

Marko Matalamäki

Growth trajectories of the established companies

Effectuation and causation in focus



ACTA WASAENSIA 412



Vaasan yliopisto
UNIVERSITY OF VAASA

ACADEMIC DISSERTATION

*To be presented, with the permission of the Board of the School of Management
of the University of Vaasa, for public examination in
Seinäjoki, Frami F (Auditorium 110) on the 21st of December, 2018, at noon.*

Reviewers Professori Henri Hakala
Lappeenrannan Teknillinen yliopisto
PL 20
FI-53851 Lappeenranta
Finland

Professor Erno Tornikoski
Grenoble Ecole de Management
12 rue Pierre Sépard
38000 Grenoble
France

Julkaisija Vaasan yliopisto	Julkaisupäivämäärä Joulukuu 2018	
Tekijä(t) Marko Matalamäki	Julkaisun tyyppi Artikkeliväitöskirja	
OrcID	Julkaisusarjan nimi, osan numero Acta Wasaensia, 412	
Yhteystiedot Vaasan yliopisto Johtamisen yksikkö PL 700 FI-65101 VAASA	ISBN 978-952-476-834-4 (painettu) 978-952-476-835-1 (verkkoaineisto)	
	URN:ISBN:978-952-476-835-1	
	ISSN 0355-2667 (Acta Wasaensia 412, painettu) 2323-9123 (Acta Wasaensia 412, verkkoaineisto)	
	Sivumäärä 209	Kieli englanti
Julkaisun nimike Vakiintuneiden yritysten kasvutekijät – tilanteen mukaista toimintaa vai suunnitelman toteuttamista		
Tiivistelmä Kasvuyrittäjyys on noussut viime vuosina yrittäjyystutkimuksen yhdeksi tärkeimmäksi osa-alueeksi. Valtaosa kasvuyrittäjyyteen liittyvistä julkaisuista keskittyy uusien ja aloittavien yritysten kasvun tutkimiseen, myös julkinen keskustelu lataa kovia kasvuodotuksia nimenomaan uusille yrityksille ja startupeille. Vakiintuneet yrityksetkin tuottavat kasvua, mutta niiden potentiaali pääsee usein unohtumaan talouskeskustelussa. Tämän tutkimuksen päätavoite on lisätä ymmärrystä tekijöistä, joiden seurauksena vakiintuneet yritykset lähtevät kasvu-uralle tasaisen kehitysvaiheen jälkeen. Tarkennettuna, tapahtuuko kasvupyrahdyks toimimalla tilanteen ja kysynnän mukaisesti ja vastaamalla markkinoiden vaatimuksiin olemassa olevilla resursseilla, vai onko kasvu pikemminkin seurausta tehtyjen strategisten suunnitelmien noudattamisesta. Tulokset osoittavat sekä tilanteen mukaisen toiminnan logiikan toteuttamisen että strategian noudattamisen vaikuttavan näiden yritysten kasvuun. Hallitsevana logiikkana tutkituissa pk-yrityksissä näyttäisi esiintyvän tilanteen mukainen toiminta. Tämän väitöskirjan osuus tieteelliseen keskusteluun on rakennettu malli, joka osoittaa, että strategian noudattaminen ja joustavuus vaikuttavat yrityksen innovaatiotoimintaan ja sen myötä liiketoiminnan kasvuun. Toinen kehitetty malli osoittaa, että joustavuuden ja yrityskasvun välinen vuorovaikutus on myönteinen ja merkittävä. Tämä tutkimus vahvistaa viimeaikaisia havaintoja siitä, että tilanteen mukainen toiminta ja suunnitelmallisuus voivat toimia samanaikaisesti samassa yrityksessä. Lisäksi tulokset osoittavat, että tilanteen mukaisen toiminnan (effectuation) tutkimus on tutkimussuuntauksena siirtynyt alkukehitysvaiheesta välivaiheeseen ja ottanut jo ensimmäiset askeleet kohti kypsää tutkimusvaihetta, jossa tutkimukselle ominaisia tunnustekijöitä ovat kvantitatiiviset tutkimusmenetelmät ja ilmiön tutkiminen todellisessa tapahtumaympäristössä.		
Asiasanat Yrittäjyys, tilanteen mukainen toiminta, suunnitelmallisuus, yrityskasvu, kasvuorientaatio, innovaatio		

Publisher Vaasan yliopisto	Date of publication December 2018	
Author(s) Marko Matalamäki	Type of publication Doctoral thesis by publication	
OrcID	Name and number of series Acta Wasaensia, 412	
Contact information University of Vaasa School of Management P.O. Box 700 FI-65101 Vaasa Finland	ISBN 978-952-476-834-4 (print) 978-952-476-835-1 (online)	
	URN:ISBN:978-952-476-835-1	
	ISSN 0355-2667 (Acta Wasaensia 412, print) 2323-9123 (Acta Wasaensia 412, online)	
	Number of pages 209	Language English
Title of publication Growth trajectories of the established companies - effectuation and causation in focus		
Abstract Business growth is one of the key topics of today's entrepreneurship research. The majority of the publications related to the growth entrepreneurship focus on exploring growth among new companies, and the public economic debate targets high expectations for growth entrepreneurship by new companies and startups. Established companies are generating growth, but their potential seems marginalized in an economical discussion. It is important to consider both new and established companies when expecting new growth from companies. The main objective of this research is to enhance our understanding of the determinants that cause a growth surge among established companies after some years of consolidation. Are these companies adapting to the situation and responding to the demands of the market with their resources (effectuation), or do they follow previously determined plans and proceed toward set goals (causation). The findings indicate the usage of both effectuation and causation logics, between which effectuation appears the dominant approach. This dissertation contributes by building a model showing that causation and Chandler's (2011) dimensions of effectuation do have an impact on firm-level innovativeness and ultimately business growth. The developed model shows that interaction between flexibility and growth is positive and significant. This study strengthens the recent findings that effectuation and causation can work simultaneously in the same company. Moreover, the results show that effectuation research has moved on from the nascent to an intermediate stage of development, and has already taken the first steps toward the mature stage, where a growing number of scholars are currently engaging in quantitative field research to study the phenomenon in its real environment.		
Keywords entrepreneurship, effectuation, causation, business growth, growth orientation, innovation		

ACKNOWLEDGEMENT

I want to show gratitude for my supervisors, Professor Marko Kohtamäki, Vice rector, PhD Elina Varamäki and Professor Tero Vuorinen for their guidance and support in completing my doctoral thesis. I want to thank the pre-examiners, Professor Erno Tornikoski from Grenoble École de Management and Professor Henri Hakala from Lappeenranta University of Technology. I also want to thank my colleagues in University of Vaasa and Seinäjoki University of Applied Sciences for their support and discussions during this journey.

I gratefully acknowledge the financial support from The Foundation of Economic Education (Liikesivistysrahasto) and Finnish Cultural Foundation (Suomen Kulttuurirahasto, EP:n rahasto).

Contents

ACKNOWLEDGEMENT	VII
1 INTRODUCTION	1
1.1 Background	1
1.2 Research gaps, objectives, and questions	2
1.3 Outline of the thesis	7
1.4 Key concepts used in the studies	9
2 THEORETICAL BACKGROUND	10
2.1 Entrepreneurship	10
2.2 Effectuation and causation.....	12
2.2.1 The development of effectuation theory	13
2.2.2 Support for and critique of effectuation theory	16
2.3 Growth orientation	16
2.4 Innovation	18
2.5 Business growth	20
2.5.1 Company age and business growth	23
2.5.2 Environment and business growth.....	25
3 RESEARCH METHODOLOGY	27
3.1 Philosophical assumptions.....	28
3.2 Methodological choices	30
3.3 Research design	31
3.4 Data collection and analysis.....	33
3.5 Validity and reliability	38
4 SUMMARY OF ARTICLES AND ESSAYS	43
4.1 Effectuation, an emerging theory of entrepreneurship; toward a mature stage of development	44
4.2 Business growth in established companies; roles of effectuation and causation.....	45
4.3 Relationship between growth orientation and innovativeness – The mediating role of causation	48
4.4 Innovativeness and business growth in SMEs – The mediating role of strategic flexibility.....	53
5 DISCUSSION AND CONCLUSIONS.....	60
5.1 Theoretical contributions.....	60
5.2 Managerial implications	63
5.3 Limitations	67
5.4 Avenues for future research.....	68
REFERENCES.....	70
ARTICLES AND ESSAYS	90

Figures

Figure 1.	A stairway to success. An integrated framework of the four studies of the dissertation	7
Figure 2.	Outline of the dissertation	8
Figure 3.	Empirical and conceptual articles per year between 1998 and 2016	13
Figure 4.	The relationship between growth orientation and innovativeness mediated by causation	49
Figure 5.	Interaction between flexibility, innovativeness, and business growth	55

Tables

Table 1.	Key concepts	9
Table 2.	Main streams of effectuation research 1998-2012	15
Table 3.	Summary of articles and essays	43
Table 4.	Effectuation articles per year 1998-2016	45
Table 5.	Prevalence of effectuation and causation in the studied companies. (E = effectuation as the dominant factor, C = causation).....	47
Table 6.	Constructs and measurement items.....	50
Table 7.	Interrater reliability of latent variables	51
Table 8.	The reliability and convergent validity.....	51
Table 9.	Fornell-Larcker criterion. Correlations between constructs and square roots of AVEs on the diagonal.....	52
Table 10.	Interrater reliability of latent variables	56
Table 11.	Constructs and measurement items.....	57
Table 12.	Model assessment	58

Abbreviations

Amos24	Analysis of Moment Structures-program
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
EO	Entrepreneurial Orientation
Eurostat	The Statistical Office of the European Communities
GFI	Goodness of Fit Index
IFI	Incremental Fit Index
R&D	Research and Development
RMSEA	The Root Mean Square Error of Approximation
r*WG(J)	An index to estimate interrater agreement for a group
rWG(J)	An index to estimate interrater agreement for a group
SEM	Structural Equation Modeling
SME	Small and Medium-sized Enterprise
SPSS	Statistical Package for the Social Sciences
TEM	Ministry of Labor and Economics
TLI	Tucker-Lewis Index

Articles and essays

This dissertation consists of two enclosed research articles and two essays:

[1] Matalamäki M. (2017). Effectuation, an emerging theory of entrepreneurship – toward a mature stage of the development. *Journal of Small Business and Enterprise Development* Vol 24, No. 4, pp. 928 – 949. DOI 10.1108/JSBED-02-2017-0030.

[2] Matalamäki M., Vuorinen T., Varamäki E. and Sorama K. (2017). Business growth in established companies; roles of effectuation and causation. *Journal of Enterprising Culture*, Vol. 25, No. 2, pp. 123-148. DOI: 10.1142/S0218495817500054.

