debate on the interplay between EO and ACAP by identifying three organizational micro-level mechanisms through which the interplay between moderate EO and high ACAP appears to positively affect firm profitability. Additionally, the study offers practical implications for managers by demonstrating means to capture the profitability-driving potential of increased EO and high ACAP.

## 2. Theoretical background

The most commonly deployed conceptualization of EO – a strategic posture that captures a firm's inclination towards entrepreneurial behavior – consists of three dimensions: proactiveness, innovativeness and risk-taking (Miller, 1983; Rauch et al., 2009). While proactiveness is the propensity to seek new market opportunities (Lumpkin & Dess, 1996), innovativeness is the tendency to experiment with new ideas to introduce new products, services and processes (Covin & Slevin, 1991), and risk-taking involves bold moves under uncertain circumstances when investing a firm's resources in projects with uncertain outcomes (Wiklund, 1999). As such, EO is argued to be important to both smaller start-up ventures and larger existing firms (Lumpkin & Dess, 1996) and considered especially beneficial to firms that must compete head-to-head with well-established competitors, as is the case for firms operating in well-established industries and mature markets (Lee, Lee & Pennings, 2001).

Originating from organizational learning literature (Cohen & Levinthal, 1990), absorptive capacity involves processes and routines facilitating knowledge acquisition, assimilation, transformation and exploitation (Jansen, Van Den Bosch

& Volberda, 2005; Zahra & George, 2002). While knowledge acquisition is defined as an organization's ability to identify and obtain external knowledge that may be valuable to the organization (Zahra & George, 2002), knowledge assimilation involves the ability to interpret, understand, and internalize the acquired information (Jansen et al., 2005). Transformation involves the organizational routines, processes, and practices that enable a firm to combine the recently acquired and assimilated knowledge with the existing knowledge base (Todorova & Durisin, 2007). Exploitation, as the final element of ACAP, is an organization's ability to apply transformed knowledge to commercial ends (Cohen & Levinthal, 1990). ACAP is commonly considered a capability enabling a company to adapt to the operational environment (Eisenhardt & Martin, 2000; Teece, Pisano & Shuen, 1997; Winter, 2003) and to implement strategic initiatives (Zahra & George, 2002). Thus, ACAP is seen as an important enabler for a firm's innovations, competitive advantage and performance (Cohen & Levinthal, 1990; Lane, Koka & Pathak, 2006; Tsai, 2001; Zahra & George, 2002).

### *2.1. Interplay between EO and ACAP for Higher Profitability*

Recent studies have also shown that EO and ACAP interact to improve firm performance (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014; Wales, Patel et al., 2013). The effects of EO and ACAP on firm performance have been argued to be realized especially through innovation and learning processes (Cohen & Levinthal, 1990; Kollmann & Stöckmann, 2014; Miller, 1983; Todorova & Durisin, 2007; Zahra & George, 2002; Zhao et al., 2011). Where entrepreneurial firms enjoy increased alertness regarding innovative opportunity seeking (Lumpkin & Dess, 1996), ACAP provides means to acquire, assimilate, transform and exploit knowledge to identify and capture emerging opportunities (Zahra & George, 2002). Thus, ACAP is suggested to especially increase efficiency (Engelen et al., 2014) and decrease uncertainty (Patel et al., 2015) related to firm innovation efforts resulting from EO.

Where the level of EO affects eagerness to search for new market opportunities, it also affects the characteristics of opportunities that a firm desires to pursue (Bhuian, Menguc & Bell, 2005; Miller, 1983). Entrepreneurial firms are attracted by unconventional products and services with high potential returns (Covin & Slevin, 1991) that may require heavy resource commitments and bold moves (Wiklund & Shepherd, 2005). As innovative new product and service market entries tend to require ex ante investments prior to initial returns (Miller & Friesen, 1982), entrepreneurial firms are more responsive to opportunities that might have been ignored by reactive, less innovative and risk-averse firms (Miller,

1983). Advanced knowledge acquisition practices enable entrepreneurial firms to be more effective in identifying opportunities with desired characteristics (Zahra & George, 2002). ACAP enables firms to efficiently acquire external knowledge (Kreiser, 2011), grants access to a wider range of external knowledge sources (Jansen et al., 2005) and facilitates the additional knowledge acquisition in identified new market opportunities (Zahra & George, 2002). Thus, the interplay between EO and ACAP increases not only the number of encountered opportunities (Engelen et al., 2014) but also the probability of facing and identifying higher numbers of high-quality opportunities with desired characteristics such as high potential returns (Anderson & Eshima, 2013).

EO is also suggested to increase willingness to be first to introduce new products and services (Lumpkin & Dess, 1996) and responsiveness to ideas obtained from external knowledge sources (Zhao et al., 2011). Thus, entrepreneurial firms inherently enjoy increased speed in sharing new ideas inside the organization. Strong ACAP routines, such as communication and cooperation, enable firms to share knowledge even more effectively, while a lack of such routines can lead to communication barriers and conflicts (Engelen et al., 2014). Knowledge assimilation that occurs through collective learning activities where individuals and groups interact to discuss and exchange opinions, beliefs, and individual experiences; challenge each other's perspectives; and present constructive criticism enables entrepreneurial firms to not only increase the speed of knowledge sharing but also identify and evaluate the potential value and the risks associated with new opportunities (Zollo & Winter, 2002). Where faster knowledge sharing and identification of the value of opportunities enable firms to engage in entrepreneurial behavior before the opportunity disappears or loses its attractiveness (Rothaermel & Alexandre, 2009), failure in assessing the risks may lead to under- or overestimation of the risk (Engelen et al., 2014). Underestimating a risk can lead to high failure costs, and over-assessment of the risk may decrease motivation to pursue entrepreneurial activities, leading to lost high-value opportunity. Thus, firms in which EO and ACAP interact may enjoy faster sharing of ideas and improved ability to identify and evaluate an opportunity and the risks involved.

Entrepreneurial firms are attracted by first-mover advantages and willing to experiment with new ideas to create novel products, services, and processes that may lead to high returns but also to high failure costs (Miller & Friesen, 1978). Advanced knowledge transformation practices enable entrepreneurial firms to increase the value of an opportunity through collaboration and knowledge creation practices that facilitate creative processes and utilize existing knowledge bases to resolve issues related to new opportunities (Engelen et al., 2014). Capacity to

transform knowledge also enables better risk management for fewer realized risks, leading to higher firm profitability (Kreiser, 2011; Patel et al., 2015). In return, risk-taking is suggested to facilitate the recombination of resources and learning of non-routinized trial-and-error knowledge (Patel et al., 2015). This capacity allows increasingly entrepreneurial firms to utilize their knowledge-based resources more thoroughly to capture new market opportunities (Wiklund & Shepherd, 2003) and enhance efforts to exploit knowledge and transform it into new resource bundles that create novel customer value (Wales, Parida et al., 2013a). Thus, the interplay between EO and ACAP facilitates the creation of meaningful applications and novel solutions for high-value opportunities and enables firms to manage the risks involved (Cohen & Levinthal, 1990).

Increased numbers of recognized opportunities may lead to a temptation to engage in multiple entrepreneurial endeavors simultaneously (Wiklund & Shepherd, 2005) and diversify business (Sapienza, De Clercq & Sandberg, 2005). Efficient knowledge exploitation practices facilitate the opportunity selection process and decrease time to market (Clausen & Korneliussen, 2012) by enabling entrepreneurial firms to quickly recognize the most valuable opportunities (Covin, Green & Slevin, 2006; Zahra & George, 2002) and to identify profitable customer segments (Engelen et al., 2014). Furthermore because the new product offerings are associated with imperfection (Zahra & George, 2002), entrepreneurial organizations can increase product-market fit by utilizing the existing knowledge bases and customer feedback to execute prompt corrective actions when innovative offerings proactively delivered to the markets fail to meet the customer requirements (Liao, Welsch & Stoica, 2003). Thus, the interplay between EO and ACAP can enable firms to identify a higher number of opportunities with desired characteristics, select the most valuable opportunity, further increase the value of the opportunity, decrease time to market and manage risks, all of which together can improve firm profitability.

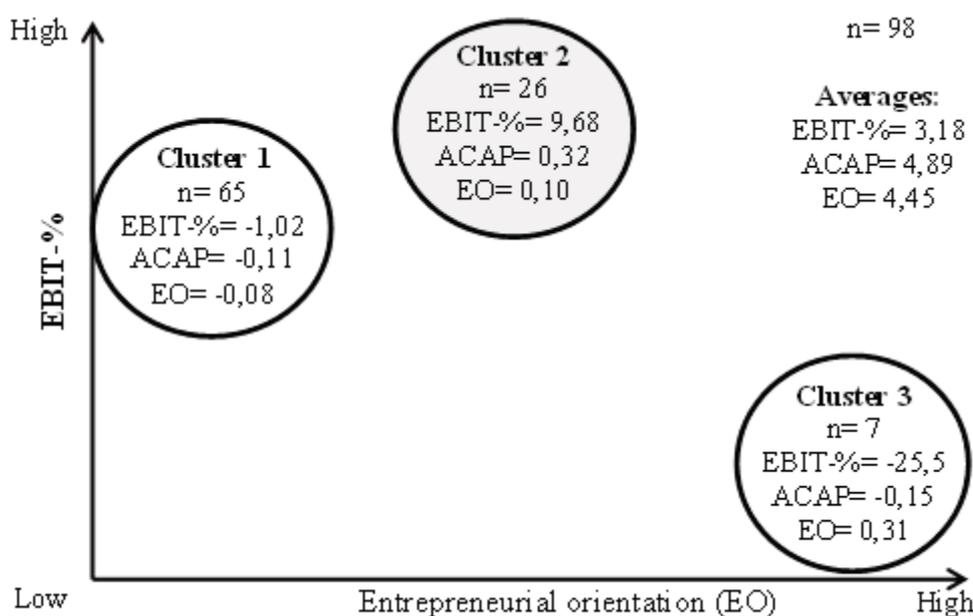
### 3. Data and methodology

This study builds on a multiple-case study approach by investigating the practices and mechanisms that illustrate the interplay between a moderate level of EO and high ACAP. Our in-depth analysis, based on unique data collected primarily through thematic interviews, introduces findings from six systematically selected highly profitable company cases.

### 3.1. Case selection and sample

The case companies were selected based on a quantitative data set collected through a survey questionnaire and linking the primary data with financial secondary data accessed through ORBIS database. Thereafter, k-means cluster analysis was applied to the combined data. Performing cluster analysis on quantitative data and selecting cases based on the results is a technique to ensure the selection of the most appropriate cases for in-depth analysis (Piekkari, Plakoyiannaki & Welch, 2010).

As the first step, 343 Finnish food manufacturing companies employing five or more people were identified from the ORBIS database. After identifying, contacting and sending the link to the web-questionnaire to prospective subjects, the researchers received 118 responses, of which 98 were completely filled out and had profitability data available. When the quantitative data were analyzed via two-step cluster analysis with two of the validated constructs of EO and ACAP and one objective financial performance variable, the EBIT-% average over three years (2010, 2011 and 2012), three clusters of companies were found (Figure 1). The first cluster on the left represents a group of companies demonstrating below-average profitability, ACAP and EO. The high-performing cluster (cluster 2) represents very high values in EBIT-% and ACAP and slightly above-average levels in EO and included 26 companies, of which we selected six cases reporting above-average values for all the variables. The third cluster represents companies with highly negative EBIT-%, below-average ACAP and the highest EO.



**Figure 1.** Three clusters identified through K-means cluster analysis.

### 3.2. *Data collection process*

Interviewees were selected based on their familiarity with the knowledge transfer activities and mechanisms related to new product development processes. Taking into consideration the industry and the size of the companies (<500 employees), the respondents were selected among CEOs, development managers and production managers. The face-to-face interviews were recorded with the permission of the interviewees and transcribed by a professional agency. Two researchers conducted the interviews by using identical semi-structured interview templates to encourage open dialogue on topics closely related to knowledge acquisition, assimilation, transformation and exploitation in the context of new market opportunity recognition and capture. The interview data consist of 6 confirmatory phone interviews and 11 face-to-face interviews, for a total of 17 interviews.

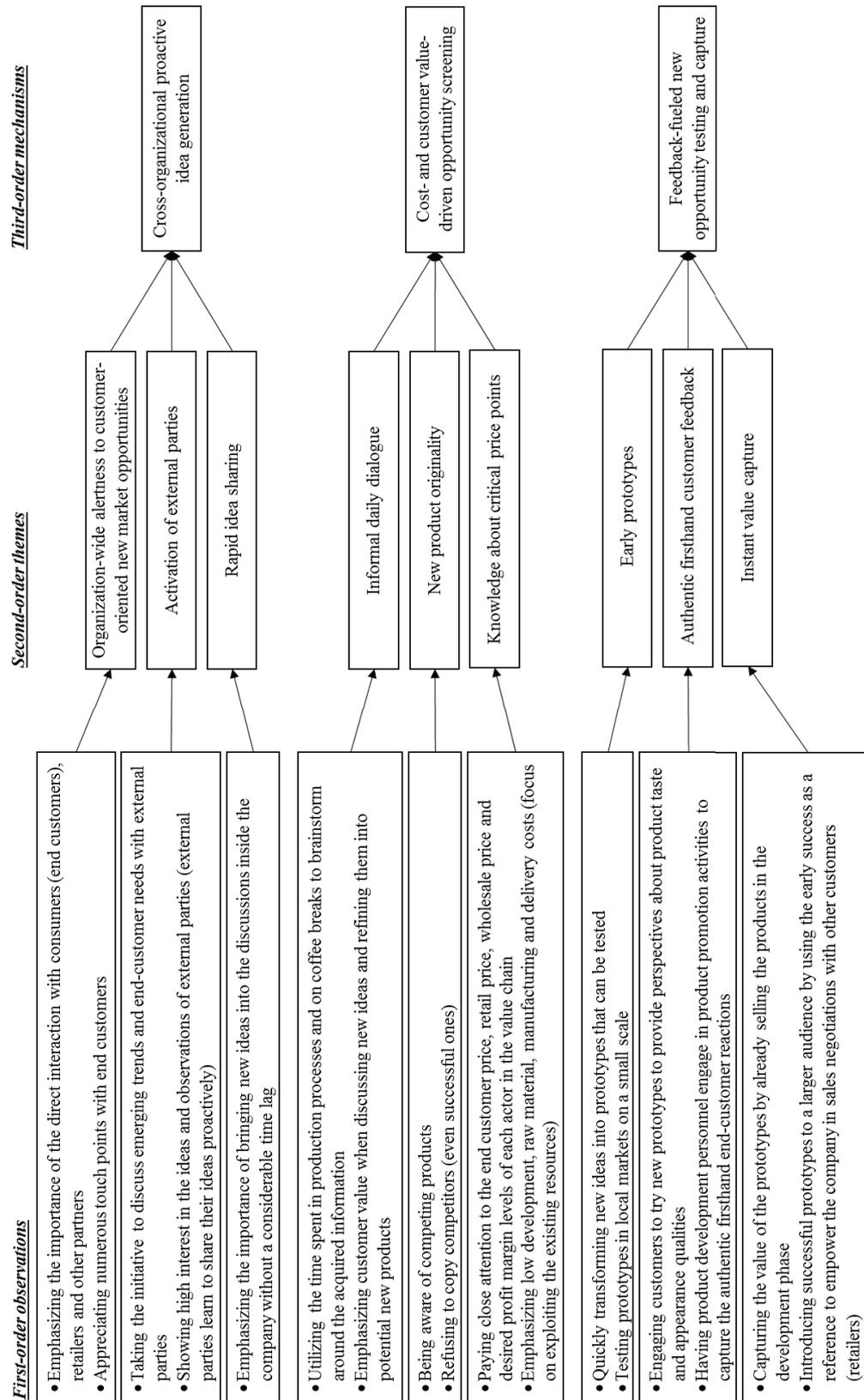
We started the interview data collection process by calling the six selected companies and had a brief phone interview with each CEO to confirm that the company was active in terms of new product development and considered itself efficient in introducing new products to the markets. Then, we scheduled interviews with two representatives who were aware of new product development activities in each company.

The interview template was designed to reveal the practices and activities that contribute to external knowledge acquisition, assimilation, transformation and exploitation related to new product development efforts. The interviewees shared their experiences openly and provided multiple real-life examples of how information flows, ideas develop and different people contribute to successful new product introduction. The detailed descriptions of how the case companies operate provided a rich source of information on prerequisites for and prevalent attitudes driving financially successful new product development, enabling us to interpret the influence of increased entrepreneurial posture. Obviously, as all the interviewees held senior positions, their answers may have been partly influenced by prior work experience, making the answers and descriptions interpretative. However, the practical and detailed examples confirmed that the shared insight mainly arose from experience with knowledge processes in the case companies and not from possible prior experiences in other companies or contexts. Furthermore, possible respondent bias was controlled for by comparing the answers and descriptions of both respondents in each company to enhance reliability of the study.

### 3.3. *Data analysis*

Data analysis was executed through simultaneous interpretation of the existing literature on EO and ACAP and the fully transcribed interview transcripts. Two researchers thoroughly examined all the transcripts organizing the data into matrices dividing observations of practices, activities and mechanisms related to new product development by the dimensions of ACAP and the evidence indicating the involvement of increased EO. As part of the matrix development process, the researchers met repeatedly to discuss similarities and differences in their findings and read through the transcripts several times and cross-checked each other's observations to ensure that the data were thoroughly and correctly interpreted (Eisenhardt, 1989). In this process, the depth of analysis evolved from the descriptive interviewee level to interpretative company- and cross-company-level analysis, providing insight into the interplay of the main concepts.

First, each of the 11 interviews was organized into a separate observation matrix, after which the findings were matched and merged into six company-level matrices. All the observations were referenced with the interviewee name and transcript page number to facilitate the cross-check process and to further analyze the possible existence of EO and ACAP interplay. Within-case analysis was built on these company-level observations and complemented with the interviewees' descriptions of their business models and the information available on their companies' websites and the ORBIS database. Several research team discussion sessions were organized to reach a holistic overall understanding of the data and to evaluate similarities and differences in practices, activities and mechanisms and the existence and nature of EO and ACAP interplay (Huberman & Miles, 1994). Furthermore, all six of the company-level matrices were brought together into a single matrix. Observations were organized into themes based on their similarity (Figure 2) by following the Gioia methodology (Gioia, Corley & Hamilton, 2012). Themes failing to indicate clear and substantial cross-case support for their importance in achieving excellence in new product development were eliminated.



**Figure 2.** Findings illustrated through the Gioia methodology.

The accuracy of the observation interpretation for both the within-case and cross-case analyses was controlled through transcription cross-checks by other team members to ensure that all the relevant practices, activities and mechanisms were identified and that the interviewee expressions revealing the involvement of entrepreneurial proactiveness, innovativeness and risk-taking were recognized. To confirm our results, we deployed data triangulation by exploiting various data sources, such as quantitative survey data, interviews, websites, a secondary financial database (ORBIS) and a data-auditing technique in which two researchers read all the transcripts thoroughly to ensure data interpretation accuracy (Eisenhardt, 1989; Huberman & Miles, 1994).

## 4. Results

Our empirical results build on within- and cross-case analyses. Where within-case analysis provides an important overview of the contextual settings of the case companies, the primary findings arise from cross-case analysis. The cross-case analysis is here deployed to identify the central profit performance-driving mechanisms affecting the early stages (idea generation, screening and testing) of the new product development (NPD) process (Cooper, 1994). Particular focus is on explicating empirical evidence of the mechanisms where different dimensions of EO (proactiveness, innovativeness and risk-taking) and the dimensions of ACAP (knowledge acquisition, assimilation, transformation and exploitation) interact to increase firm profitability. As the case companies belong to the cluster of companies having slightly above-moderate EO and high ACAP, the analysis is performed especially to capture the underlying mechanisms externalizing the cluster characteristics.

### 4.1. *Within-case analysis*

#### Case Industrial Meat Company

Operating in Finnish and Swedish markets, this company provides consumers cold-smoked products and salamis. Interacting with domestic and international distributors and following the public discussion, the company utilizes the gathered knowledge to create additive-free, low-fat and organic products to satisfy growing demand from nutritionally aware consumers. The company has developed effective product development processes, in contrast to their competitors, that

seem to be capable of transforming new ideas into original products faster than the majority of their competitors in the market.

#### Case City Bakery

This case company operates as a bakery specializing in a niche of Mediterranean and French breads. The company's products are available for consumers from several grocery stores and the company's regular marketplace booth. Furthermore, the products are actively sold to numerous hotel, restaurant and catering customers. The company cooperates with its customers to comprehend consumer consumption preferences to create new product offerings that are more appealing to the consumers. With a combination of highly productive processes and effective product development, the company is capable of competing with other actors in the markets with a better price to quality ratio than their competitors.

#### Case Additive-Free Bakery

The company operates several bakeries producing, among other things, gluten-free products. The company's products are available at their own three locations and numerous grocery stores due to cooperation with national grocery store chains. Additionally, the company offers its products to some hotel, restaurant and catering (Horeca) customers that request specific types of bakery products for their menus. The company frequently creates new experimental products that are available in their own locations, assessed based on their popularity and further developed based on the consumer feedback received. Viable products are further marketed via grocery store chains.

#### Case Pizza Company

The company operates in four different sectors: restaurant business, Horeca sales, grocery store sales, and solution sales. The company produces bakery products for Horeca customers and offers convenience foods and sauces for consumers via grocery stores. Additionally, it has created an interesting service concept for event organizers that enables sports arenas and other similar customers to effectively operate fast food service with an all-inclusive service concept delivered by the case company. New product and service development activities of the company build on addressing the value produced to each actor in the value system.

#### Case Traditional Meat Company

The company operates as a meat product wholesaler. It offers cooked and raw meat products for Horeca customers and private consumers via grocery store meat counters and the company's own shop. The company specializes in cured meat products and meat-curing services provided for their customers but also offers other meat products to markets. The company actively gathers and utilizes knowledge concerning consumer consumption preferences via their store location to create new product offerings to satisfy the existing customer demand. The company works in close cooperation with Horeca customers to create new products for that sector.

#### Case Sauce Manufacturer

The company produces a large selection of different marinades, dressings, sauces, and spices for their customers. Additionally, the company offers their customers product development services free of charge to find new ideas and establish new business with customers. The company's customers are mainly meat counters, meat-processing companies, and grocery stores. Working closely with customers to obtain feedback on products, the company uses the feedback to introduce new and further develop existing products. Highlighting the importance of partnerships, the company's operations are very collaborative to improve its understanding of its customers.

#### 4.2. *Cross-case analysis*

##### **Mechanisms of Cross-organizational Proactive Idea Generation**

New product idea generation as a starting point for the NPD process appears greatly affected by the interplaying mechanisms of EO and ACAP. The results demonstrate that the case companies are characterized by increased organization-wide alertness to new market opportunities, ability to activate external parties to participate in idea generation and willingness to rapidly share ideas. The importance of direct interaction with consumers (end customers), retailers and other partners is demonstrated in the interview data as the most valued source for new product ideas and entirely new product ranges and even on one occasion as the initiator of the establishment of completely new production facilities. Case companies benefit from numerous possible touch points with end customers, such

as their own factory shops, their own cafeteria or restaurant services, separate sales points, active product promotions on the premises of the retailers and interaction at food exhibitions. Not only directors but also other employees whenever in direct customer interactions show increased alertness to new market opportunities by active listening and proactive engagement in discussions. For example, sales personnel are encouraged to engage in discussions with customers for new ideas and feedback, push the discussions a bit deeper to better understand what is truly meant and document the findings. Here, organizational emphasis on knowledge acquisition embedded with increased entrepreneurial proactiveness appears to positively affect the ability to efficiently capture end customer insight to generate new product potentials.