[3] Siltamäki M., Matalamäki M. and Vuorinen, T. (2017). Relationship between growth orientation and innovativeness – The mediating role of causation. Paper presented and published in 2017 RENT Research in Entrepreneurship and Small Business –Conference proceedings in Lund, Sweden, November 2017. ISSN 2219-5572.

[4] Matalamäki M., Siltamäki M. and Vuorinen T. (2017). Innovativeness and business growth in SMEs – The mediating role of strategic flexibility. Under review for *Management Research Review*. Paper presented and published in 2017 International Conference of Small Business ICSB World Conference –proceedings in Buenos Aires, Argentina June, 2017.

1 INTRODUCTION

1.1 Background

In the last two decades, business growth has become one of the core topics in entrepreneurship research (Shane & Venkatamaran, 2000; Van de Ven & Poole, 1995; McKelvie & Wiklund, 2009). As markets change and the rules of the game are redefined, scholars and politicians recognize the decisive role of SMEs as sources of growth, employment creation, and overall well-being at both national and international levels. Growth entrepreneurship has a central role in society as well as in economic and regional development. This is not surprising, because ultimately, all economic models of business creation are based on the assumption of business growth (Aldrich & Reuf, 2006). Growing companies generate essential economic growth, without which an economy will spiral into recession. This is the general view on which the western economic system is based. Growth entrepreneurship is central to European entrepreneurship policy. Business growth is defined as indicated by the annual growth of a company reaching 5–10 percent; high growth is defined as indicated by a company generating at least 20% annual growth in three consecutive years (Delmar, 2000; Shepherd & Wiklund, 2009).

The majority of the publications related to growth entrepreneurship focus on investigating growth among new companies (Delmar 2000; Autio 2009; McKelvie & Wiklund 2010). In addition, the general economic debate holds high expectations for growth entrepreneurship among new companies and start-ups. This research aims to highlight the potential of established companies, which are not at the center of the entrepreneurial discussion when it comes to business growth; and to show that perhaps they ought to be. Both new and established companies should be considered when setting expectations for new growth companies. The vast majority of steady companies never become growth companies, and most growth companies never become high growth companies. They maintain reasonable rates of growth, are possibly profitable, and are satisfied with that status. Nevertheless, some of those steady or growth companies will take that leap and become growth, or high-growth, companies. This research explores independent factors that explain these outcome variables and seeks to learn from them and to contribute to the entrepreneurial debate. This dissertation intends to understand whether these companies adapt to the situation and respond to the demands of the market with their resources (effectuation) or follow previously determined plans (causation) and proceed toward set goals (Sarasvathy, 2001).

Research on entrepreneurship has intensified, research has explored new theoretical views to explain entrepreneurial behavior (Leitch et al., 2010; Fisher, 2012). These include elaborative, unconventional theoretical perspectives, such as effectuation (Sarasvathy, 2001). Effectuation theory assumes entrepreneurs are not fully aware of their goals at the beginning of the entrepreneurial process, and instead utilize the resources available to meet the demands of the market in a flexible manner (Sarasvathy, 2001). Effectuation is contrasted with causation, which emphasizes the importance of systematic analysis and integrative planning. Effectuation assumes a selected strategy with a goal or objective that is pursued after acquiring the necessary resources (Sarasvathy, 2001).

Effectuation challenges the traditional understanding of entrepreneurial decision making (Fisher, 2012; Reuber et al., 2016; Read et al., 2016; Alsos et al., 2016). However, it has been criticized owing to the slow progress of its development and because of perceived shortcomings in the testability of the theory (Perry et al., 2012; Arend et al., 2016; Nielsen & Lassen, 2012; Goel & Karri, 2016). Since the introduction of the first validated measurement scales (Chandler, 2011) there has been a substantial change in effectuation research. As the literature on effectuation has intensified and evolved, more empirical articles have been published. Following Van de Ven (2007), we specify the research questions to be addressed in the next chapter and the possible solutions with evidence.

1.2 Research gaps, objectives, and questions

Both new and established companies generate growth, but the potential of the established companies seems marginalized in the current economic discussion (Shane, 2009). But why are new businesses so interesting for researchers? There are multiple reasons for the interest in new companies. New companies and start-ups are attractive from the business growth research viewpoint because they have great growth potential. There are business incubators for new companies and start-ups in the university environment where information is easy to find for researchers. A university's spinoff companies and start-ups are often set up in the pursuit of growth, which makes them reasoned research subjects for growth business research. The general economic debate also sets high expectations for growth entrepreneurship on the part of new companies and start-ups. However, there is prior research claiming that this growth potential will very rarely materialize (Davidsson & Delmar, 2006: 157; Shane, 2009; Rannikko, Tornikoski, Isaksson & Löfsten, 2018). Shane (2009) claims that a typical start-up does not create employment and produces no prosperity for its environment.

Recently, researchers have questioned the role of high-growth companies as employment creators, because it has become evident that a large proportion of high-growth companies are more concerned with collecting investment support and maximizing profits, instead of becoming economically viable large-scale employers (Shane, 2009; Haltiwanger et al., 2013; Neumark et al., 2010). Moreover, prior research reveals that the survival rate for start-ups is very low, somewhere between 35 and 50 percent, while in established companies generating business growth it is relatively high, between 90 and 96 percent. (Davidsson & Delmar, 2000). Therefore, it is important to shine a light back on to established companies and their growth potential, and this dissertation attempts to do that.

There is no clear consensus on the definition of an established company, although it is a frequently used term in the economic literature (e.g., Baum et al., 2000). It refers to a company with cultural norms (Zahra, 2006), internal resources, past experience, and perceptions about environmental uncertainty and hostility (Antolin-Lopez et al., 2015). Such firms also enjoy higher levels of legitimacy, stakeholder support, and public awareness that accrue from their stability (Baum et al., 2000). In this dissertation, we used a longitudinal five-year perspective to gather data on the financial records, so the established companies presented in this research are at least five years of age. The purpose of this study is to stimulate discussion on the perspective of how, and through which variance-based explanations established businesses generate business growth. The main objective for this research is to identify factors explaining the conditions under which companies use effectuation and causation to grow. More specifically, this dissertation answers the question of whether these companies are adapting to the situation and responding to the demands of the market with their resources (effectuation), or following previously determined plans and proceeding toward set goals (causation)?

Effectuation theory seems to have developed remarkably quickly, as evidenced by the large follow-up review conducted for this dissertation in Article 1. Therefore, this dissertation attempts to fill the gap in the literature, claiming that effectuation theory is still in its infancy, while our results suggest it has developed to an intermediate stage and indeed beyond that (Perry et al., 2012; Edmondson & McManus, 2007). This study extends effectuation research from the original focus on new ventures, start-ups, university spin-offs (Sarasvathy, 2001; 2008; Lingelbach et al., 2015; Maine et al., 2015), and novice entrepreneurs (Daniel et al., 2015; Nielsen & Lassen, 2012) to include established companies as a suitable context for effectuation research. In doing so, this study contributes to effectuation research by investigating established companies, which were neglected in effectuation research for many years.

In the past few years, the effectuation literature has focused on combining effectuation and other constructs like innovation, which has become one of the main streams in effectuation and causation literature. Innovation is also widely seen as one of the key sources of business growth (Dew & Sarasvathy, 2007; Gabrielsson & Gabrielsson, 2013; Helmersson & Mattsson, 2013; Van de Vrande, De Jong, Vanhaverbeke, & De Rochemont, 2009). In our literature review, we found no previous research considering a relationship between causation and growth orientation in established companies. This research aims to fill the gap in the literature by demonstrating a relationship between growth orientation and innovation, studying the mediating role of causation in the context of established companies.

There is relatively little previous literature combining effectuation with business growth. In a systematic literature review, we found three articles featuring both concepts in the key words or title. All three were qualitative case studies, Pattinson (2016) is a single case study, Nummela et al. (2014) is a study consisting of three cases, and Helmersson and Mattson (2013) is a text-analysis case study. This study complements the context of established companies with the effect on innovation and business growth through its use of a quantitative method. The results suggest that strategic flexibility fully mediates this relationship.

The main theoretical motivation of this dissertation is to identify factors explaining the conditions under which companies use effectuation and causation to grow. The overall aim is to answer the following question:

RQ: How do established companies grow, by adapting to the situation and responding to the demands of the market with their resources (effectuation) or by following previously determined plans and proceeding toward set goals (causation)?

The following sub-questions were formulated during this dissertation process. It can be said that this process itself generated the sub-questions, and ultimately these will answer the main research question:

SQ1: Has effectuation research moved on from the nascent to the intermediate stage of development, or has it even already begun its transition toward the mature stage of development?

SQ2: How have the studied industrial companies managed to accomplish a high level of growth after a long steady period or a consolidation phase?

SQ3: Are growth-oriented companies more likely to formulate strategic plans, innovate more, and experiment in their operations as they pursue business growth?

SQ4: How does the flexibility, a dimension of effectuation impact on firm-level innovativeness and ultimately on business growth?

This dissertation investigates business growth in established companies, identifying factors explaining the conditions under which companies use effectuation and causation logics to grow. The empirical findings indicate the usage of both effectuation and causation logics in established companies, while effectuation appears to be the dominant approach in the small and medium-sized enterprises (SMEs) studied. The other theoretical value of this dissertation is to highlight the progression of effectuation. The findings of this study indicate that effectuation research has not only moved on from the nascent to the intermediate stage of development (Edmondson & McManus, 2007), but has already taken the first steps toward the mature stage. This study presents a model, showing that strategic flexibility mediates the influence of innovativeness on business growth in the context of SMEs. It also highlights the importance of using formal strategic planning taking account of causal logic. Growth-oriented companies are more likely to form strategic plans and innovate more. Moreover, we investigate how growth orientation influences innovation in the context of SMEs, using causation logic as mediator for this setup. The findings suggest that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures.

Figure 1 presents an integrated framework of the four studies and illustrates that this study is based on effectuation and causation theory, marking step one, where the causation approach ensures that the venture stays focused and predicts what is predictable, while the effectuation counterpart allows a flexible response to changes in the operations environment, constituting a solid base for a business venture (Sarasvathy, 2008; Dew et al., 2009; 2011; Fisher, 2012; Sitoh et al., 2014; Van de Vrande et al., 2009).

In step two, the goal of an entrepreneur is not fully known. Instead, the entrepreneur utilizes the resources available to meet the demands of the market, which refers to the effectuation logic. Article 2 explores the roles of effectuation and causation in their growth trajectories. Despite the fact that the majority of the studied companies had prepared a strategy, its practical implementation proved extremely difficult. Customer-orientation and quickly responding to demand in rapidly changing situations were viewed as methods for pursuing business growth. The majority of the studied companies seemed to rely on the resources available,

indicating that they followed the logic of effectuation. The findings of this study indicate the use of both effectuation and causation logics, among which effectuation appears to be the dominant approach.

Step three involves moving the business venture to the next level, and at that point there should be a desire for and attitude aligned toward growth, a growth orientation. In this phase, it is important to have goals or objectives selected based on strategy, toward which the organization works by acquiring the necessary resources; this status indicates the presence of the causation logic. The findings of Essay 3 confirm that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures. Causation logic has a positive impact on innovativeness, and the relationship between a firm's growth orientation and innovativeness is mediated by causation, whereas growth orientation has a positive relationship with causation.

In step four, companies need to develop their processes, since ventures that show a high level of innovativeness appear to perform better than those that do not. Essay 4 suggests that innovativeness influences strategic flexibility, which significantly affects business growth. The companies are encouraged to maintain flexibility in the face of changes in the environment as doing so is crucial for SME survival.

This dissertation investigates business growth in established companies, identifying factors explaining the conditions under which companies use effectuation and causation logics to grow. Consequently, through the implementation of the proposed framework, we suggest that a company can gain and maintain competitive advantage in a turbulent business environment by following these steps and creating business growth on its way to success.

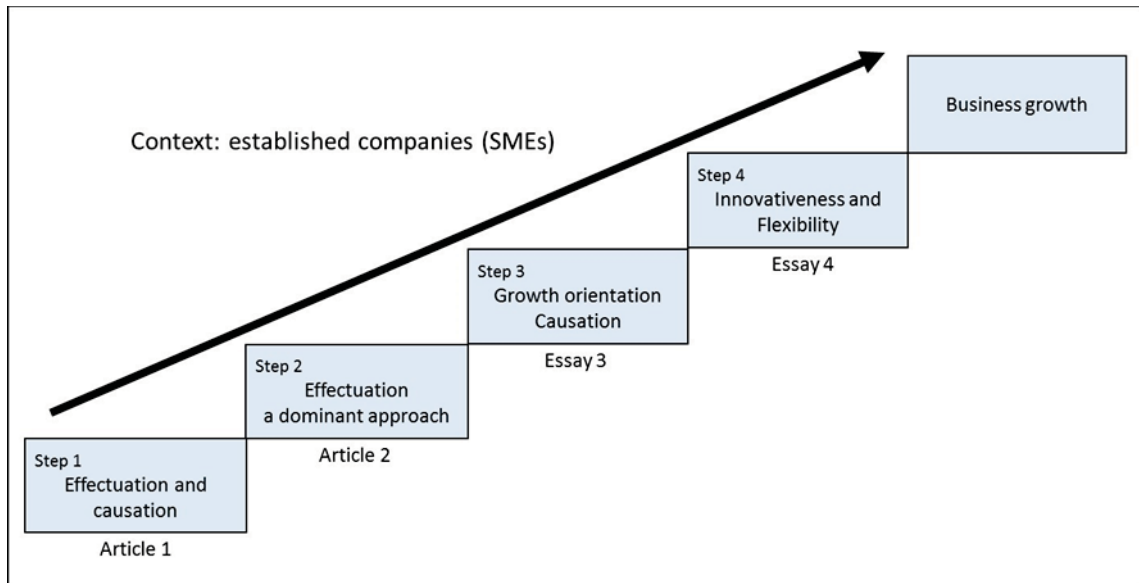


Figure 1. A stairway to success. An integrated framework of the four studies of the dissertation

1.3 Outline of the thesis

This dissertation is divided into two separate parts. Part 1 is an introductory overview of the studies, divided into five sections. The introductory first chapter relates the background of the studies, defining the research gap, objectives, and questions, and then introduces the outline of the thesis. Finally, the key concepts used are explicated. In Chapter 2, the theoretical background and the framework of the thesis are presented. Chapter 3 concentrates on the philosophical assumptions of the thesis; ontology, epistemology and the key methodological choices of the study. The research strategy and design, data collection, data analysis, validity, and reliability of the results are described and evaluated. The articles and essays are reviewed and summarized in Chapter 4. Chapter 5 summarizes the results, theoretical contributions, and managerial implications of the research, considering the limitations and avenues for future research.

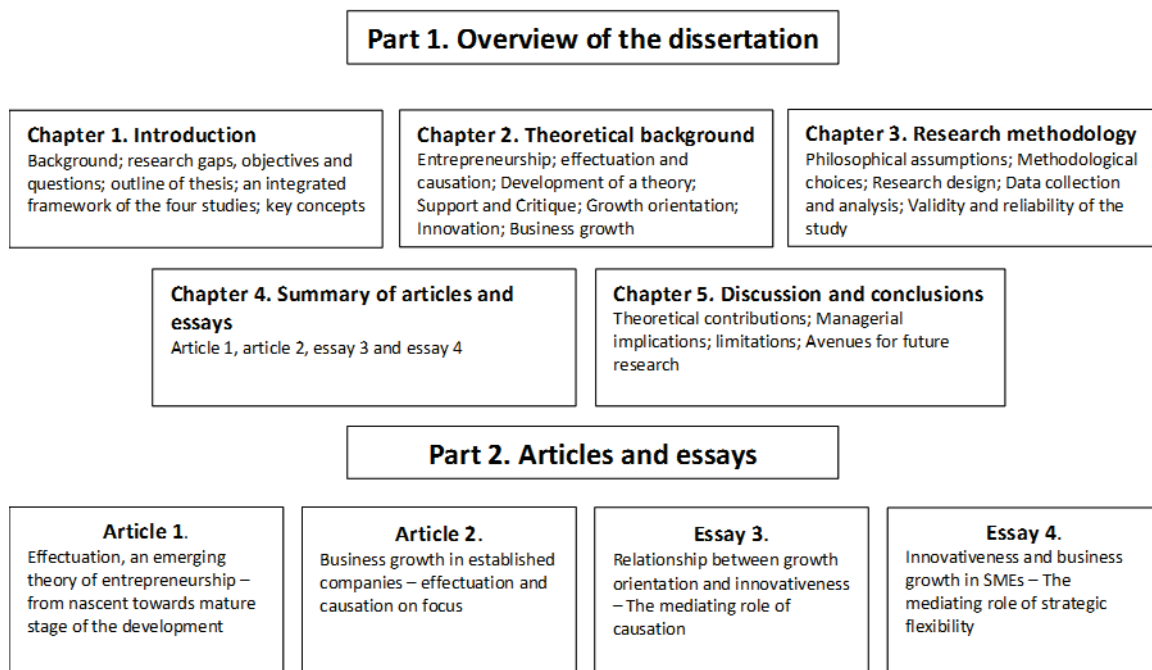


Figure 2. Outline of the dissertation

This dissertation consists of four individual articles. Article 1 is a review article sole authored by Matalamäki. Article 2 is a qualitative case study co-authored by Matalamäki, Vuorinen, Varamäki, and Sorama. Essay 3 is a quantitative survey study, co-authored by Siltamäki, Matalamäki, and Vuorinen. Essay 4 is also a quantitative survey study co-authored by Matalamäki, Siltamäki, and Vuorinen. Matalamäki is the lead author in Articles 1, 2 and Essay 4, and a second co-author in Essay 3.

In the o, Matalamäki had the main responsibility for managing the review process, research design, writing, data collection, and analyzing the data. In Essay 3, the responsibilities were divided between colleagues. Matalamäki had the main responsibility for the research design and writing three of the four theoretical sections. Data collection and analysis were undertaken in research triangulation with colleagues. In Essay 4, Matalamäki had the main responsibility for the research design, writing, and the research process in general. The collection and analyzing of data were implemented in research triangulation with colleagues.

1.4 Key concepts used in the studies

Table 1. Key concepts

Concept	Definition
Business growth / High growth	Business growth is defined as the annual growth of the company being at least 5–10 %, high growth is defined as the company generating at least 20% annually in three consecutive years. The growth indicators in order of prevalence are; turnover, employees, profit, assets, and equity (e.g., Delmar, 2000; Shepherd & Wiklund, 2009).
Causation	Causation emphasizes a goal, selected based on strategy, toward which the organization works by acquiring the necessary resources. It is a part of the wide spread in the strategic management sphere of thought, and contains widely cited theories (e.g., Sarasvathy, 2001, 2008; Perry et al., 2012).
Effectuation	Effectuation theory assumes the goal of an entrepreneur is not fully known at the beginning of the entrepreneurial process. Instead, the entrepreneur utilizes the resources available to meet the demands of the market in a flexible manner (e.g., Sarasvathy, 2001, 2008).
Entrepreneurship/Entrepreneur	An entrepreneur is an individual or group of stakeholders that is/are committed to start up, maintain, and grow a profitable business venture. The entrepreneur is generally perceived as a source of new ideas, goods, services, and business/or procedures (e.g., Schumpeter, 1934; Cole, 1959; Minniti and Lévesque, 2008).
Established company	A company with cultural norms, internal resources, past experience and perceptions about environmental uncertainty and hostility. They also enjoy higher levels of legitimacy, stakeholder support and public awareness due to its stability (e.g., Baum et al., 2000; Zahra, 2006; Antolin-Lopez et al., 2015).
Innovation	The invention or the creation of a new idea, continuing with the development of that idea, and concluding with its implementation. The process of making changes to something established by introducing something new, by applying radical or incremental changes to products, processes, or services (e.g. O’Sullivan and Dooley, 2008; Hechavarria & Welter, 2015; Wiklund et al., 2009; Braunerhjelm et al., 2009).
Small and medium-sized enterprise (SME)	A company is categorized as an SME if it is (mainly) privately owned, has an average staff size of fewer than 250 persons, its annual turnover is less than 50 million euro, and its total balance sheet value is less than 43 Million euro (cf. OECD).
Start-up	An enterprise in the early stage of the life cycle, where the entrepreneur moves from the idea stage to acquiring financing, laying down the basis structure of the business, and initiating operations or trading (cf. Timmons, 1994).
Strategic flexibility	Strategic flexibility depends on the inherent flexibilities of the resources available to the firms and on the firm’s flexibilities in applying those resources to alternative courses of action (Sanchez, 1995, p. 138).

2 THEORETICAL BACKGROUND

The theoretical background of this study will be summarized in this chapter. First, entrepreneurship, as an umbrella term, is introduced in paragraph 2.1. Then the focus is on defining the four central concepts of this dissertation. The second sub-section concentrates on effectuation and causation, which are introduced from various viewpoints and alongside their affecting constructs. The roots and development of effectuation theory are discussed, followed by current main streams and hot topics around the theory. The support for and critique of effectuation theory is also evaluated and positioned to the current effectuation discourse. In sub-section three, effectuation is contrasted with growth orientation. The fourth sub-section incorporates innovation and effectuation, and the fifth sub-section concentrates on business growth, defining high growth and using viewpoints of environmental effect and context of established companies.