*Pizza company: The interaction with the customers is really important. If a customer asks whether we sell a “simsalabim”-thing, don’t just reply “no” but also make notes on it, so we get the information that customers have requested such a thing, and maybe at some point, we can take it into consideration and start thinking about it and making preparations for it.*

Additionally, what appears distinctive to the case companies is that they are able to activate surrounding parties to proactively contribute to new product idea generation. By exhibiting genuine interest in ideas coming from external parties, interaction with consumers, daily open dialogue with resellers – as well as other actors such as logistics companies and promotion service providers – initiates the process of organization-wide active knowledge acquisition crossing the traditional organizational boundaries. For example, taking the initiative to discuss emerging trends and end customer needs with the ground-floor employees of retailers or asking a delivery person for insight into well-selling products activates external parties to share ideas on new market opportunities whenever they encounter them. Where increased proactiveness with advanced knowledge acquisition and assimilation capabilities activates external parties, an increased level of entrepreneurial innovativeness, manifested in organization-wide openness towards new ideas, decreases the resistance to “not-invented-here-ideas” inside the focal company. Organization-wide innovativeness enables knowledge assimilation to begin alongside knowledge acquisition in customer interaction, facilitating the interpretation of the acquired knowledge to draw the right conclusions.

*Sauce Manufacturer: We have had huge strength, that... we have had good relations with shopkeepers, so that we have information well in advance on what are they going to require in the future... with this (information) we have gained new customers.*

*Additive-Free Bakery: We might ask customers directly... or we hear a lot from product representative... and bread department managers talk to our delivery drivers... and the customers say directly at the store that... the reaction of the customers is the most important.*

Furthermore, the case companies are eager to rapidly share the gained insight within the focal company. By being encouraged to document and share the observations and new ideas, increasingly entrepreneurial firms with advanced knowledge-processing capabilities are able to connect the acquired knowledge with the existing knowledge base. Here, the interplay between increased proactiveness and innovativeness and high knowledge acquisition and assimilation capabilities affects the speed of the NPD process by quickly feeding the ideas into the screening phase and exposing the ideas to a broader audience inside the focal company. In this endeavor, companies appear to benefit from increased alertness to new product and service ideas and other market opportunities and also from the mindset of immediately sharing the observations within the organization.

*Pizza Company: Just a little while ago, we received feedback... The customer felt that the servings were too simple, and... the next day, we took action. We brought it up and started developing it... this is our way to operate... we react to a situation when it occurs.*

*Traditional Meat Company: For Labor day, we made one version of it [sausage], and this week we'll make a new one. The customer tried it and wanted changes, which we will now make. The product will match the customer preferences.*

### **Mechanisms of Cost- and Value-Driven Opportunity Screening**

The screening process builds on efficient knowledge processing, exploiting informal daily dialogue, promoting the originality of the new product idea, and evaluating the value potential for the entire value system and the ability to utilize the existing resource base. First, to complete the assimilation of the acquired knowledge and transform the raw ideas into valuable insights, case companies rely on informal daily dialogue. Increased innovativeness is manifested in discussions at coffee breaks and during daily operations where new ideas are evaluated and developed further. Openness to new external ideas and willingness to innovate new products enable firms to transform the assimilated customer insight into testable product ideas. The companies make use of the time spent in production processes

and on the coffee breaks to brainstorm around the acquired information to extract valuable new ideas from it. Infused new-idea screening practices demonstrate the embedded proactiveness, innovativeness, assimilation, and transformation routines through which new ideas are evaluated. Serving as a capacity to turn the acquired and assimilated knowledge into potential new products that meet the requirements of established product strategy and customer needs, knowledge transformation is critical to facilitating entrepreneurial innovativeness by the case companies.

*Traditional Meat Company: Pretty much, it happens here when we are having coffee. So if some customer from somewhere asks for some special kind of product, we start developing it, considering what could be the idea, and someone might get an idea that “Yes, let’s try that,” and then we start developing from there. ...the thing usually starts from the coffee table conversations.*

*City Bakery: While working, we have lots of time to discuss informally about how we do things and where are we saving (money)... Here at the oven. At the oven or at the dough-making station... there, we discuss these things and what we could do and where we could get raw material or what kind of raw material suppliers there are.*

The screening process also reflects increased innovativeness by emphasizing new product uniqueness. Aspiration to transform ideas into novel product concepts benefits from knowledge acquisition practices and entrepreneurial proactiveness to explore the existing products on the market, enabling firms to evaluate the originality of new product ideas. By emphasizing new product uniqueness, the case companies ease their access to retailer shelf space and can avoid head-to-head competition affecting new product profitability, the central criterion for new-idea evaluation. Original product ideas and refusing to copy competitors indicate strengthened proactiveness and capability to create successful original products, requiring innovativeness, which together with proactiveness indicate enhanced EO.

*Sauce Manufacturer: We don’t think that we need to start copying our competitors, even if we see that they have some novel product.*

*City Bakery: I have tried to differentiate our portfolio from what the big bakeries do... for example, the abandoning of rye bread. And the making of artisan breads and Mediterranean breads... After that, we get lot of products that our competitors do not have.*

At the new-idea-screening phase, the focus is on the value produced for the entire value system, meaning that the case companies consider value for end customers, retailers, wholesalers and the focal company itself. Finding an optimal balance among customer value, attractive prices and high profit margins is at the center of knowledge transformation. Successful products embed low development, raw material, manufacturing and delivery costs; high value for the end customer; and attractive profit margins for firms operating within the value system. Based on knowledge of critical price points and stakeholder profit margins, the companies improve their capability to assess product ideas and create products that are financially appealing to the customers. Calculating the prices in the idea-screening phase decreases the risk of product failure.

*Additive-Free Bakery: For the producer, there will be certain costs, but if it is so high that the customer does not want to pay it, then... something has to be changed in the whole process or in the raw materials, or in some other parts, or the product just cannot be released to the markets. That often becomes clear when the product is tested by the customers and some price is set for it.*

*Pizza Company: Now the stores have started understanding this... it is not only how much they sell but, rather, that they sell the right products, which have profit margins. From our products, the store gets damn good profit margins. Then, they also want to put it on display well in the good spots inside the stores.*

Finally, the results show that the case companies place considerable emphasis on product profitability, product pricing and reseller profits by engaging in opportunities that can be captured with existing resources and capabilities. The new offerings are developed in a manner that they can be produced with the existing resources without making heavy investments in new capabilities or equipment. Thus, a great majority of the new product and service innovations are more incremental than radical. As case companies do not search for opportunities in completely new markets or industries, a very high level of proactiveness or innovativeness is not required as with new market entries with highly innovative product or service concepts. Furthermore, product development utilizing existing capabilities and resources lowers the required level of risk-taking.

**Sauce Manufacturer:** Since we mostly still make the same kind of products that we always have, we don't have to make investments at all... Let's say that we'd rather stick to the markets that we have gained access to, so we don't try anything more extraordinary than anyone else; instead, we stay rational, and since we have some markets, we will look after them.

*City Bakery: At the moment, investments have been minor... the customer orientation is the most important thing, we cannot lose that... All the other technical things and the rest can be solved in time.*

### **Mechanisms of Feedback-Fueled Opportunity Testing and Capture**

The case companies are efficient in building early prototypes of the ideas found attractive at the screening phase, collecting feedback from customers to further coordinate the development process and capturing the value of new products that are still under development. Here, transformed knowledge is exploited to build minimal viable products on a small scale. Building early prototypes in the new product concept development and testing phases speeds up the product development process. EO influences the process by increasing the speed and determination of acquired knowledge internalization. For instance, the case companies highlight that the process from knowledge acquisition to assimilation and transformation may sometimes take only days – firms interpret and react immediately when they encounter challenges in product sales.

*Industrial Meat Company: We are a rather small company, but in this salami business, we are a big player, but small and flexible in our way, so we can really quickly turn an idea into a product. It does not require that much bureaucracy after all.*

*Traditional Meat Company: We can make decisions ... in a day here; when some big meat refinery... starts making decisions, it will take them months... This is like a fast turning ship... I know how slow those big unwieldy ships [large corporations] are to turn. It might take them a year, before anything actually happens.*

*Additive-Free Bakery: If we take a competitor [large corporation], for example,... they cannot just take their products to the store and say “Sell these”... It will take them a year or two. During those two years’ time, we have brought six new products to the market, and have already shut down the majority of them. For us, the business lives fast like that.*

Prototypes are directly tested with consumers and resellers to proactively acquire early feedback, which is exploited to further develop products but also to quickly abandon unviable ideas. Thus, knowledge acquisition appears to provide essential information for the assimilation, transformation and exploitation of knowledge and not only serves as a common initiating capacity for the new product idea

generation process but also tightly interrelates with the later NPD phases. Here, the entrepreneurial orientation, particularly proactiveness, facilitates cooperative operation and proactive feedback gathering in product development and testing. Being able to acquire, assimilate and transform insight into prompt corrective action enables the case companies to manage the risk of launching a failing product on a full scale. Since the prototype-testing processes are based on the acquired feedback, the companies' perceived risk becomes lower than it would be without the feedback knowledge.

*Traditional Meat Company: It goes like, if we develop a new product, we make a prototype of it and take it the customer... Personal visit... and then he tastes it... he accepts the product as it is or gives us improvement ideas... in the end, if the product is good, it starts to roll on its own. In the end, the consumers will make the final decision.*

*Additive-Free Bakery: It is easier to bake breads and take them up to our store for sale and see if they get sold. I ask the sales clerks, since it has been a good day, what do the customers buy and what do they like? And then they say that the customers have praised the Mämmi [traditional Finnish dessert] and said that is the best. A couple of hundred people have bought it and five have said that it is the best they have ever had. Then, we will lock the recipe down, and we won't change it anymore.*

*Sauce Manufacturer: It does not matter to us even if we make a small number of products and they don't get sold. After that, we just do not make them anymore. It is not a problem for us. We can make small quantities, and we can make large quantities.*

The case companies tend to capture the value of the prototypes by already selling the products in the development phase. In addition to enabling direct consumer interaction and a continuous feedback loop, prototype testing with end customers also serves as a promotional activity. Therefore, companies rely on product sampling days in supermarkets, which provide customer feedback and increase sales. For example, in some cases, even the head of new product development (master chef) him- or herself engages in product promotion activities to capture the authentic firsthand end customer reactions. Thus, the companies do not rely on expensive marketing campaigns but, rather, believe that their high-quality products speak for themselves and are capable of attracting consumers to purchase their products after sample testing. By verifying retailer and consumer preferences and increasing market awareness through prototype selling, firms are able to not only reduce the risk related to the final version of the product but also finance the

early development phase. Building on early prototypes decreases both the market risk and the financial risk.

*Additive-Free Bakery: Today, we plan and make. Tomorrow, it is already for sale. And we get the money already on the same day. We get a constant flow of cash without any half-year waiting periods. However, since we have our own store, we can sell the experiments to customers. Then, our sales clerks will give us feedback on what things the customers like. Having our own store is really important, and it is an opportunity that we should use.*

*Sauce Manufacturer: Sometimes, we have a chef giving out samples on our behalf... He goes next to a meat counter and gives samples of either fish or meat products that are seasoned with our products. Then, he gives us feedback on what the customers have liked, and at the same time, we can boost the sales of our new products such as meat seasoning oils or chili pepper oils.*

*Traditional Meat Company: In [larger supermarket chains] we are present in stores. We deliver our products there, and we have our representative, who demonstrates the products and gives samples, and from that, we gain customer awareness and enhance our sales.*

Capacity to exploit new knowledge builds on leveraging the acquired, assimilated and transformed knowledge to enter the markets with new products. These companies are familiar with effective prototype development and entering smaller local markets to determine whether new products are capable of succeeding. If the products succeed on these local markets on a smaller scale, then the new products are introduced to a larger audience by using the early success as a reference to strengthen the companies' positions in future sales negotiations with other customers. Here, entrepreneurial proactiveness to increase the sales of new products is facilitated by the ability to efficiently exploit customer feedback.

*Additive-Free Bakery: When the product has been finished and the sample tested, maybe experimentally sold at our store, then after that we can pretty quickly see whether people are interested in it and whether we should take it to nearby supermarkets or not... we first try with a small volume in one location before we expand to all the stores...*

*City Bakery: We do offer these conversions to our current customers and purchasing managers... and we can see... if there is demand for that kind of products. If there is, then it is easy to bring a similar product, yet a bit*

*different, to other customers... We can try it out with small quantities and see how well they sell. Usually, it can be seen pretty quickly.*

## 5. Discussion and implications

### 5.1. *Theoretical contribution*

Our theory and empirical results provide interesting findings that contribute to multiple scholarly discussions on EO and ACAP. First, our findings join the discussion on the possible limitations and optimal level of EO (Dai et al., 2014; Patel et al., 2015; Wales, Patel et al., 2013; Wiklund & Shepherd, 2011). By demonstrating how a moderate level of EO outlines the characteristics of new market opportunities that highly profitable SME firms operating in a well-established industry pursue, our analysis increases the understanding of the effects of increased entrepreneurial posture on innovation process and firm profitability (Alegre & Chiva, 2013; Baker & Sinkula, 2009; Kollmann & Stöckmann, 2014). Second, our results add to the ongoing discussion on EO's interrelationship with other factors (Lumpkin & Dess, 1996; Rauch et al., 2009). In particular, where recent quantitative studies have shown that EO and ACAP interact to improve performance (Engelen et al., 2014; Patel et al., 2015; Sciascia et al., 2014; Wales, Patel et al., 2013), our findings provide novel in-depth insight into the essence of the interplay of these two strategic constructs.

By identifying three dominant micro-level mechanisms—1) cross-organizational proactive idea generation, 2) cost- and customer value-driven opportunity screening, and 3) feedback-fueled new opportunity testing and capture—the results show how firms with increased EO benefit from high ACAP and vice versa. First, based on our findings, it appears that companies possessing advanced learning and knowledge-processing capabilities, such as ACAP, benefit from increased alertness to new market opportunities (Lumpkin & Dess, 1996), openness to new ideas (Zhao et al., 2011), and courage to experiment, which are typical in entrepreneurial firms (Kollmann & Stöckmann, 2014; Lumpkin & Dess, 1996). What appears distinctive to the case companies is how a moderate level of EO externalizes as genuine interest towards ideas coming from customers and partners (Zhao et al., 2011) and how interplay with high ACAP facilitates cross-organizational knowledge sharing (Lane, Salk & Lyles, 2001). By exhibiting proficiency in communicating (ACAP) and responsiveness to external ideas (EO), the case companies activate external parties to proactively identify, generate and share ideas on new market opportunities. While customers as a primary external knowledge source have already been found to drive high firm performance in similar contextual settings (Grimpe & Sofka, 2009), our novel findings

demonstrate how the interplay between increased EO and high ACAP can increase efficiency in generating ideas to capture new market opportunities, likely affecting overall firm performance.

Second, our findings are aligned with prior research suggesting that high ACAP facilitates inter- and intra-organizational knowledge transfer, especially through informal daily dialogue (Lane et al., 2001), which enables firms to share, evaluate and further develop recognized new market opportunities. Whereas other results suggest that firms with moderate EO focus on the delivery of high customer value by producing market-oriented innovations (Bhuian et al., 2005) and thus are rather incremental in nature (Baker & Sinkula, 2005), distinctive to our case companies is that they build new-idea screening on the evaluation of potential value to all actors in the value system. Here, efficient utilization of internal and external knowledge bases enables firms to develop ideas with attractive end customer value with appropriate prices and to secure adequate profit margins for resellers and the focal company. Increased EO appears to further facilitate firm profitability by externalizing an emphasis on new product originality and willingness to differentiate offerings from competing alternatives (Lechner & Gudmundsson, 2012), enabling these firms to be noticed by the end customers (Song & Parry, 1997) and command higher profit margins (Boulding, Lee & Staelin, 1994).

Third, our results demonstrate how the case companies are eager to experiment with early prototypes, which can partly explain why an increase in EO has previously been found to increase new product speed to market (Clausen & Korneliussen, 2012). What is distinctive to the case companies is that they are not only enthusiastic to try new ideas with customers but also concerned with capturing authentic end customer reactions to experimentation. Here, high ACAP facilitates proactive feedback gathering through knowledge acquisition, assimilation and transformation practices occurring in parallel, enabling increasingly entrepreneurial firms to execute prompt corrective action when required (Engelen et al., 2014; Liao et al., 2003). Furthermore, experimenting with prototypes with paying customers enables the case companies to capture value even in the early stages of the new product development process, increasing revenues and also promoting the new products and decreasing marketing costs. Therefore, given the discussion above, our findings increase the understanding of EO's relationship with firm profitability and add to the existing knowledge on the interplay between EO and ACAP that drive profitability, the central dimension of overall firm performance.

### 5.2. *Managerial contribution*

Managerially, the study provides interesting insight into the facilitation of knowledge utilization in the new product development process to its full extent through an increased entrepreneurial strategic posture and advanced knowledge-processing capabilities. In profitable firms, new product ideas often derive from external sources but are quickly brought inside the company to be evaluated and further developed to improve the value potentials across the value chain. Embracing this proactive stance by engaging in informal dialogue with external stakeholders but also within the organization appears to facilitate innovation and information acquisition, assimilation, and transformation routines. By creating a culture enabling informal communication, the organizations enhance their knowledge-based resources and utilization of knowledge. The case companies also illustrate practices that enable quick failure and adjustment through trial-and-error learning. Instead of aiming to introduce ready or perfect products to the markets, profitable organizations build the early stages of their product development process on a constant customer and consumer feedback loop. Such an approach ensures that organizations' new offerings exhibit demand from the customer side and that innovations match customer preferences. Sourcing new product ideas from customers and end-users, the organizations can also reduce requirements for unnecessary risk-taking.

Furthermore, potential new products are developed with a constant strong focus on profitability and gross margins throughout the process. Since the profitability of a product or service is well planned from the beginning of the innovation process, it is likely that the product will end up with viable profit margins for major stakeholders within the entire value system. By operating in this manner, the companies are able to quickly discard unviable ideas. Thus, although new product and service innovations facilitated by high ACAP and moderate EO appear to be rather incremental, managers seeking high firm profitability should seek to develop such a combination of these organizational characteristics.

### 5.3. *Limitations and Suggestions for Future Research*

As the theoretical and managerial contribution of our study builds on the analysis of micro-level mechanisms explicating the existence of studied concepts, performing such an analysis requires a well-outlined contextual setting to produce meaningful insights and applications. Therefore, the context of our study may limit the application of the findings to an extent. Where our analysis increases our understanding of the interplay mechanisms of EO and ACAP, especially in the context of SMEs operating in a mature industry, and investigates the interplay

effects from the profitability perspective, future studies could further the discussion by focusing on dissimilar contextual settings and other dimensions of firm performance. Moreover, where our results add to the ongoing discussion on EO's interrelationship with other factors by investigating the interplay with ACAP (Lumpkin & Dess, 1996; Rauch et al., 2009), in-depth investigations on the interplay with other capabilities, through which the full potential of especially very high EO can be captured, represent interesting opportunities for future research. Finally, our findings indicate that different dimensions of ACAP appear to be activated simultaneously in our case companies, enabling them to enjoy highly efficient knowledge utilization. This finding encourages scholars to investigate the nature of ACAP by challenging the assumption of the sequential order of different dimensions of ACAP. Future studies could investigate how to facilitate parallel execution of ACAP activities in larger firms.

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## MEASURING NEW PRODUCT AND SERVICE PORTFOLIO ADVANTAGE

Jesse Heimonen  
Project researcher  
University of Vaasa, Department of Management

**Acknowledgements:** An earlier version of this manuscript was presented at the 2016 International Council of Small Business conference in New York, USA. I am grateful to the anonymous reviewers for their constructive comments, which helped to further develop the manuscript. This study was financially supported by TEKES (Finnish Innovation Funding Agency), the doctoral school of Vaasa university, Foundation for Economic Education, Nissi Foundation Niilo Helander Foundation and Private Entrepreneur Foundation. Thank you for American Journal Experts for proof reading this article.

**Abstract:** This study introduces the concept of new product and service portfolio (NPSP) advantage by reporting the development and validation of a three-dimensional measure that reflects the three advantage characteristics: novelty, meaningfulness and superiority. Based on industry-wide homogeneous generalizable quantitative data from 108 manufacturing companies, the results indicate that NPSP novelty, meaningfulness and superiority represent distinct characteristics that together constitute NPSP advantage. Contributing to new product development research, the findings suggest that the three-dimensional construct that includes these distinct characteristics provides a better fit to the data than the unidimensional structure to measure the concept of advantage. In addition, this study provides an integrated approach to measuring the desired innovation process outcome (NPSP advantage) considering both new products and services, bridging the research between new product development and new service development.

**Keywords:** New product development, new service development, new product and service portfolio advantage, measurement development

## 1. Introduction

In the prior new product development (NPD) literature on new product success, the success-driving characteristics of new products and the performance-mediating role of new product advantage have received considerable attention (Cooper & Kleinschmidt, 1987; Hong, Song, & Yoo, 2013; Im & Workman, 2004; McNally, Cavusgil, & Calantone, 2010; Nakata, Im, Park, & Ha, 2006; Rijdsdijk, Langerak, & Hultink, 2011). Recent scholarly discussions on the characteristics driving new product success have raised the issue of measuring different advantageous characteristics, such as novelty, meaningfulness and superiority, through a unidimensional advantage construct, as the different characteristics are likely to be consequences of dissimilar actions and may have different performance implications (Rijdsdijk et al., 2011; Szymanski, Kroff, & Troy, 2007). For example, prior studies have shown that new product novelty and meaningfulness represent separate characteristics (Hong et al., 2013; Im & Workman, 2004) and argued that superior products are not necessarily meaningful in fulfilling customer needs (Rijdsdijk et al., 2011; Szymanski et al., 2007), indicating the need for a more transparent distinction between novelty, meaningfulness and superiority and improved measures.

Given that manufacturing firms have also begun to add services to their offering portfolios to better match customer preferences and to differentiate themselves from competitors (Gebauer, Gustafsson, & Witell, 2011; Oliva & Kallenberg, 2003), instead of relying solely on value delivered through a singular product, new services and novel combinations of new products and services can provide an additional source of competitive advantage. Thus, innovation no longer solely involves products or processes but also increasingly incorporates services and product-service combinations, requiring a more holistic approach to innovation efforts that considers both new product and service development simultaneously (Biemans, Griffin, & Moenaert, 2016; Papastathopoulou & Hultink, 2012). Despite the growing body of knowledge on new service development (NSD), compared to NPD research, the field is fragmented; in addition, no generally accepted guidelines for new service success have been presented (Biemans et al., 2016). For example, the prior NSD research has not conceptualized new service advantage as a measurable concept and has not identified the characteristics (such as novelty, meaningfulness, and superiority) that constitute this advantage. However, it has been suggested that the same advantageous characteristics that apply to new products apply to new services as well (Cooper & de Brentani, 1991). Where new product advantage is defined as “the extent to which a new product offers unique benefits and to which it is superior to competing products” (Rijdsdijk et al., 2011, p. 35), similarly, an advantage may be achieved through new services or new product-

service combinations that provide unique benefits enabling a firm to outperform competing alternatives. Thus, the existing NSD research would benefit from incorporating the advantage-constituting characteristics and the performance-mediating concept of new product advantage and from taking a more holistic approach to new product and service development by measuring the advantage at the portfolio level.