2.1 Entrepreneurship

There has been a considerable increase in entrepreneurship research over the past five decades, it is even claimed to be the fastest growing field within social science (Reader & Watkins, 2006; Leitch et al, 2010). But what makes entrepreneurship so interesting and important? Entrepreneurial firms are reported to create extraordinary economic value, and moreover produce spillovers that promote employment growth rates among all the companies in their operation environment (Van Praag & Versloot, 2007). Entrepreneurship, along with other economics and management sciences, investigates how individuals form and justify their decisions, and does so by asking questions such as which motivation factors influence entrepreneurs' ability to create an organization and steer it along a growth path; and what are the intended and unintended consequences of these actions; and if learning acquired can be passed on to new entrepreneurs? (Minniti & Lévesque, 2008). The first mention of entrepreneurship in the literature is presented by Richard Cantillon in 1732, whose original definition of entrepreneurship is still accurate; in that it incorporates the idea of self-employment, more or less well-known costs, and doubtful input information on income, and uncertainty stemming from the fact that market demand is almost impossible to predict (Minniti & Lévesque, 2008).

The uncertainty of the future is still at the core of entrepreneurship. Prominent economists such as Schumpeter (1934) were the first to consider the entrepreneur an innovator. Innovativeness transforms the ways in which companies can create a new value, by setting an imbalance in the market, which in turn leads other

companies to try to compete. Schumpeter (1934) argues that through this process the whole economy develops. Penrose, (1959), introduced the concept of growth entrepreneurship. Her work concentrates on a firm-level analysis, rather than an individual one. It suggests that firms are always profit-oriented, and growth and profitability fundamentally refer to the same incentive. Kirzner (1973, 1979, 1982 and 1997) was the first to acknowledge the essential balancing role of the entrepreneur in the economy, contradicting the Schumpeterian view of creative destruction. From his viewpoint, the entrepreneur acts as a balancing force in the market and enables a functioning market process. All r should be considered pioneers whose influence on entrepreneurship research has been significant. They have strived to understand and explain the behavior of the entrepreneur and the related processes in decision making in companies (Minniti & Lévesque, 2008; Hébert & Link, 2006; Baumol, 1990, 2002).

Entrepreneurship has been studied extensively from various viewpoints, such as those of personal characteristics and talents (Djankov et al., 2006; Lévesque et al., 2006). Michelacci, (2003) and Lazear, (2004, 2005), have suggested that entrepreneurs must be multi-skilled talents, jacks of all trades, able to resolve all kinds of situations without necessarily excelling at any of them. Fairlie and Meyer (2003) studied immigration and entrepreneurship, Minniti (2004, 2005) social capital and the impact of unemployment rates, and firm size and organizational perspective have also been addressed (Minniti & Lévesque, 2008; Parker & Robson, 2004; Parker, 2008). Learning to be a better entrepreneur has attracted interest and inspired researchers in the field of entrepreneurship (Shane, 2000; Gibb & Richie, 1982). Entrepreneurial action and innovation are described as key to the survival and growth of firms in an unstable, uncertain environment (Lévesque & Minniti, 2006). Landström, Åström, and Harirchi (2015) investigated whether entrepreneurship and innovation are in fact one or two fields of research, following Schumpeter's (1934) traits, and conclude that they are two separate fields of research. Audretsch and Keilbach (2004, 2005) studied issues of innovation and R&D functions. Their findings indicate that entrepreneurship affects the innovation selection process and thus creates a multifaceted equation that facilitates dissemination of acquired knowledge to different parties. Sharing of property rights indicates innovation and entrepreneurship (Hellman, 2007).

As entrepreneurship has attracted more interest among scholars, new perspectives have emerged to explain the phenomenon (Leitch et al., 2010; Fisher, 2012; Eisenhardt, Kotha, Meyer, & Rajagopalan, 2010). Effectuation theory has attracted the most interest among scholars. In a Scopus database search of peer-reviewed academic journals in the subject areas of business, management and accounting, economics and finance, and social sciences, the search term

effectuation resulted in 269 hits, while *bricolage* brought 58, and *improvisation* only 10 hits as part of the title, abstract, or keywords.

2.2 Effectuation and causation

Effectuation is one of the most-cited emerging theories of entrepreneurship (Fisher, 2012; Perry Chandler & Markova, 2012; Welter & Kim, 2018). Effectuation theory proposes the goal of an entrepreneur is not fully known at the beginning of the entrepreneurial process. Instead, the entrepreneur utilizes the resources available to meet the demands of the market in a flexible manner (Sarasvathy, 2001). Practitioners of effectuation tend to take risks only to the extent matched by the losses they are prepared to sustain, and to ensure they are capable of reacting to changes triggered by the environment. Causal logic describes the calculation of expected returns, and the objective will be to maximize expected returns (Brettel et al., 2012).

A good example of effectuation is provided by a metaphor of a chef using whatever ingredients are in the store cupboard to decide which meal to cook, that is, the outcome relies on the available materials. In an alternative version of this activity, the chef has a recipe (plan) which he or she follows by acquiring the ingredients (resources) and using them to achieve the end result, set as the goal of the activity. This approach is called causation (Sarasvathy, 2001; 2008).

Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means (Sarasvathy, 2001, 245).

At the core of causation lies the idea that there is a goal or objective, selected based on strategy, toward which the organization works by acquiring the necessary resources (Sarasvathy, 2001). Some of the resources may be new, while others may already be available to the organization. The benefits of this approach include the organization being able to provide what the market demands in a cost-effective and timely manner (Sarasvathy, 2001, p. 250; Dew et al., 2009). The causal school emphasizes the systematic competitive analysis and integrative planning (Sarasvathy, 2001, 252). Effectuation, however, is based on models set out by Knight (1921), Weick (1979), March (1982, 1991), March & Simon (1958), and Mintzberg (1991, 1994) questioning the efficiency of systematic planning (Sarasvathy, 2001, 254-256).

March's idea on exploration and the challenge to pre-existent goals, Mintzberg's gathering of evidence against planning and prediction, and Weick's emphasis on enactment and living forward are all integrated into a model of effectual reasoning (Sarasvathy, 2001, 256).

2.2.1 The development of effectuation theory

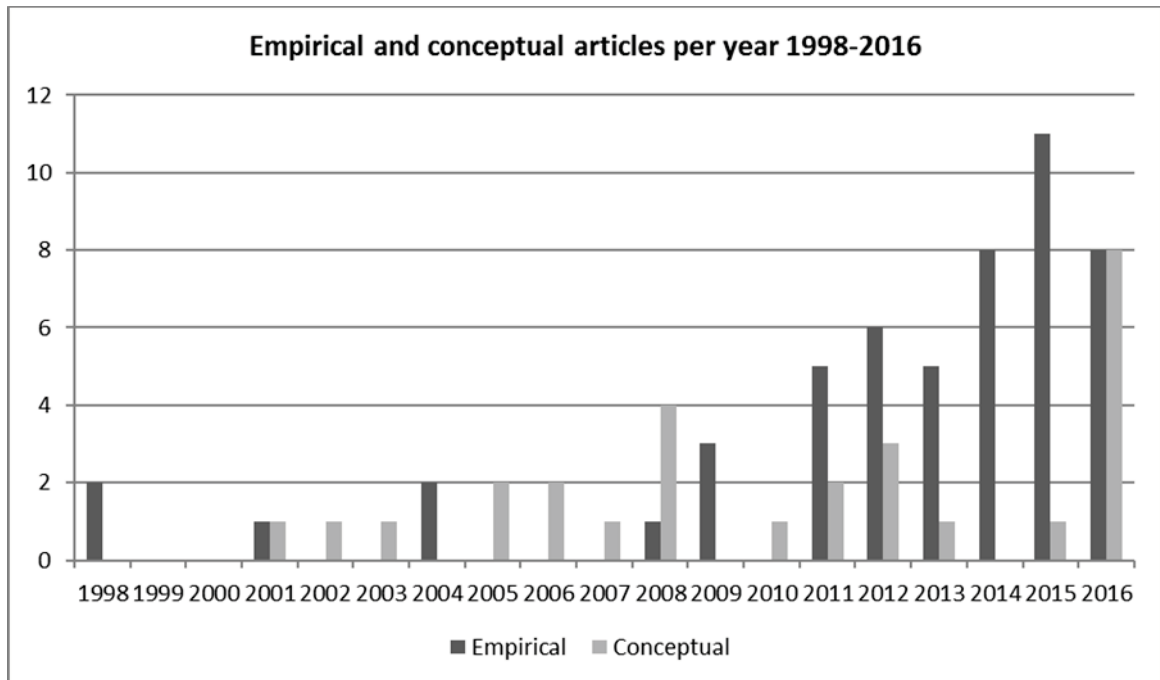


Figure 3. Empirical and conceptual articles per year between 1998 and 2016

Experienced entrepreneurs aim to succeed with the available resources and only invest the resources they are prepared to lose into a project. Companies using effectuation logic remain adaptable to changes in order to sustain progress in a rapidly changing operating environment (Wiltbank et al., 2009; Sitoh et al., 2014; Dutta et al, 2015; Lingelbach et al., 2015; Reymen, Andries, Berends, Mauer et al., 2015). The causation approach ensuring that the company remains focused and anticipates what can be predicted, while the effectuation counterpart allows a flexible response to changes in the operations environment (Sarasvathy, 2008; Dew et al., 2009; 2011; Fisher, 2012; Welter & Kim, 2018). Berends et al. (2014) illustrated an early form of effectuation logic, which over time evolved into the causation logic.

Effectuation is the dominant decision-making strategy in both uncertain and risky environments until the entrepreneur can predict the future with

a very high degree of accuracy. Firm performance using causation improves dramatically once an entrepreneur in our model can predict the future with > 75% accuracy (Welter & Kim, 2018).

Jiang and Tornikoski (2018) challenge this view in their recent paper, suggesting that in the early stages of the venture, entrepreneurs do not perceive uncertainty, so they follow causal logic. The same study suggests entrepreneurs actively combine effectuation and causation in later phases when they encounter uncertainties in the environment (Jiang & Tornikoski, 2018). To summarize the overall findings, effectuation and causation are methods that can run concurrently and alternate during the various phases of the business venture (Van de Vrande, De Jong, Vanhaverbeke & Rochemont, 2009; Sitoh et al., 2014).

Current research diversifies the effectuation theory from the level of the entrepreneur to that of the corporate context (Brettel, Mauer, Engelen & Küpper, 2012). Werhahn et al. (2015) present preliminary results on the potential dimensions for effectual orientation and distribute subdimensions into five dimensions; means orientation, partnership orientation, affordable loss orientation, contingency orientation, and control orientation.