By applying the generalizable quantitative data from 108 manufacturing companies and developing and validating measures for new product and service portfolio (NPSP) novelty, meaningfulness, superiority and NPSP advantage, this study provides two particular contributions. As the first main contribution, the findings suggest that novelty, meaningfulness and superiority represent distinct characteristics that can be measured separately; however, together, they constitute a three-dimensional NPSP advantage construct demonstrating a better fit than the unidimensional approach to measuring new product and service advantage. As the second contribution, this study introduces an approach to measuring the advantage-constituting characteristics of both new products and services simultaneously by incorporating the characteristics into the portfolio level and conceptualizing the NPSP advantage construct. Thus, the findings contribute to the existing literature on NPD and NSD, providing an integrated approach to measuring the advantageous characteristics of new products and services at the portfolio level and suggesting interesting future research opportunities.

## 2. New product and service portfolio advantage

Although modern economies are service-driven, innovation knowledge produced and consumed by scholars remains mainly product-driven (Biemans et al., 2016). In accordance with the suggestion by Papastathopoulou and Hultink (2012) that NSD literature would benefit from a synthesis of the existing NPD and NSD knowledge to build an integrative innovation model, the present study builds on prior NPD literature to develop the concept of new product and service portfolio advantage, which is considered the desired outcome of a new product and service development process. Whereas most prior studies do not distinguish advantage-constituting characteristics when measuring new product advantage (Atuahene-Gima & Li, 2004; Cooper, 1979; Cooper & Kleinschmidt, 1987; Slotegraaf & Atuahene-Gima, 2011), recent studies have argued that different characteristics may have different antecedents and performance outcomes and thus should be measured separately (Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011). As prior research on NPD defines new product advantage as “the extent to which a new product offers unique benefits and to which it is superior to competing

products” (Rijsdijk et al., 2011, p. 35), the definition may be considered to address three advantage-constituting characteristics: novelty (unique), meaningfulness (beneficial) and superiority (superior). As the characteristics of singular products and services constitute the characteristics of the new product and service portfolio, the same advantage-constituting characteristics may be considered to apply at the portfolio level. In addition, at the portfolio level, new products and services can provide novel value combinations, together enabling a firm to better match the target customer preferences and thus produce superior value. Therefore, NPSP advantage is here conceptualized to indicate a firm’s ability to produce products and services with unique features, original product and service concepts or novel product and service combinations that are perceived useful and appropriate in fulfilling the needs of the target customers and the ability to outperform the competing offerings.

Novelty refers to the uniqueness of the new products and services or to a novel combination of new products and services in comparison to those currently on the market. Uniqueness is suggested to contribute to new product advantage by differentiating the offering from competing offerings (Cooper, 1983). Unique features are also linked to the product competitive advantage and product success through their ability to assist the customer in performing unique tasks (Song & Parry, 1997). Similarly, a singular new service can enable a firm to differentiate itself from other companies in the market or to assist in performing a customer-specific job (Gebauer et al., 2011). Furthermore, although some singular products or services may not be novel, these can complement other products and services, enabling a firm to offer novel value through a novel combination of new products and services. Thus, unique products or services or novel combinations of products and services may enable a firm to differentiate the offering and better match the preferences of the target customer and enjoy an advantage over competitors.

Regardless of how new products may differ from other existing offerings in the market, they should also produce value to the target customer. As Sethi, Smith, and Park (2001, p. 74) stated, “a primary determinant of new product success is the extent to which the product is different from competing alternatives in a way that is valued by customers.” Meaningfulness refers to attributes or functionalities that target customers perceive as valuable and beneficial. A product or service that addresses certain needs can create value by providing gains or relieving pains by being useful, assisting the customer in achieving his or her goals or generating value by other means. For example, quality and reliability, which are often considered traditional measures for new product advantage (Li & Calantone, 1998), are advantageous only if they are meaningful to the target customers. Furthermore, at the portfolio level, with the introduction of additional meaningful

products or services, a firm may be able to increase the level of delivered value, reducing the customer pain of seeking complementary products or services elsewhere. Thus, a high level of NPSP meaningfulness may provide an advantage over competitors.

Additionally, customers tend to prefer offerings with superior characteristics (Carpenter & Nakamoto, 1989). Superiority refers to the extent to which the new product provides superior value over competing products (Rijsdijk et al., 2011). If the target customers value the price over other value attributes, superiority does not necessarily require a high level of novelty, as it can be achieved through cost efficiency (Kim, Shin, & Min, 2016). Similarly, the superiority of new services can be gained through differentiation or cost advantages, enabling these services to outperform competing services in the value attributes that are meaningful to the target customers. At the portfolio level, the new products and services may deliver superior value alone or in combination with other products and services. Therefore, NPSP superiority can provide a competitive edge against competitors.

**Hypothesis 1:** Novelty, meaningfulness and superiority represent distinct characteristics of NPSP

Finally, although novelty, meaningfulness or superiority may provide an edge against competing offerings, together, they are more likely to provide a source of advantage. Offerings that are clearly different from other offerings on the market and that provide high customer value through meaningful characteristics that precisely match customer needs and that do this better than any other offering may be expected to enjoy an advantage over competitors. Therefore, novelty, meaningfulness and superiority are herein suggested to represent distinct characteristics that together constitute the NPSP advantage concept.

**Proposition 1:** Novelty, meaningfulness and superiority together constitute NPSP advantage

### 3. Scale development

#### 3.1. *Data collection, response pattern and respondents*

To test and validate the measures, primary quantitative survey data were collected from the Finnish food manufacturing industry. The sample for the study was outlined by utilizing the ORBIS database, through which 343 food manufacturing companies employing five or more people were identified. Thereafter, through calls to all identified companies, 293 were successfully contacted; finally, 255

agreed to provide their emails to receive the research form. After two email reminders, 108 fully completed responses from CEOs and managers of companies employing an average of 38 people were registered.

### 3.2. *Measure development*

To develop the portfolio-level measures, a three-step process was employed: 1) item identification, selection and new item generation; 2) content validity evaluation; and 3) data collection and analysis. In the first phase, prior research was explored to identify relevant items for novelty, meaningfulness and superiority of new products and services. In addition to developing items introduced and deployed in prior studies (Atuahene-Gima, 1995; Chen, Reilly, & Lynn, 2012; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011), complementary questions were generated. In the second phase, the content validity index (CVI) approach was deployed to ensure the content validity of each item. In the CVI assessments, eight academic professionals rated each question based on a 4-point scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant and 4 = highly relevant in measuring the phenomenon at hand (Polit, Beck, & Owen, 2007). The first evaluation round indicated a need for minor rephrasing. After the second evaluation round, all items achieved the suggested (>.8) average I-CVI threshold value. In the third phase, respondents were contacted and questionnaires were sent; eventually, the answers were analyzed. For all the items, a 7-point scale stating "To what extent do the following statements reflect the new products and services sold in 2010, 2011 and 2012? (1 = strongly disagree, 7 = strongly agree)" was employed. Tests for construct structures were executed in two phases. First, exploratory factor analysis (EFA) for all 15 items was run, and second, the optimal structure for the constructs with confirmatory factor analysis (CFA) was tested.

## 4. Results

To analyze the factor structure of all 15 items, maximum likelihood and Oblimin with Kaiser normalization rotation were used for the factor analysis. The results of the exploratory factor analysis (presented in Table 1) suggested a three-factor solution. One item that failed to exhibit satisfactory loading (>.5) to any common factor was removed. The remaining 14 items loaded onto their common factors, suggesting the first factor represented novelty, the second factor represented meaningfulness, and the third represented superiority. Eigenvalues greater than one explained 76.4 % of the variance, where the strongest factor explained 53.9 %. Cronbach's alpha tests indicating the threshold value (.70) for each factor (.91; .89;

.94) were deployed to ensure the reliability of the constructs. Furthermore, the factor analysis demonstrated an excellent KMO-value (.90) that was highly significant in Bartlett's test of sphericity (<.001). In addition, the results of the exploratory factor analysis indicated that the results support the first hypothesis that novelty, meaningfulness and superiority are distinct characteristics of new products and services.

**Table 1.** The results of the exploratory factor analyses (EFA).

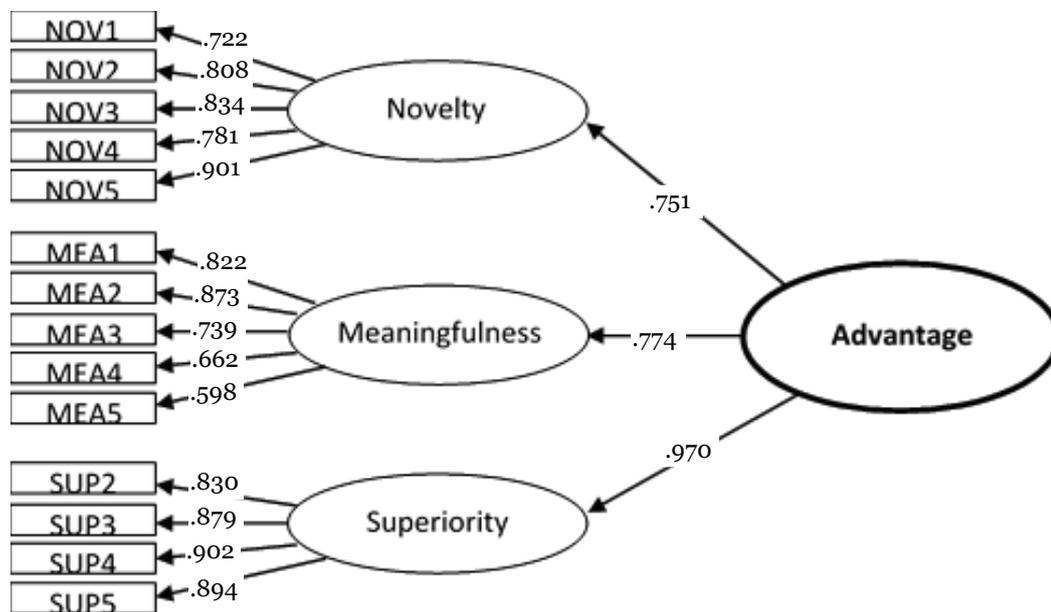
Construct and items	Mean	Std. Dev.	Factor 1	Factor 2	Factor 3
<i>Novelty (<math>\alpha = 0.91</math>)</i>					
<sup>1</sup> The new products and services are very unusual in comparison to the competing products and services	3.16	1.68	-.726		
<sup>2</sup> The new products and services are more revolutionary than the competing products and services	2.58	1.56	-.875		
<sup>3</sup> The new products and services are very unexpected in comparison to the competing products and services	3.06	1.62	-.946		
<sup>4</sup> The new products and services offer a new kind of solution to the customer's problems versus the competing products and services	3.51	1.81	-.651		
<sup>5</sup> The new products and services are unique in terms of their features versus the competitive products and services	3.52	1.76	-.709		
<i>Meaningfulness (<math>\alpha = 0.89</math>)</i>					
<sup>6</sup> The new products and services are useful when considering the targeted customer group	5.20	1.30		.648	
<sup>7</sup> The new products and services produce high value when considering the targeted customer group	4.94	1.40		.587	
<sup>8</sup> The new products and services meet the customer expectations when considering the targeted customer group	5.32	1.22		.811	
<sup>9</sup> The new products and services help the customers in achieving their goals when considering the targeted customer group	5.25	1.42		.828	
<sup>10</sup> The new products and services reflect customer needs well when considering the targeted customer group	5.50	1.16		.785	
<i>Superiority (<math>\alpha = 0.94</math>)</i>					
<sup>11</sup> The new products and services are superior to the competing products and services	<i>deleted</i>				
<sup>12</sup> The new products and services are the best of their kind in the market in comparison to the competing products and services	4.79	1.75			.901
<sup>13</sup> The new products and services are the best in the market in their category in comparison to the competing products and services	4.42	1.70			.974
<sup>14</sup> The new products and services are superior to the competing products and services in satisfying the customer needs	4.13	1.62			.676
<sup>15</sup> The new products and services are superior in quality to the competing products and services	4.52	1.66			.783

Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

To confirm the results of exploratory factor analysis and to test the optimal construct structure, confirmatory factor analysis was executed by using SPSS AMOS version 23.0.0. First, a single-dimension structure with all 14 items for new product and service advantage was tested. The results demonstrated poor model

fit:  $\chi^2 = 444.76$ , degrees of freedom (d.f.) = 77,  $p = .000$ ,  $\chi^2/\text{d.f.} = 5.776$ , RMSEA = .211, GFI = .550, CFI = .687, and IFI = .691 (Bollen, 1989; Hu & Bentler, 1999). The loadings for the factors ranged from .467 to .851. Testing any number of released error variance relationships between items did not lead to an acceptable model fit, supporting the EFA results of a multidimensional structure for the construct.