The effectuation literature review between 2012 and 2016, explain the studied data permits identification of the dominant constructs of effectuation research. The constructs can be divided into the following main streams, categorized in Table 2:

Table 2. Main streams of effectuation research 1998–2012

Main contribution or related construct	1998-2001	2002-2006	2007-2011	2012-2016
Innovation and product development	0	0	1	6
Internationalization	0	0	1	7
Effectuation, causation simultaneously	0	0	2	3
Expert entrepreneurs	0	2	4	4
Bricolage, improvisation	0	0	1	4
New companies, Start-ups	0	1	2	4
Scale developing	0	0	1	3
Business growth	0	0	0	3
Entrepreneurial orientation	0	1	0	2
Debate criticism	0	1	3	4
Debate supportive	0	1	0	5
Other support or construct	4	2	2	7
Total	4	8	17	52

First, innovation and product development activities in conjunction with effectuation has become one of the most topical constructs (Brettel et al., 2012). The second main stream of study investigates internationalization and effectuation (Kalinic et al. (2014); Chetty et al., (2015); Fuerst and Zettinig (2015). Effectuation, improvisation and bricolage concepts can provide an explanation of how entrepreneurs who do not have previous international experience and who lack access to systematic market research or systematic analysis of foreign markets can create new projects that internationalize at an early stage (Evers & O’Gorman, 2011). The findings indicate that unplanned internationalization is unlikely to be included with homogeneous decision making. Instead, entrepreneurs’ decision making is based on the affordable loss subdimension rather than concentrating on maximizing the return on investments (Kalinic et al., 2014; Harms & Schiele, 2012).

The third main stream focuses on empirical studies, showing evidence that the effectuation and causation logics can work simultaneously (Lingelbach et al., 2015; Reymen et al., 2015; Sitoh et al., 2014), suggesting that causal behavior ensures that the strategy is followed, while effectuation allows flexibility to changes in its operating environment (Dew et al., 2011; 2009; Sarasvathy, 2008; Berends et al., 2014). Effectuation and causation are reported to be beneficial in different stages of the project. There is evidence for a greater emphasis on one or other of the processes, moreover both processes are also used complementary (Sitoh et al., 2014; Van de Vrande et al., 2009; Dutta et al, 2015).

The fourth main stream proposes that entrepreneurial experts use effectual logic to identify opportunities. They use the resources what they could afford to lose and share the risks with their networks or partnerships (Dew et al., 2009). An unpredictable future can be tackled using effectual logic, which avoids prediction (Read et al., 2009). This line of research has already attracted scholars for more than ten years but remains one of the main streams (Read et al., 2005; Dew et al., 2009; Fiet, Norton & Van Clouse, 2013).

2.2.2 Support for and critique of effectuation theory

The heuristics of effectuation are widely acknowledged (Read, Sarasvathy, Dew, & Wiltbank 2016; Sitoh, Pan and Yu, 2014; Reymen, Andries, Berends, Mauer et al., 2015; Dutta et al, 2015). Fisher (2012), claims effectuation to be one of the few feasible alternative theoretical perspectives, developing the theory of entrepreneurship. Coviello and Joseph (2012) find effectuation to be an explanation for success in developing new products. However, like any other theories, there are also divergent research opinions, like that of Chiles, Bluedorn, and Gupta (2007), who find effectuation to be undefined and less than original; and of Baron (2009), who argues that the basic tenets described in effectuation theory cannot really exist. Some of the criticism concerns the testability of the theory (Arend, Saroogh & Burkemper, 2015).

More recently, there have been attempts to develop measurement approaches for effectuation (Chandler et al., 2011; Brettel et al., 2012; Werhahn et al., 2015). Chandler et al. (2011) developed and validated a measurement scale for causation and effectuation, proposing that effectuation can be divided in four subdimensions; experimentation, affordable loss, flexibility, and pre-commitment. Since the publication of their paper, substantially more empirical research has been presented.

2.3 Growth orientation

Prior studies of business growth have found evidence for a positive effect of an orientation to growth, which is hardly surprising, because the intention to take certain actions normally correlates with the actions being taken (Wiklund & Shepherd 2003). There are also divergent studies, suggesting that the relationship with growth orientation and growth is not particularly strong (e.g., Kolvereid & Bullvåg 1996; Wiklund & Shepherd 2003). Researchers have used surveys to elicit practicing entrepreneurs' aspirations, intentions, or willingness to grow their firms. These studies include viewpoints: means, motive, opportunity, including the

social, financial, and technological resources required (Dutta & Thornhill, 2008; Gundry & Welsch, 2001; Knockaert et al., 2011; Wiklund & Shepherd, 2003). Strong motivation is associated with a direct and positive effect on company growth (Bellu & Sherman, 1995; Kolvereid & Bullvåg, 1996; Miner et al. 1994; McKelvie et al., 2017).

Growth orientation refers to a readiness and willingness to grow the business. The more the growth orientation increases, the company is expected to select growth-oriented strategies that lead to actual growth (Autere & Autio, 2000). Business growth might cause changes to the circumstances of the business. These changes may be different from the entrepreneurs' own goals, for example more difficult duties as a consequence of business growth is a substantial concern for many a small business owner and is one that affects their attitudes to business growth (Wiklund et al., 2003). On the contrary, if the entrepreneur has a positive attitude toward the new tasks required to progress firm growth, then the positive attitude will also apply to the company's growth (Wiklund et al., 2009).

The theory of planned behavior is often utilized theory in predicting and explaining the behavior of individuals, and it has been cited more than 20000 times in the Scopus database. The behavior is determined by a person's intentions to perform certain behavior and perceived control (Ajzen 1991). The person's intentions are determined by the attitude toward those intentions and perceived behavioral control. The theory of planned behavior was developed from the theory of reasoned action (Fishbein & Ajzen 1975; Ajzen & Fishbein 1980) by Ajzen (1988; 1991) by adding the concept of perceived behavioral control which originates from self-efficacy theory as proposed by Bandura (1977). The theory of planned behavior has been used in different research fields, such as psychology, health sciences, leisure studies, and marketing to explain and predict intentions and behaviors (Lortie & Castogiovanni, 2015). As proposed by the theory, the intentions to grow the business materialize as actions are taken in pursuit of the original intentions (Heinonen et al., 2004; Smallbone et al., 1995; Wiklund & Shepherd, 2003).

Sexton and Bowman-Upton (1991) have criticized growth models that do not take into account the role of entrepreneurs and their motivation to grow. The study concludes that the growth orientation of small business managers determines how large a company grows. There are multiple reasons why individuals start and operate their own firms, but the goal of maximizing economic returns is rarely cited (Douglas, 2013; Kolvereid 1992). Many entrepreneurs start their business to pursue other kinds of personal goals, such as independence intentions, or job satisfaction delivered through changing profession (Douglas, 2013; Lange, 2012; Wiklund et al., 2003; McKelvie et al, 2017). A prudential attitude to growth may

also stem from the fear of losing the informal character of the small company (Davidsson et al., 2007).

Growth orientation and effectuation can be considered elements supportive of each other. Despite their overlaps, these two phenomena are not studied together extensively. Crick and Crick (2015) were the first to investigate decision making and learning among owners and managers in their qualitative study. The study found various degrees of cause consequences and effectuation-based decision making in a dynamic operating environment. An important factor affecting decision making was whether the owners and managers were following a growth strategy. Moving from a causation to an effectuation logic was required during the operation (Crick & Crick, 2015). To measure growth orientation, we used the corresponding dimension of entrepreneurship as opportunity-based business behavior developed by Brown, Davidsson, and Wiklund (2001).

2.4 Innovation

Entrepreneurship and innovation are commonly acknowledged as key sources fostering economic growth and prosperity of the regions (Audretsch et al., 2006; Cooke et al. 2011; Harris 2011). Innovativeness represents an aspiration to break away from old technologies or practices and striving to advance from the current situation (Lumpkin & Dess, 1996). The OECD (2005) classifies between four basic forms of innovation: product, process, market, and organizational innovation (Karlsson & Tavassoli, 2016).

Innovation is often described as one of the current explanations for companies achieving business growth (Bhide, 2000; Hakala, 2013). Ventures that show high levels of innovativeness and utilize the resources to hand to fulfill the needs of the markets, appear to outperform those that do not (West, 2002; Andersson, Potočnik & Zhou, 2014). Innovative firms tend to be flexible and to employ pre-commitment with their customers. These findings confirm those in previous literature reporting that flexibility is a key strength of small firms (Fiegenbaum and Karnani, 1991; Zhou & Shalley, 2003). Innovative companies can generate exceptional economic performance and are therefore widely seen as the universal engines of business growth (Schumpeter, 1934; Brown & Eisenhardt, 1995; McGrath et al., 1996). Entrepreneurship and innovation are often regarded as intertwined concepts. Both are seen as necessary and cohesive elements in creating growth and prosperity in society (Braunerhjelm, Acs, Audretsch, & Carlsson, 2009). Landström, Åström, and Harirchi (2015) conducted an extensive review to determine whether these are in fact one or two fields of research. The review led

the authors to conclude that despite a few interesting overlaps in the knowledge bases, they are two separate fields of research.

Innovation is one of the most studied constructs within effectuation, and the attraction has accelerated in last years. Many recent empirical studies examine innovativeness and its relevance to the effectuation and causation processes. In a literature review, we found eight papers combining effectuation with innovativeness, which makes it one of the main streams of current effectuation literature (Lingelbach, Sriram, Mersha and Saffu, 2015; Berends, Jelinek, Reymen and Stultiëns, 2014).

Velu and Jacob (2016) investigated business model innovation among electronic trading platforms and found that the attendance of entrepreneurs positively influences the level of innovation. Svensrud and Åsvoll (2012) found effectuation processes effective in the early phase of a business venture. Brettel et al. (2012) report results supporting the importance of the moderating effect of innovativeness in the R&D process. Dew, Sarasvathy, Read and Wiltbank (2008) suggest firms utilize non-predictive effectual logic, and merge effectuation into their innovation processes. SMEs are distinguished as an essential source of business growth (Westhead & Storey, 1994; Bhide, 2000; Delmar et al., 2003; Parker et al., 2010; Storey, 1994)), because they have a tendency to exploit innovations (Autio 1998; Kuratko & Hodgetts, 2001). However, prior empirical innovation research has mainly focused on large companies and their innovativeness (Gudmunson et al., 2003). Berends, Jelinek, Reymen and Stultiëns (2014) found small firms favor an effectuation logic in their early development stages, but increasingly tend to adopt a causation logic. Coviello and Joseph (2012) explore how innovators engage with customers. Brettel et al. (2012) offer results supporting the moderating effect of innovativeness in the R&D process.