Thereafter, the structural model for the three-dimensional advantage construct consisting of novelty, meaningfulness and superiority was tested (Figure 1). The results demonstrated a good model fit:  $\chi^2 = 79.34$ , degrees of freedom (d.f.) = 67,  $p = .144$ ,  $\chi^2/\text{d.f.} = 1.184$ , RMSEA = .041, GFI = .909, CFI = .990, and IFI = .990. The loadings for the first-order factors ranged from .598 to .901, and those of the second-order factors ranged from .751 to .970. Composite reliability and average extracted variance values for both the first- (CR = .95;.95;.96, AVE = .80;.80;.86) and the second-order factors (CR = .98, AVE = .82) were suitable compared to the suggested threshold values (CR > .80, AVE > .50). Eight error variance relationships were released inside the main factors. The results suggest that each dimension (novelty, meaningfulness and superiority) represents an individual construct alone; however, these three dimensions together constitute a second-order construct measuring one phenomenon (NPSP advantage), supporting the proposition 1.



**Figure 1.** Three-dimensional advantage construct structure (CFA).

## 5. Discussion and implications

By conceptualizing and validating a three-dimensional construct to measure NPSP advantage, the present study contributes to prior discussions on the characteristics of new product advantage (Kim, Im, & Slater, 2013; McNally et al., 2010; Nakata et al., 2006; Rijdsdijk et al., 2011) and answers the call to approach the innovation process more holistically by considering both new products and services simultaneously (Biemans et al., 2016; Papastathopoulou & Hultink, 2012). Thus, this study has two particular contributions. As the main contribution, the current study confirms the distinction between different new product and service characteristics commonly perceived to constitute the unidimensional advantage construct (Li & Calantone, 1998; McNally et al., 2010; Slotegraaf & Atuahene-Gima, 2011). Recent studies have reported with confidence the difference between superiority and meaningfulness (Rijdsdijk et al., 2011) and the distinction between meaningfulness and novelty (Hong et al., 2013; Im & Workman, 2004) but have not tested or reported these three distinct characteristics simultaneously. Aligned with prior studies suggesting that product advantages consist of unique, beneficial and superior characteristics (Atuahene-Gima, 1995; Li & Calantone, 1998; Rijdsdijk et al., 2011), the present results suggest that novelty, meaningfulness and superiority represent distinct characteristics. This study demonstrates that these three components of advantage are distinct from each other. In addition, these components measure the advantage of the three-dimensional construct structure, which fits the empirical data significantly better than the unidimensional construct. Thus, the findings add to the existing knowledge on the concept of new product advantage.

As the second contribution, this study builds a bridge between the new product development and the new service development literature by introducing an approach to measuring new product and service advantage at the portfolio level. Where the prior NPD research has discussed the advantageous characteristics of new products (Hong et al., 2013; Im & Workman, 2004; Rijdsdijk et al., 2011; Szymanski et al., 2007), the driving characteristics of new service success have received less attention (Biemans et al., 2016). At the same time, it has been suggested that taking a more integrated approach to studying innovation processes that considers both new products and services simultaneously provides interesting future research opportunities (Papastathopoulou & Hultink, 2012). Considering not only a singular product or a service but also combinations of products and services, the concept of NPSP advantage captures the total value a firm can deliver, which is an increasingly important criterion affecting the success of a firm (Gebauer et al., 2011; Oliva & Kallenberg, 2003). By developing a measure to capture the advantage at the new product and service portfolio level, this study

provides an integrated approach to measuring a desired innovation process outcome, the advantage over competitors that is available through the total possible value a firm can deliver. Thus, by bridging the research streams of new product and service development and by incorporating the concept of advantage into the portfolio level, the results provide interesting opportunities for future studies.

### 5.1. *Limitations and suggestions for further research*

Like all studies, this study has its limitations. The main limitation for the results derives from its contextual setting. The sample was recruited from industrially and culturally homogeneous companies. Future studies should validate the measures in other than low- and medium-technology industries and in different cultural environments to confirm the reliability of the construct. Furthermore, conceptualizing NPSP advantage provides numerous new research opportunities such as investigations of antecedents and outcomes of NPSP advantage. Interesting opportunities for future research include the relationship between NPSP advantage and strategic orientations such as entrepreneurial orientation and market orientation; an integrated new product and service development process; and new product and service portfolio success.

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## ENTREPRENEURIAL ORIENTATION AS A DRIVER OF FIRM PROFITABILITY: THE ROLE OF NEW PRODUCT AND SERVICE PORTFOLIO ADVANTAGE

Jesse Heimonen

Project researcher

University of Vaasa, Department of Management

Marko Kohtamäki

Professor / Visiting Professor

University of Vaasa, Department of Management /

Entrepreneurship and Innovation, Luleå University of Technology

**Acknowledgements:** An earlier version of this manuscript was presented at the 2016 International Council of Small Business conference in New York, USA. We are grateful to the anonymous reviewers for their constructive comments, which helped to further develop the manuscript. This study was financially supported by TEKES (Finnish Innovation Funding Agency), the doctoral school of Vaasa university, Foundation for Economic Education, Nissi Foundation Niilo Helander Foundation and Private Entrepreneur Foundation. Thank you for American Journal Experts for proof reading this article.

**Abstract:** To illuminate the relationship between entrepreneurial orientation (EO) and firm performance, this study employs a sample of 95 Finnish food manufacturing companies to examine the role of new product and service portfolios (NPSPs) in the relationship between EO and firm profitability. The findings show that EO has no direct impact on firm profitability but instead affects NPSP success through NPSP advantage and that NPSP success affect firm profitability. This study contributes to the literature by identifying two product and service portfolio level variables through which EO may affect profit performance and adds to the discussion on the antecedents and outcomes of an integrated approach to new product and service development.

**Keywords:** Entrepreneurial orientation, firm profitability, new product and service advantage, new product and service success, mediation

## 1. Introduction

Entrepreneurial orientation (EO) is considered as a strategic posture facilitating successful market entry for new products and of firm performance (Wales, Patel, Parida, & Kreiser, 2013). In particular, EO affects firm performance through its impact on other drivers of success such as organizational learning (Real, Roldán, & Leal, 2014), innovation processes (Patel, Kohtamäki, Parida, & Wincent, 2015) and innovation performance (Anderson & Eshima, 2013). As EO has a substantial impact on both exploratory and exploitative innovations (Kollmann & Stöckmann, 2014), it affects the identification and selection of new market opportunities and the composition of firms' product and service portfolios, as a result. As new product characteristics can offer a firm competitive advantage (Hong, Song, & Yoo, 2013) and because services – which are difficult to imitate – can offer a firm an additional source of sustainable competitive advantage (Oliva & Kallenberg, 2003), novel combinations of products and services can help a firm distinguish itself from its competitors and better meet its customers' needs and desires (Gebauer, Gustafsson, & Witell, 2011). Therefore, understanding the role of EO in creating advantageous product and service characteristics and providing a source of competitive advantage is important.

As a strategic posture that enhances a firm's engagement with entrepreneurial behavior (Covin & Slevin, 1991) and that reflects an inclination toward entrepreneurial proactiveness, innovativeness and risk-taking (Miller, 1983), EO has received considerable attention from, entrepreneurship, strategy and innovation scholars and practitioners, among others (Wiklund & Shepherd, 2005). EO has been argued to affect the number of new opportunities encountered (Engelen, Kube, Schmidt, & Flatten, 2014), the willingness to experiment (Lumpkin & Dess, 1996) and openness to diversify businesses (Sapienza, De Clercq, & Sandberg, 2005). Recently, EO has been found to have a positive impact on characteristics that constitute advantage and on the success of new products (Hong et al., 2013). The new product development (NPD) literature suggests that new products with competitive advantage are unique and provide superior value to target customers (Atuahene-Gima, 1995; Li & Calantone, 1998), and prior studies have found that new product characteristics such as novelty, meaningfulness and superiority in performance positively affect new product success (Im & Workman, 2004; McNally, Cavusgil, & Calantone, 2010; Rijdsdijk, Langerak, & Hultink, 2011; Song & Parry, 1997).

Prior NPD research has focused considerably on the role of new product characteristics (Atuahene-Gima & Li, 2004; Cooper, 1979; Cooper & Kleinschmidt, 1987; Slotegraaf & Atuahene-gima, 2011) but has not yet addressed the

antecedents or outcomes of new service characteristics (Biemans, Griffin, & Moenaert, 2016). Studies claim that organizational antecedents – such as EO – might be drivers of new product and service success and should thus be investigated further (Papastathopoulou & Hultink, 2012). EO might fuel innovative product and service bundles that improve customer value creation and value capture, leading to higher company performance. In fact, a recent review by Papastathopoulou and Hultink (2012) suggests that future studies should consider the simultaneous development of products and services and analyze their joint effect on performance. Thus, the performance impact of product and service portfolio characteristics represent an interesting research opportunity (Gebauer et al., 2011), and there is a call for studies analyzing the antecedents and outcomes of product/service success.

Acknowledging the limitations in the previous literature, the present study intends to provide two main contributions by applying generalizable quantitative data. First, this study extends the prior knowledge on the EO-performance relationship (Rauch, Wiklund, Lumpkin, & Frese, 2009) by introducing two variables: new product and service portfolio (NPSP) advantage and NPSP success, which may channel the profitability effect of EO. NPSP advantage embodies three advantage-constituting characteristics, i.e., novelty, meaningfulness and superiority, while NPSP success is a measure of the performance of new products and services. Second, the findings add to the discussion on synthesizing research into new product and service development (Biemans et al., 2016; Papastathopoulou & Hultink, 2012) by investigating the antecedents and desired outcomes of the innovation process covering both products and services: new product and service advantages and successes at the portfolio level. In addition, the results yield interesting insights into those new product and service portfolio characteristics that might be considered by practitioners when engaging in entrepreneurial endeavors.

## 2. Theory and hypotheses

### 2.1. *Entrepreneurial Orientation and NPSP Advantage*

Entrepreneurial orientation is defined as a strategic posture oriented toward entrepreneurial behavior (Kollmann & Stöckmann, 2014). EO is frequently conceptualized to incorporate three dimensions: proactiveness, innovativeness and risk-taking (Miller & Friesen, 1983). Prior research has found that these dimensions of EO have positive effects on innovation and financial performance (Wiklund & Shepherd, 2011). However, recent studies have also begun to address

the limitations of EO in being able to completely explain actualized outcomes and have posited that EO might instead affect firm performance in combination with other organizational characteristics, resources and capabilities and through various mediating variables (Rauch et al., 2009). As a disposition toward identifying new and attractive market opportunities and market capture, EO is likely to affect not only the quantity of recognized opportunities but also the quality of deployed opportunities (Engelen et al., 2014). Thus, in addition to mediators found in the previous literature, EO may be expected to affect the composition of offering portfolios and the advantage-constituting characteristics of the products and services included therein (Hong et al., 2013).

The new product development literature defines advantage as “the extent to which a new product offers unique benefits and to which it is superior to competing products” (Rijsdijk et al., 2011, p. 35). Thus, advantage may be understood to correspond to those characteristics that are unique (novelty), beneficial (meaningfulness) and better (superiority) than those offered in competing offerings. Novelty indicates the degree to which the new product or service is considered to be unique among the competing offerings, while meaningfulness refers to the degree to which the product or service is appropriate and useful to target customers (Im & Workman, 2004). As the third advantage dimension, superiority is defined as the degree to which the product or service is considered dominant over those offerings that are competitive with it in terms of fulfilling the needs of target customers by offering higher quality or other value attributes (Rijsdijk et al., 2011). At the portfolio level, a singular new product or service can generate advantage alone or in combination with other new products and services. For example, unconventional combinations of products and services may distinguish a firm from its competitors and providing complementary products and services may allow a firm to deliver superior value. In a vein similar to that of new product advantage, NPSP advantage is here conceptualized to refer to the new product and service portfolio characteristics that are novel, valuable and meaningful to target customers as a result and that are superior to those of competitors in terms of fulfilling the needs of target customers.

There are multiple ways in which entrepreneurial proactiveness, innovativeness and risk-taking may affect the characteristics of new products and services and the characteristics of NPSP. Entrepreneurial proactiveness is thought to increase the awareness of new market opportunities and the number of opportunities the firm encounters as a result (Engelen et al., 2014). Increasing the number of opportunities observed improves the chances of developing novel product and service potentials with high customer value. Proactive firms are also thought to be more dynamic and adaptive in terms of meeting customer preferences, leading to

meaningful new product and service characteristics (Hughes, Hughes, & Morgan, 2007). Further, proactive firms aim to capture new market opportunities ahead of competitors (thus avoiding competition) and to create advantages that will outperform competitive offerings in the future (Lumpkin & Dess, 2001).

Similarly, entrepreneurial willingness to innovate and to commit to unconventional ideas is thought by some to increase the learning efforts from foreign markets (Sapienza et al., 2005) and thus the ability to diversify a firm's offering portfolio and create novel value combinations. As "innovativeness is universally perceived as exploring something new that has not existed before" (Cho & Pucik, 2005, p. 556), it can do so by producing novel product and service characteristics, completely new product and service concepts or unique product and service combinations. Innovativeness has also been found to enable firms to match unique customer preferences and to increase the meaningfulness of an offering (Dai, Maksimov, Gilbert, & Fernhaber, 2014). Thus, if it can identify meaningful product or service features and characteristics, a firm can further develop those characteristics that drive superior value.

Finally, entrepreneurial attitude toward risk-taking facilitates experimentation under uncertainty (Covin & Slevin, 1991; Patel et al., 2015; Wiklund & Shepherd, 2011). Investing in highly novel potential products with which the target market has no prior experience (business risk) or investing in the development and production of a new product requiring resources that are dissimilar to the existing resource base (financial risk) requires risk-taking abilities (Lumpkin & Dess, 2001). The more extraordinary products or services the NPSP consists of, the higher the perceived business risk is that customers will not be able to easily adopt them. Similarly, developing new products and services that contain elements with superior value can be costly, and these costs are generated before profits are forthcoming. Thus, EO and risk-taking may increase the tendency to deploy opportunities with unique characteristics, enabling a firm to test its opportunities and to confirm the expected customer value of the new offering. Therefore, we posit our first hypothesis as follows:

**Hypothesis 1:** EO has a positive impact on NPSP advantage.

## 2.2. *NPSP Advantage, NPSP Success and Firm Profitability*

New product advantage consists of certain characteristics (novelty, meaningfulness and superiority) that have been found to positively affect new product success (Hong et al., 2013; Im & Workman, 2004; McNally et al., 2010;

Rijsdijk et al., 2011; Song & Parry, 1997). Similarly, prior studies have found the absence of product advantage to be a major cause of product failure (Cooper, 1979; Cooper & Kleinschmidt, 1987). New product advantage is also argued to enhance firm financial performance, as measured by profitability, return on investment and market share (Li & Calantone, 1998). As the success of a new product and service portfolio results from aggregating the success of singular products and services, the same advantage can be considered to also drive portfolio-level success. In addition, NPSP success can result from the ability of new products and services to deliver unique and superior value together. Although a singular product or service may have a substantial impact on NPSP success or – in some cases – even drive the financial success of a firm, the success of one product or service may not be expected to substantially explain firm-level financial performance in general. Instead, the success of a new product and service portfolio is likely to have such a firm-level impact. In particular, long-term NPSP success may reasonably be expected to substantially affect firm financial success, as measured by profit performance.

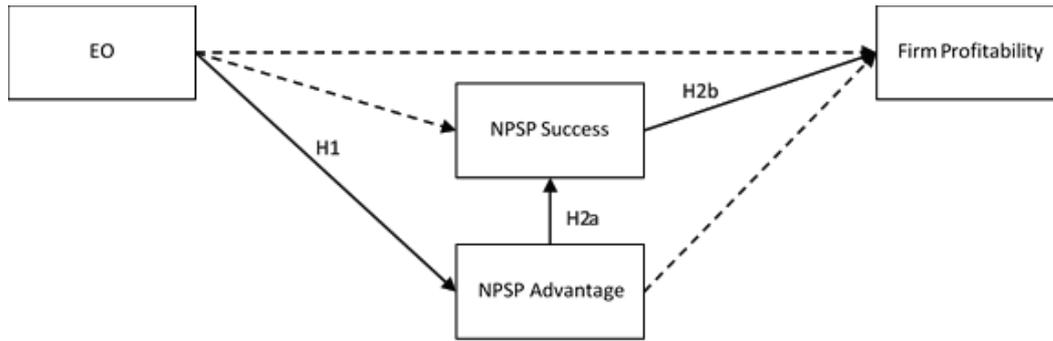
At the portfolio level, novelty can be achieved through unique features and unique design in products and services or by means of novel combinations of products and services. Novelty helps differentiate a firm from its competitors and allows such a firm to enjoy positional advantage (Cooper, 1979). As unique features let customers perform unique tasks, (Cooper, 1983) and novel combinations of products and services can yield novel customer value, differentiation can help customers to distinguish and remember the offering, thus positively affecting buying behavior and consequently NPSP success (Song & Parry, 1997). Further, products and services and product and service combinations that are distinguished from competing offerings tend to be more price inelastic, leading a firm to command premium margins (Boulding, Lee, & Staelin, 1994). Diverse NPSP can enable firm to match customer specific needs better by making meaningful complementary products and services available and thus delivering superior value to the customer. For example, some products or services can be provided exclusively to allow the customer to avoid the pain of searching for the product or service elsewhere. Thus, although the initial success or financial returns of a singular product or service may not be outstanding, its role in generating NPSP success through NPSP advantage may be invaluable and irreplaceable.

Although distinguishable products and services enable firms to differentiate their offerings from those of their competitors, the new products and services must also be considered valuable by target customers to ensure long-term prosperity (Im & Workman, 2004). Novel features may be perceived as simply bizarre if value cannot be clearly communicated (Im, Hussain, & Sengupta, 2008). By addressing

meaningful value attributes, new offerings thus enable a firm to maximize the product-market fit (Kim, Im, & Slater, 2013), increasing customer satisfaction in the process (Anderson & Mittal, 2000; Szymanski & Henard, 2001). At the portfolio level, flexibility in adjusting offering concepts enables the firm's offerings to better match customer expectations and requirements (Zhang, Vonderembse, & Cao, 2009). For example, in the food manufacturing industry, delivery, inventory management and into-the-shelf services may be meaningful and may facilitate sales. These services may be required as part of obtaining access to grocery stores and sometimes must even be provided without additional compensation. Thus, evaluating the success of a single product or service based on direct financial returns may not always be reasonable, particularly when the returns are extracted at the portfolio level.

Finally, buyers tend to favor alternatives that they consider to provide superior value (Carpenter & Nakamoto, 1989). Some scholars have argued that quality as a value attribute represents the major determinant of product profitability (Cooper & Kleinschmidt, 1987; Schoeffler, Buzzell, & Heany, 1974). Further, attributes such as reliability (Li & Calantone, 1998) and the ability to reduce customer costs (Song & Parry, 1997) might enable the firm to better meet those customer needs that may be driving the new product success. In addition, if customers are motivated by low price over other characteristics, cost efficiency can offer an advantage over competitors and drive NPSP success and firm profitability. Similarly, by providing superior value via low customer cost, the product and/or service can open access to certain customers, which can lead to the sales of other products and services thereafter. Thus, NPSP success and overall firm financial performance may be enhanced by offerings that are even characterized initially by negative profit performance. Further, at the NPSP level, complementary product and service availability and decreased transaction costs can provide yet another source for advantage-driving value attributes. Regardless of what the actual value attributes may be, new products and services that are preferred by customers over those of competitors will eventually result in market success (McNally et al., 2010). Therefore, we hypothesize as follows:

**Hypothesis 2: (a)** NPSP advantage positively affects NPSP success, **(b)** which, in turn, positively affects firm profitability.



**Figure 1.** Research Model.

### 3. Methods

#### 3.1. Data Collection, Response Patterns and Respondents

The present study utilizes both primary survey data and objective financial data. The sample was identified using objective financial data obtained through the ORBIS database on Finnish food manufacturing companies. Delimiting the study to include only companies located in Finland with at least five employees that were classified under primary NACE code 10, our final sample included 343 companies. Thereafter, we called all the identified companies, resulting in 293 successful contacts. After initial contact was made, 255 CEOs and managers agreed to provide their email address for purposes of sending them the link to the online questionnaire. After the phone calls and two email reminders, we received 118 answers, and of these, 108 were successfully completed. In the end, we were able to link all the required financial data to 95 responses.

#### 3.2. Analysis Method and Measurements

The items for the constructs measured were adopted from prior studies. We followed Brislin's (1970) suggestion for ensuring translation equivalence by translating the items first into Finnish and then having another researcher back-translate them into English. The retrospective measuring approach suggested in recent studies (Kumar, Petersen, & Leone, 2013; Miller, Cardinal, & Glick, 1997) was deployed in the survey to reflect the same years (2010, 2011, 2012) with the objective financial data. We used STATA 13.1 to test the hypotheses through structural equation modelling (SEM) technique.

**Firm profitability.** We operationalized firm profitability by calculating the three-year average the of EBIT (earnings before interest and tax) percentage over 2010, 2011 and 2012. Financial information was obtained from the ORBIS database.

**NPSP success.** We utilized a measure previously developed by Cooper and Kleinschmidt (1987) for new product success and leveled up the items to indicate all the new products and services. A confirmatory factor analysis resulted in a good model fit for the five-item single-dimension new product and service success construct ( $\chi^2 = 2.13$ , degree of freedom (d.f.) = 2,  $p = .345$ ,  $\chi^2/\text{d.f.} = 1.063$ , RMSEA = .024, and CFI = 1.000). The loadings for the single factor ranged from .851 to .933. The composite reliability (CR = .94) and average variance extracted (AVE = .75) values were good. Three error variance relationships were released inside the factor.

**NPSP advantage.** To measure new product and service advantage, we built on items used in prior studies (Atuahene-Gima, 1995; Chen, Reilly, & Lynn, 2012; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011). A confirmatory factor analysis for a three-dimension advantage construct consisting of novelty, meaningfulness and superiority demonstrated a good model fit:  $\chi^2 = 79.34$ , degree of freedom (d.f.) = 67,  $p = .144$ ,  $\chi^2/\text{d.f.} = 1.184$ , RMSEA = .041, and CFI = .990. First-order factor loadings ranged from .598 to .901, whereas the second-order factor loadings ranged from .751 to .970. Composite reliability and average extracted variance tests for both the first order factors (CR = .95;.95;.96, AVE = .80;.80;.86) and the second order factor (CR = .98, AVE = .82) indicated good construct reliability. We released eight error variance relationships inside the main factors.