Innovativeness is one of the three dimensions of entrepreneurial orientation (EO), which has become one of the central topics of the entrepreneurship literature over the past three decades (Covin & Wales, 2012). Additionally, EO has many overlaps and similarities with the main topics of this thesis, and EO therefore cannot be ignored, even though it is not a central topic of this dissertation. EO refers to a company's aptitude to be innovative and proactive, and its ability to take risks (Miller, 1983). These three dimensions have since been adopted by researchers and used widely in the economic literature (Kemelgor, 2002; Dimitratos et al., 2004; March 1991; McGrath 2001). Previous research proposes that EO can have a positive effect on business growth (Zahra & Covin, 1995; Wiklund, 1999; Wiklund & Shepherd, 2005; Kraus et al., 2012). There are more than 150 studies asserting that the concept of EO is universally accepted among scholars (Wales et al., 2011).

EO facilitates taking risks with new and uncertain markets, industries, and services, and being more innovative with regard to new opportunities than competitors (Wiklund et al., 2009). Innovativeness is one of the key components of EO due to the orientation and exploitation of new opportunities and the company's ability to engage in new product creation. It also describes a company's aptitude for experimentation and creativity, which eventually generate processes that can lead to new avenues and business growth. (Lumpkin & Dess, 1996; Eggers et al., 2013). It is even proposed that financial and human resources, including social networks, have a positive effect on SMEs growth through EO, albeit not a direct one (Wiklund et al., 2009: 365).

2.5 Business growth

Business growth is one of the most prominent topics of today's entrepreneurship research (McKelvie & Wiklund, 2010; Henderson & Weiler, 2010; Shepherd & Wiklund, 2009). It is even claimed to be a central question of research on entrepreneurship (Audretsch, Coad & Segarra, 2014; McKelvie & Wiklund 2010). While the literature on SME growth has been as described as fragmented (Gherhes, Williams, Vorley & Vasconcelos, 2016; Wiklund et al., 2009), it has attracted sustained interest among scholars for five decades and has been studied from various viewpoints, including measures, types, and the stages of growth (Leitch et al., 2010; Davidsson et al., 2010; McKelvie & Wiklund, 2010). The impact of globalization and internationalization have also been studied intensively alongside growth (e.g., Sapienza et al., 2006; Naldi & Davidsson, 2014), as have gender, learning, performance, and the various strategies affecting growth (Leitch et al., 2010). However, there has been criticism of its slow conceptual development (Wiklund et al., 2009: 351; Leitch et al., 2010). There are many different stakeholders affecting the business growth of a company; which might include an entrepreneur/business owner, customers, suppliers, funders, academics, and policy makers. All these players have different beliefs, values, expectations, and agendas that can potentially alter the growth mode, growth rate, and motivation of the company (Gibb, 2000).

Penrose (1959) analyzed economic growth at the company level, addressing the roles of individuals and resources in firm growth (Bradley, Wiklund & Shepherd, 2011). Penrose's conclusion was that formulating a theory of firm growth is complicated by it being the individual entrepreneur who decides whether to pursue new opportunities that lead to growth. The entrepreneur's personal characteristics as they affect the company's growth have been studied by many researchers (Barringer et al., 2005; Zhang et al., 2008; Shane, 2009; Achtenhagen et al., 2010).

The topic is interesting in that a single person can have so high influence on the development of the company's growth. The justification for individual significance is generally considered to be that the entrepreneur plays a key role in the company's decision making, in defining guidelines, and in their implementation. This description is particularly suitable for smaller companies, in which the company is often personified by the entrepreneur (Barringer et al., 2005; Zhang et al., 2008; Shane, 2009; Achtenhagen et al., 2010).

Entrepreneurs – as the enactors of business growth – are not given the central role they deserve, though they decide whether to grow the business or not (Achtenhagen et al., 2010, 309).

Prior studies have concentrated on a wide variety of determinants of entrepreneurship and business growth. McKelvie and Wiklund (2010) suggest that there are three main streams in company growth research; the first being growth as an outcome. The outcome is seen as a result of growth and focuses on exploring the growth of pre-factors; growth is seen in these factors as a dependent variable. Studies in this stream concentrate on the stages of development and a firm's life cycle (Leitch et al., 2010). While a wide variety of growth-predictor measures have been introduced, a consistent growth predictor remains elusive. The second stream focuses on the consequences of growth, that is, the increased size of the changes brought about by the company's operations. Central to this stream is the analysis of changes in decision making or know-how. The third main stream focuses more on the growth process in which growth is neither a dependent nor an independent variable, instead focusing on the process itself. The three studies mentioned above describe the company's growth through research, and although they are presented separately from each other, there are many overlaps between them (McKelvie & Wiklund 2010: 264).

Shepherd and Wiklund (2009) identified the five indicators for growth: growth in 1) sales, 2) employees, 3) profit, 4) assets, and 5) equity. Achtenhagen et al. (2010), Delmar (2006) and Weinzimmer et al. (1998) have presented supporting results. Shane (2009) and Barringer et al. (2005) found evidence of the higher education level of a founder/entrepreneur being a predictor of business growth. Song, Wang and Parry (2010) studied the market research process and its connection to company success. The results indicate that market information collection procedures have positive impacts on the processes of development and utilization. Song et al. (2010) stated that market research is not sufficiently well-known in growth entrepreneurship research to predict a company's potential for success. Traditional market research can also contribute to the company's development, especially in emerging markets, where less customer behavior information is

available (Song et al., 2010). Shane (2009) warned policy makers against thinking that creating more start-up companies for any possible sector would be a suitable solution to boost depressed economic regions. Shane (2009) claims that a typical startup-company is not very innovative, does not create employment, and produces no prosperity for its environment. The majority of individuals founding start-ups are not entrepreneurs in the way the term was originally perceived.

Without the existence of potential entrepreneurial profit, there would be no entrepreneurship (Schumpeter, 1934: 137).

Comparing new companies with established companies reveals that a new company may have many benefits; the organization is narrow, lean, and adaptive, and there are not layers of managers, which makes decision making more flexible and more straightforward. New growth companies are found to be more often managed by teams than established companies are. Entrepreneurial teams have a positive effect on business growth. Each company's chances depend on how the entrepreneur or entrepreneurial team member sees an opportunity and the ability to exploit that opportunity (McKelvie & Wiklund, 2009; Birley & Stockley, 2002).

A high-growth companies are generally believed to have a substantial impact on employment creation. A high growth company generates at least 20% annual growth for three consecutive years (Delmar, 2000; Shepherd & Wiklund, 2009). The interest in high-growth companies has dramatically increased in the last decade, however, the current knowledge of their total economic contribution and the impact on society's well-being is quite modest (Davidsson & Delmar, 2006: 157; Shane, 2009; Rannikko et al, 2018). The researchers have questioned the role of high-growth companies as employment creators, because recently it has become evident that a large proportion of high-growth companies are concerned with collecting investment support and maximizing profits, instead of becoming economically viable large-scale employers (Shane, 2009; Haltiwanger et al., 2013; Neumark et al., 2010).

Entrepreneurs having experience from the same field of operations has been found to be a prevalent factor among high-growth companies in previous studies. High-growth companies also tend to be young, and their owners to have a stronger than average educational background (Barringer et al., 2005; Zhang et al., 2008; Shane, 2009). These companies also have a knowledgeable and active board of directors. High-growth companies are typically less than 10 years old at the baseline and small sized, with fewer than 20 employees (Shane, 2009). Young companies tend to be more growth-oriented and innovative (Barringer et al., 2005, Zhang et al., 2008; Shane, 2009; Wagner & Zidorn, 2017). The differences also extend to other spheres including experience, level of education, gender of the entrepreneur, and

business management skills (Barringer et al., 2005, Zhang et al., 2008). It is vital that the company's operations are not too formal or bureaucratic (Barringer et al., 2005). Penrose (1995: 51-53) emphasizes the importance of having older employees in the organization and of the growth of new learning tasks alongside the growth of the company.

Over the past 50 years, a considerable volume of economic research has focused on analyzing the stages of business development. Levie and Lichtenstein (2010) analyzed 104 models of stages for business development. They conclude that there is no consensus on what the stages of growth are, or on how and why they are progressing as claimed. The different models have similarities, and predetermined plans create an illusion of certainty with regard to the future path. Each published roadmap points in a different direction, mostly because they are all based on insufficient assumptions about the future. Nevertheless, these models explain the large number of difficulties, which new companies can face during their first years (Levie and Lichtenstein, 2010).

Effectuation was not originally researched in the context of established companies; therefore, effectuation and business growth was not studied actively in the early effectuation literature. This dissertation contributes to the business growth literature by presenting quantitative results of the causation and effectuation logics pursued in established companies.

2.5.1 Company age and business growth

Company age is one of the most important determinants predicting business growth (Haltiwanger et al. 2013; Lawless 2014); however, there is insufficient knowledge of the effect of age on business growth. The lack of research relating to firm age and business growth can be explained through factors related to the limited research data available on firm age (Headd & Kirchhoff, 2009: 548). Inadequate information on business ages might be a result of ignoring the firm-age data, which has only recently been considered relevant and added to research databases (Decker et al., 2014: 3). Research findings indicate that young companies are equally likely to experience decline as established companies, but that young companies are more likely to achieve high growth (Reichstein et al. 2010; Coad et al. 2013; Barba Navaretti et al. 2014; Cabral 1995).

Young firms differ most notably from established companies in the sense that they tend to experience a growth spurt shortly after starting the business, before reaching the saturation point in the market. After the spurt, the growth rate slows, and growth becomes less regular. The growth of new ventures is difficult to predict,

but as the venture ages, it becomes easier to predict its performance (Coad et al., 2018: 56; Coad et al., 2016: 229). Established companies could be assessed as having higher growth rates due to their experience outcomes, and advantages in forecasting and long-term planning. However, empirical results support theories claiming that older companies face difficulties in adapting their strategy in an unpredictable operating environment, while new companies achieve growth efficiently by exploiting opportunities (Coad et al., 2018).

Younger firms are found to be more flexible because they operate with looser organizational structures than established firms, which enables them to react faster to changes in their environments, therefore they benefit more in terms of innovation output than established firms (Wagner & Zidorn, 2017; Coad et al., 2018). In established companies, the business ecosystem is ready; there is a steady cash flow, and established networks and clients; there might be no need for external capital to finance growth. For established companies, it should be easier to approach familiar prospective customers with an innovation, than it would be for new companies that have to reassure customers without any preconception of cooperation (Barringer et al., 2005). Despite these beneficial points, the growth of an established company is found to be more infrequent and unpredictable than that of a new one (Coad et al., 2016).

Both new and established companies can generate growth, but the potential of the established companies seems to be marginalized in the economic discussion. This study aims to stimulate discussion around how established businesses will create opportunities for growth. But why research established companies? Shouldn't we show interest in new companies if we expect to see growth and job creation? Prior research reveals that the survival rate for established companies generating business growth is very high, between 90 and 96 percent. Startup-companies reach barely half of that rate, somewhere between 35 and 50 percent (Davidsson & Delmar, 2000). It was found that less than two percent of the ten-year employment growth of Swedish survivors came from firms of two years of age and younger. By contrast, almost 75 per cent of employment growth was generated by companies of at least ten years of age (Davidsson & Delmar, 2000).