**Entrepreneurial orientation.** EO is here conceptualized as consisting of three dimensions (proactiveness, innovativeness and risk-taking), we deployed the measures used by Patel, Kohtamäki, Parida, & Wincent (2015) that themselves originated from Covin and Slevin (1989). A nine-item measure was deployed in which all three dimensions were measured through three questions by using a 7-point scale (1 = fully disagree, 7 = fully agree) inquiring, “to what extent do the following statements represent your organization”. A structural model with three second-order factors demonstrated acceptable model fit:  $\chi^2 = 36.97$ , degree of freedom (d.f.) = 23,  $p = .033$ ,  $\chi^2/\text{d.f.} = 1.61$ , RMSEA = .075, and CFI = .973 (Bollen, 1989; Hu & Bentler, 1999). Two error relationships inside the main factors were released. The loadings for all the factors were between .611 and .998.

**Control variables.** We controlled for the effects of firm age, firm size and competitive intensity on firm profitability. The firm age variable was created by

calculating the difference between a firm's year of establishment and 2012. To control for firm size, we utilized the average number of employees in years 2010, 2011 and 2012. These first two control variables were formulated utilizing the ORBIS database. The competitive intensity control variable was measured using five 5-point scale items derived from prior studies (Jaworski & Kohli 1993). The CFA analysis presented acceptable model fit for the construct:  $\chi^2 = 1.99$ , degree of freedom (d.f.) = 4,  $p = .74$ ,  $\chi^2/d.f. = 0.49$ , RMSEA = .000 and CFI = 1.000 (Bollen, 1989; Hu & Bentler, 1999). A single factor solution ranged from .476 to .870, with one exception of .340. To maintain the content validity of the measure, we did not remove the item with marginally low loading. Leaving the competitive intensity variable out of the model completely also did not affect the results. A one-error variance relationship inside a single factor was released.

#### 4. Results

Table 1 presents the means, standard deviations and correlation matrix of the variables. As hypothesized, the correlations indicate statistically significant positive relationships between EO and NPSP advantage, between NPSP advantage and NPSP success, and between NPSP success and firm profitability. In addition, correlations indicate a positive relationship between EO and NPSP success, and a negative relationship between firm age and profitability. However, as Figure 2 shows, relationships that are not hypothesized are not statistically significant when the variables are inserted into the research model.

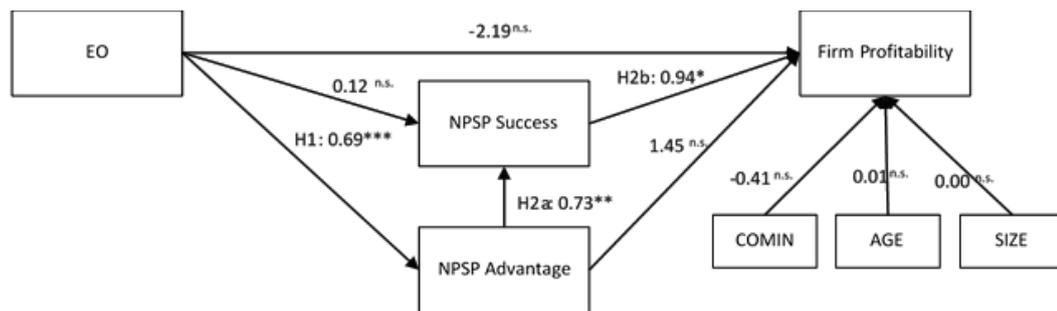
**Table 1.** Means, Standard Deviations and Correlations of Variables.

		Mean	SD	1.	2.	3.	4.	5.	6.
1.	Firm profitability	3.15	10.04	1.00					
2.	NPSP Success	5.55	2.35	0.21*	1.00				
3.	NPSP Advantage	4.33	1.15	0.09	0.39*	1.00			
4.	Entrepreneurial orientation (EO)	4.47	1.10	-0.08	0.29*	0.66*	1.00		
5.	Competitive intensity	3.87	0.68	-0.02	0.12	0.09	0.12	1.00	
6.	Firm age	24.28	21.50	0.08	-0.01	-0.09	-0.29*	-0.01	1.00
7.	Firm size (Number of employees)	30.50	29.65	0.00	-0.06	-0.02	0.10	-0.02	0.07

Notes: \*  $p < 0.05$ , (in two-tailed tests)  
SD= Standard Deviation

This study follows SEM approach to test mediation. The mediation model is to be tested by building a path from independent variable (EO) to mediating variables (NPSP advantage and NPSP success) and from mediators to dependent variable (profitability) (James & Brett, 1984). Even though, the direct path from independent variable to dependent variable is not expected, it can be controlled

(James, Mulaik & Brett, 2006). The SEM results support hypothesis 1 and suggest that EO has a direct positive impact on NPSP advantage ( $\beta = 0.69$ ;  $p = 0.000$ ), where EO's direct impact on NPSP success ( $\beta = 0.12$ ;  $p = n.s.$ ) and Profitability ( $\beta = -2.19$ ;  $p = n.s.$ ) are not significant. Similarly, the results are aligned with hypotheses 2a expecting NPSP advantage to positively affect on NPSP success ( $\beta = 0.73$ ;  $p = 0.004$ ) and 2b claiming that NPSP success has positively impacted firm profitability ( $\beta = 0.94$ ;  $p = 0.041$ ). The research model explains 46 % of the overall variance ( $R^2=0.46$ ) and demonstrated good structural fit:  $\chi^2 = 3.32$ , degree of freedom (d.f.) = 6,  $p = .767$ ,  $\chi^2/d.f. = 0.55$ , RMSEA = .000 and CFI = 1.000 (Bollen, 1989; Hu & Bentler, 1999). The test of EO's indirect effects on NPSP success ( $\beta = 0.50$ ;  $p = 0.007$ ) and Profitability ( $\beta = 1.59$ ;  $p = 0.058$ ) suggest EO to have statistically significant indirect positive effect on NPSP success through NPSP advantage and very close to statistically significant indirect effect on Profitability. The tests of total effects suggest EO ( $\beta = 0.56$ ;  $p = 0.003$ ) and NPSP advantage ( $\beta = 0.81$ ;  $p = 0.004$ ) to have statistically significant impact on NPSP success which has statistically significant impact on Profitability ( $\beta = 1.59$ ;  $p = 0.041$ ).



Notes: \*  $p < 0.05$ , \*\*  $p < 0.01$ , and \*\*\*  $p < 0.001$   
 COMIN= Competitive intensity  
 AGE= Firm age (From the year of establishment until 2012)  
 SIZE= Average number of employees (Years 2010, 2011 and 2012)

**Figure 2.** The Research Model with path coefficients.

## 5. Discussion and implications

### 5.1. Theoretical Contribution

Although prior studies have mainly acknowledged the positive EO-performance relationship, doubts about the direct impact of EO on firm performance have also been discussed (Wiklund & Shepherd, 2011). In addition, instead of contributing directly to firm performance, the positive effects of EO may be realized through other firm performance-driving variables benefitting from a proactive, innovative and risk-taking stance in both identifying and capturing new market opportunities (Rauch et al., 2009). In this vein, EO has been found to affect performance through

organizational learning (Real et al., 2014) and various innovation outcomes (Anderson & Eshima, 2013; Hong et al., 2013; Kollmann & Stöckmann, 2014), for example. Our study extends prior knowledge on the EO-performance relationship by identifying two desired innovation outcome variables – NPSP advantage and NPSP success – through which EO's potential to drive profitability may be extracted. In addition, the present study joins the discussion on finding an integrated approach to innovation process by investigating the antecedents and outcomes of advantageous product and service characteristics at the portfolio level (Biemans et al., 2016; Papastathopoulou & Hultink, 2012). Thus, our study makes two main contributions.

First, the results indicate that EO does not directly impact firm profitability but that the positive effects of EO are mediated through NPSP advantage to NPSP success which has direct positive impact on firm profitability. As such, the present study extends previous EO research by providing an additional explanation for inconsistent results related to EO-performance relationship (Wiklund & Shepherd, 2011). As EO has been found to affect the number of encountered opportunities (Engelen et al., 2014) and the willingness to experiment (Lumpkin & Dess, 1996), entrepreneurial firms enjoy the richness of encountering new product and service potentials. As the success of engaged opportunities eventually determines firm performance (Covin, Green, & Slevin, 2006), the number of identified new market opportunities as such may not present a solid performance predictor. Instead, the quality and the characteristics of the selected opportunities may be expected to affect whether there is success at capturing new market opportunities (Cooper, 1979; Cooper & Kleinschmidt, 1987) and at driving firm performance.

EO provides a favorable platform for the development of new products and services delivering novel and superior value to target customers (Hong et al., 2013). Entrepreneurial proactiveness and innovativeness not only increases the number of identified opportunities but also enables the firm to develop unique features and novel product and service combinations to better match customer preferences. EO also provides the requisite ability to explore new opportunities with uncertain market outcomes and to commit to costly investment decisions (Covin & Slevin, 1989; Miller, 1983) that are often required to develop, manufacture and deliver offerings with superior value (Wiklund & Shepherd, 2005). Thus, entrepreneurial proactiveness, innovativeness and risk-taking are here suggested to have a positive impact on the advantage-constituting characteristics of new product and service portfolios and thus to NPSP success that eventually drives a firm's profit-performance.

Second, the present study contributes to the discussion regarding an integrated approach to innovation processes by investigating the antecedents (EO) and desired outcomes (NPSP advantage and success) of new product and service development (Papastathopoulou & Hultink, 2012). Whereas the prior literature on new product development has concentrated on the success- and advantage-constituting characteristics of new products (Atuahene-Gima & Li, 2004; Cooper, 1979; Cooper & Kleinschmidt, 1987; Im & Workman, 2004; McNally et al., 2010; Rijdsdijk et al., 2011; Slotegraaf & Atuahene-gima, 2011; Song & Parry, 1997), little attention has been paid to the advantageous characteristics of services or combinations of products and services at the portfolio level (Biemans et al., 2016). As singular products and services featuring characteristics such as novelty, meaningfulness and superiority aggregate to the portfolio level and thus drive the success of the NPSP, NPSP advantage may also be achieved through a novel combination of new products and services being able to better match customer-specific needs and thus deliver superior value. Novel combinations of meaningful complementary products and services provide the means for superior value delivery, enabling firms to enjoy competitive advantage (Gebauer et al., 2011). Thus, at the portfolio level, the initial financial returns of a singular product or service may not even be relevant if the product or service serves to facilitate the success of other products and services in the portfolio. Further, although the characteristics and success of a singular product or service can in some cases drive NPSP success or even firm's strong performance, the characteristics and successes of new products and services together are more likely, in general, to explain various measures of firm performance, including profitability. By investigating the concept of new product advantage and success at the new product and service portfolio level, this study contributes to the new product and service development literature and provides an interesting avenue for further research.

## 5.2. *Contributions to Practice*

This study has interesting implications for managers as well. Our findings suggest that an entrepreneurial mindset can affect NPSP characteristics and enable firms to enjoy advantage over competitive offerings. Although entrepreneurial proactiveness might expose a firm to greater numbers of new market opportunities and might increase the number of high-quality opportunities encountered, the positive attitude toward innovativeness provides a favorable platform for experimentation and enables the creation of novel features, product service concepts and combinations of products and services. As the creation and delivery of unique products and services and combinations of products and services

delivering high customer value tend to require risky investment decisions, having the courage to engage in such opportunities with uncertain outcomes may facilitate the creation of NPSP advantage. Thus, by emphasizing those new market opportunities with novel, meaningful and superior characteristics, an entrepreneurial firm may expect to enjoy greater NPSP advantage and success and eventually firm profitability.

### 5.3. *Limitations and Suggestions for Further Research*

As with every study, the current study has its limitations. To an extent, the results may be limited to the Finnish national context of rather small firms and to the food manufacturing industry in Finland, in particular. Future studies should test the NPSP measures in other contextual settings to verify the results. Moreover, the findings encourage future studies to search for other potential NPSP level variables that may mediate the EO-performance relationship. Such concepts might include NPSP creativity, for example. In addition, our study opens up interesting avenues for further research that can investigate the composition of new product and service portfolios and the varied roles of singular products and services.

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