To gain competitive advantage and economic growth, new companies would need to be more innovative and productive than established companies, but there is empirical evidence indicating that they are not (Shane, 2009). When governments encourage individuals to set up new businesses, it may lead to new businesses being set up in a business environment featuring low barriers to entry, where competition is tough and therefore levels of failure are higher (Shane, 2009). Previous entrepreneurial experience is a unifying factor in a number of studies of

growth companies. Growth companies tend to have higher initial capital, more than one founder, and to employ more people in the early stages of the venture (Barringer et al., 2005).

An organization aspiring to growth has to make the strategic decision of whether it seeks growth by exploiting existing business operations (specialization) or by engaging with new business opportunities (diversification). The method chosen to fulfill the chosen strategy might be either organic or external (Chatterjee & Singh, 1999; Simmonds, 1990; Ortiz-de-Urbina-Criado et al., 2014). Penrose (1995) distinguishes organic growth and growth by acquisition, while finding that both ways offer companies unique opportunities and pose unique challenges (Penrose, 1995). Young and small firms tend to follow an organic growth strategy, while large established companies often choose an external growth strategy (Delmar, Davidsson & Gartner 2003; Agarwal & Helfat, 2009). The latter often involves a merger or an acquisition, which are the most likely shortcuts to rapid growth; other options also have considerable potential to contribute to corporate renewal (Tall, 2014). Prior research has identified acquisitions as having a significant impact on innovativeness in companies (De Man & Duysters, 2005). A growth strategy based on the access to external resources is one option that has significant benefits in a dynamic business environment. Those benefits include better management of the operations, efficiency, flexibility, lower capital needs, and the presence of a risk-sharing network of actors. In addition, new sub-contracting and partner companies are generated (Varamäki, Saarakkala & Tornikoski, 2007: 14–15). This applies especially to younger companies, due to their liabilities of newness. Young firms tend to have narrow networks; hence, additions to the network are more beneficial for them (Wagner & Zidorn, 2017).

2.5.2 Environment and business growth

Environmental perspectives are important in explaining business growth. Especially in SMEs, where managerial decisions are heavily influenced by the external environment (Smith & Smith, 2007). Previous research has contributed to the environmental impact of location, industry, and markets in business growth research (Gartner, 1984; Gibb, 1997). The environment offers SMEs opportunities that can be utilized or fail to be utilized (Davidsson, 1989). Entrepreneurs learn by experimentation, copying from competitors, problem solving, and clearly from failures, if they are not so big as to cause the business to fail too (Cope, 2005; Deakins & Freel, 1998; Minniti & Bygrave, 2001; Politis, 2005). The growth capability also depends on the status of the market (Baldwin and Gellatly, 2003). It is assumed that the environment has this same effect on all companies if the

environmental conditions are similar. An environment that is turbulent, heterogeneous, hostile, dynamic, or characterized by strong competition can be favorable to small companies (Cooper et al., 1994). The general attractiveness of the industry is universally beneficial for all the companies operating in the line of business. To maximize their potential, companies need to find a balance between their abilities and the business environment in which they compete (Coad et al., 2018).

Successful small companies tend to become profitable by expanding and exploiting the available opportunities and market niches under unstable conditions (Covin & Slevin, 1990; Kolvereid, 1992; Pelham & Wilson, 1996). In a fast-changing business environment, technological changes provide businesses with growth potential, but the decision making is more difficult than in stable environments due to the difficulties involved in forecasting (Rosenbusch, Bausch & Galander, 2007; Wiklund et al., 2009). Such environments can favor new and small companies leveraging alliances, forging partnerships, and utilizing innovative operation methods (Wagner & Zidorn, 2017). The changes in the social, political, technological, and economic environment create opportunities for companies. In a hostile environment, a company might confront various threats; increased competition or a decline in demand for a company's products. Fluctuations in demand might cause serious setbacks for a small firm and affect growth intentions. There are usually versatile markets with varying features and needs to be fulfilled within one area of an industry (Rosenbusch et al., 2007), and, for a smaller and lean organization, it is easier to find and exploit these specific market needs than to try to serve the entire market where demand is more homogeneous (Wiklund et al., 2009).

There are a variety of environmental challenges for a company that targets growth. The risk factors include: institutional and political risks (Busenitz et al., 2000), market area risks, and capital expenditure risks (Blazenko & Yu, 2013, Bartram et al., 2011). When a company grows rapidly it faces challenges around maintaining sufficient liquidity. Successful businesses tend to grow moderately, via revenue funding to reduce financial risks (Davidsson, Steffens & Fitzsimmons 2009). A company's growth does not always go hand in hand with productivity or profitability (March 1991; McGrath 2001). A high level of risk-taking is associated with a greater likelihood of failure (Alvarez 2007). Previous research results indicate that companies growing moderately and profitably live longer and deliver more economic good in the long term (Davidsson et al., 2009: 388). This should be taken in to consideration, even though the interest in high-growth companies remains strong.

3 RESEARCH METHODOLOGY

The theoretical motivation of this dissertation reflects the background of the studies, defining the theoretical question, and identifying factors explaining the conditions under which companies use effectuation and causation logics to grow. The other motivation is to investigate whether effectuation theory is still in its infancy, as claimed, or if it has developed to an intermediate stage or indeed to a mature level. The large literature review reveals the dramatic change in effectuation literature since 2011, leading to a desire to explore that transformation that led to a substantial developmental leap in effectuation research. The next step was to introduce the factors explaining the conditions under which companies use effectuation and causation to grow. This research illustrates how ten selected industrial companies have managed to accomplish rapid growth after a long and steady or a slow growth period. The questions will be explored through the dialogue between literature and empirical findings (Van de Ven, 2007; Grant & Pollock, 2011).

Critics argue that social science cannot be objective due to the multiple diverse interferences, like cultural differences, interpretations of the different languages, social and political perspectives. Understanding these contradictory differences often requires communication across different philosophical perspectives (Van de Ven, 2007). The main objective of the research process is to confront theory with the empirical results, and that dialogue is continuous throughout the research process (Dubois & Gadde, 2002: 555). It should start with an introduction of the research question, why is it important in terms of theory and practice. The next phase is to identify the current debate on topic and how this research will develop it further. Finally, the contribution of the study should be presented (Grant & Pollock, 2011). The research question, the prior knowledge of the researcher, and the target audience are formulating the research approach (Creswell, 2003). The choice of a research method depends on the researchers answers to five key questions: 1) the research question, *what* are we studying? 2) *what* kind of data are necessary? 3) *How* is the research data to be collected? 4) *what* is the data source? and 5) *how* can we analyze the data to answer the research question? Finally, the researcher should combine the philosophy, methodology, and research questions (Holden & Lynch, 2004). The fundamental philosophical assumptions, the methodology used, and the research design of this dissertation are discussed in more detail below.

This chapter explains the reasoning behind this study's underlying ontological questions; what is knowledge, the epistemological perspective; how do we know

it? Finally, it reviews the methodological aspects, the values, and the procedures or means used for the phenomenon being researched.

3.1 Philosophical assumptions

Philosophical assumptions in organizational research can be categorized into four subdivisions: ontology, epistemology, human nature and methodology (Burrell & Morgan, 1979). These are typically approached from the objectivist or subjectivist viewpoint. Ontology refers to the existence of a phenomenon, whether the reality is assumed given (objectivist) or is the product of a human mind (subjectivist). Epistemological assumptions consider whether information can be obtained (objectivist), or if it relies on something being experienced (subjective). Human nature refers to the perception of people and their experiences of the environment (objectivist) or to the experienced environment being the creation of human mind (subjectivist) (Burrell & Morgan, 1979). Ontologically, this study is based at least to some degree on its researchers' and informants' subjective experience of reality.

The basic beliefs reflecting the philosophical assumptions, such as ontological research paradigms guide our knowledge inquiry, referring to those paradigms in a more or less similar manner, as: positivism, post-positivism, critical theory, and constructivism (Guba & Lincoln, 1994). A decade later, Guba and Lincoln (2005) extended their list by adding the participatory/cooperative research paradigm. Creswell (2003) nominated post-positivism, advocacy/participatory, constructivism, and pragmatism. But like Guba and Lincoln, ten years later, Creswell (2014) developed the list by dropping positivism and nominating post-positivism, transformative, constructivism, and pragmatism as the four leading research paradigms. A variety of other researchers, including Girod-Séville (2001) identified three paradigms; positivism, post-positivism, and constructivism. Tashakkori and Teddlie (1998) named positivism, post-positivism, pragmatism, and constructivism. Rossman and Rallis (2003) named positivism, critical interpretivism, humanism, and critical realism. These dissenting, but similar types of research paradigm-listings have caused confusion and raised questions among researchers, such as those on what constitutes a paradigm and who is to decide which paradigms are to be included on the "list of acceptance" (Morgan, 2007: 60). Fundamentally, all these paradigms confirm the research results and protect them against scientific criticism and questioning (Allard-Poesi & Maréchal, 2001).

Positivism and post-positivism are often referred to as according with the quantitative approach, while constructivism and critical theory are linked to the qualitative approach (Onwuegbuzie et al., 2009; Denzin & Lincoln, 2005).

Nevertheless, both methods are claimed to be appropriate for use with any research paradigm (Guba & Lincoln, 1994). The positivists claim that reality is not dependent on the researcher's prior knowledge, appearance, or mindset (Girod-Séville & Perret, 2001). The researcher's job is only to describe and explain the existing reality, the created knowledge is objective and not context specific (Allard-Poesi & Maréchal, 2001). Post-positivism recognizes the human behavior engaged in the research process (Onwuegbuzie et al., 2009; Burrell & Morgan, 1992), and that the researcher's background and values affect the studied phenomenon (Guba & Lincoln, 1994). In critical theory, reality is influenced by the values of the researcher and informant. In constructivism, reality is socially constructed and shaped by individual's experience of the world (Guba & Lincoln, 1994). Accordingly, an individual's reality changes over time as people gain new knowledge and information.

This study is interpretative in that the results are observed and reflected upon through secondary data. Reality is constructed through the consciousness of the respondent's answers and affected by interpretations of the researcher's abilities, values, and prior knowledge, in order to understand how the managers, business owners, and executives interviewed perceive the growth trajectories of their organization and the factors affecting it.

Article 1 is a literature review, building on established literature and the empirical results of effectuation studies. The peer-reviewed journal articles consist of validated knowledge and are likely to offer reliable information on the field; but are nonetheless affected by the researcher's values and prior knowledge. Therefore, Article 1 can be considered rooted in post-positivism. Article 2 could be claimed to follow the principles of constructivism, due to the intense interaction between interviewee and informants. The views of the interviewee are not independent of the interviewee's beliefs and values; instead, the reality is constructed in a subjective way and through a relationship with the environment.

Essays 3 and 4 are to be assessed from the post-positivism perspective, recognizing the human behavior engaged in the research process as they utilize quantitative data. Aside from the human interference, these essays could not be described as following a positivist methodology because they attempt to test hypotheses.

From the viewpoint of scientific reasoning, there are three possible perspectives for a researcher: *deduction*, *induction*, and *abduction* (Perry, 1998). Deduction builds on former theories and seeks to test hypotheses. Induction describes the approach where the starting point is an empirical phenomenon and theory is built on the findings. Abduction is the third perspective and refers to the continuous dialogue between theory and empirical observation (Perry, 1998; Dubois & Gadde,

2002). The conceptual Article 1 leans toward deductive reasoning by building on existing theory. Article 2 can be considered to utilize abductive reasoning, because the interplay between theoretical concepts and the empirical findings can be described as continuous throughout the research process. Essays 3 and 4, both based on quantitative research data, follow deductive reasoning, building on existing theories, and testing hypotheses.

3.2 Methodological choices

Entrepreneurship and business growth research require a rich and broad analysis to support theory development, hence, methodological heterogeneity is required to understand entrepreneurship (Bygrave, 2006; Leitch et al., 2010). Qualitative research focuses on understanding the underlying dynamics in individual settings. A case study answers the questions *why* and *how* and strives to understand the focal phenomenon in a more detailed way than is possible with quantitative surveys.

The quantitative method enables a researcher to collect a rich and representative dataset, which improves the generalizability of the results. This method tries to explain the relationship between variables through numerical data (Holden & Lynch, 2004; Cameron, 2011). There are still relatively few prior quantitative studies of effectuation, even though the method has the potential to make substantial contributions to the entrepreneurship research. Only 14 quantitative papers were published between 2001 and 2016. It seemed justified and logical to add the quantitative method to this study, in order to develop the research on effectuation and causation.

The mixed-method research design makes it possible to gather and exploit all the elements of quantitative and qualitative methods of data collection. The ultimate message is that a mixture of quantitative and qualitative methods can provide a better understanding of research questions than either could alone. This is particularly appropriate to the field of entrepreneurship studies, where researchers need to express the context and all the special features affecting it (Molina-Azorin, 2012). The mixed-method approach as a methodological choice can be justified by grounding it in recent findings of the entrepreneurship, innovation, and business growth research (Edmondson and McManus, 2007; Bygrave, 2006; Creswell, 2003, Bryman, 2007).

It has been suggested that quantitative and qualitative research be re-designated as exploratory and confirmatory techniques that use quantitative and qualitative methodologies within each study, either simultaneously or in a sequential manner

(Onwuegbuzie & Leech, 2005; Erzberger and Prein 1997; Davidsson 2003; Westhead and Wright 2000). In this study, qualitative and quantitative methods are utilized as individual, sequential parts. Article 2 adopts the qualitative method, while Essays 3 and 4 adopt a quantitative method. Prior studies on mixed methods research find that the research may not be intended to be based on both quantitative and qualitative techniques in the beginning, but as the research progresses it becomes apparent that the mixed-method approach would be the most effective (Bryman, 2007). Steenhuis and Bruijn (2006) suggest the connection between management researchers and business practitioners is weak. The managers find difficult to understand the problems through quantitative or qualitative research alone (Johnson et al., 2007). Mixed-method research makes it possible to exploit multiple methods and diverse forms of data collection and analysis and therefore provides rich and versatile data.

Instead of mathematical models, management research should focus on identifying and solving management problems empirically (Kiridena & Fitzgerald, 2006). Even though the combination of these two methods was not intended at the beginning of this dissertation, it felt appropriate to implement these diverse observation methods to interpret the phenomenon. It is reasonable to claim that the mixed-method approach suits the philosophical approach of this dissertation.

3.3 Research design

This dissertation is based on four individual articles, investigating whether the studied companies achieve growth by adapting to their situation and responding to the demands of the market with their resources (effectuation), or by following previously determined plans and proceeding toward set goals (causation). This was the starting point and comprehensive position where this dissertation began with a qualitative case study. Due to the early finding of the dramatic change in the effectuation literature around year 2011, it was decided to conduct a follow-up literature review. Article 1 clarifies the development of effectuation theory. The empirical material for Articles 1 and 2 was gathered simultaneously, so the two articles strengthen each other. The writing process for these two articles spurred the design of the framework of the dissertation as a whole. In Article 1, the research design revolved around a systematic literature review on effectuation between 1998 and 2016. This article constitutes the foundation for this dissertation and its findings determined the following steps taken.

In Article 2, the research design chosen was a qualitative case study, illustrating how ten selected industrial companies managed to accomplish growth spurts after

a long period of consolidation. The semi-structured interviews, identifying independent factors that explain outcome variables by those people experiencing the phenomenon were chosen a main source of the information in this article. After this study, the research arguments seemed to require a broader empirical background and therefore it was decided to conduct quantitative research to explain the phenomenon more generally.

We found no previous research considering a relationship between effectuation and growth orientation. Therefore, Essay 3 fills the gap in prior research, investigating the impact of growth orientation and innovativeness on the effectuation and causation heuristics in the context of SMEs. The specific research questions of growth orientation (Brown, Davidsson and Wiklund, 2001) were placed in the same quantitative survey questionnaire used in Essay 3, formulating its own research entity. In Essay 4, the sample size was 229 respondents. All the studied dependent and independent variables were subjective, representing individual comprehension of strategizing practices in companies and therefore the chosen unit of analysis was the individual level.

In Essay 4, the theoretical frame comprises the following three main elements; strategic flexibility, innovation, and business growth. We conducted a quantitative survey, using the same measurement scale as in the qualitative study (see, Chandler, 2011), to obtain more generalizable results and to broaden the phenomenon. The relationships between innovation and business growth have long been at the center of entrepreneurship research and are considered crucial for employment and value creation (Storey, 1994; Bhide, 2000; Delmar et al., 2003; Parker et al., 2010). We added strategic flexibility, a dimension of Chandler's (2011) measurement scale to this setup, which is one of the emerging theories of management studies, challenging the traditional understanding of entrepreneurial decision making. The entrepreneur utilizes the resources in a flexible manner and enables the firm to respond to changes in operation environment (Sanchez, 1995; Zhou and Wu, 2010).

The chosen construct was innovation, because it was among one of the most studied constructs together with effectuation, and a preliminary skim of the data suggested it influenced growth. The unit of analysis is the company level. To gain a more comprehensive understanding of the studied phenomenon, the essay presents the views of between one and four respondents from each company. The respondents were drawn from two groups; managers and higher executives. The essay thus relies on 231 survey responses from staff of 126 companies. This study adds flexibility, a dimension of effectuation, to the context of established companies and explores its effect on innovation and business growth.

3.4 Data collection and analysis

All four articles and essays discuss their data collection and analysis in more detail. In Article 1, the research design used was a systematic literature review on effectuation from 1998 until the end of 2016. The large review revealed the dramatic change in effectuation literature after 2011, leading to a desire to explore that transformation that led to a substantial developmental leap in effectuation research. The effectuation literature has evolved, and more empirical research has recently been published. For this review, we used the Scopus Elsevier, ABI inform, and EBSCO databases to search.

In Article 2, the chosen research design was a qualitative case study illustrating how ten selected industrial companies had managed to accomplish growth after a long period (3–5 years) of steady development. Qualitative data was collected from informants through open-ended themed interview questions (Eisenhardt, 1989). This method has many benefits including allowing informants to use their own words, which might provide more versatile and rich information than questionnaire responses could. Qualitative data may also be drawn from multiple sources, like observations during the interviews. It is also possible to pose clarifying questions during interviews and the informant's answers can add enlightening information (Creswell, 2006).

The qualitative data in this dissertation are obtained from interviews of key informants of ten manufacturing SMEs in Finland. The data source used was the database *Voitto+*, which contains economic information data from 2009–2013 for approximately 300000 Finnish companies (Suomen Asiakastieto Oy). The selection criteria included that the chosen companies should be industrial SMEs, and that they had generated high growth after a few years of slow growth or consolidation. Companies with fewer than 10 employees were excluded, as were firms with more than 250 employees. We excluded governmental and communal companies, and farming and agricultural companies. The additional criterion excluded the likes of construction companies that had managed a large growth spurt in one year following landing a big contract.

The final selection criteria were: 1) an industrial company that had operated for at least five years; producing a sample of 1003 companies 2) which employed at least ten employees at the starting point, but not more than 249 employees (this is the Eurostat definition for a SME); narrowing the sample to 182 companies and 3) whose operations had been profitable during this cycle. Initial screening revealed 31 potential companies apparently suited to closer evaluation. Multiple data sources were used, including archives and field observation, but at the heart of this

study is the semi-structured interview of those people experiencing the phenomenon. The unit of analysis of this study is the firm, but narrative analysis of the owners/managers in charge was chosen as the methodological approach in this study. The qualitative data works well with the selected theory, but also seemed appropriate for the target group of this study, as narratives can help understand these unique growth trajectories.

In extant literature, managers of successful firms are found to be better educated and have prior experience of their industry (Leitch et al, 2010). Interorganizational relationships and growth-oriented business culture are also stressed (Barringer et al, 2005; Windahl & Lakemond, 2010; McKelvie et al., 2017). However, while the entrepreneurship literature has identified a wide list of variables affecting growth trajectories of companies, there is still insufficient information on the phenomenon, and no clear consensus among researchers (McKelvie et al., 2017). In our study, the interviewees represent many different educational backgrounds. The level of education varies from only completing secondary school to completing a university degree. All the informants have several years of work experience, some of them have worked in the same company for their whole career, others in different SMEs, and others in large companies. Experience emerges as unifying factor for informants.

We recorded the interviews and transcribed them. Then we made notes and wrote a short case history of each case. The unabridged transcriptions of the interviews were used for the final analysis. Once the interviews were conducted, the case histories for each company were written based on the narratives gathered. The focus was on capturing key decisions made before and during the growth spurt period. Critical incidents and the presence of effectual or causal behaviors during each event were thoroughly investigated, compared, and cross-checked using the measures introduced by Chandler et al. (2011) were used as the themes of the research interviews.

The most widely-used growth indicator in the field of entrepreneurship research is turnover growth (Murphy, Trailer & Hill, 1996). Therefore, we used this indicator to measure growth in this study. It was decided to constrain the investigation to ten companies initially and increase the number of informants if the authors felt the saturation point for the information was not achieved. In the event, it was not necessary to expand the number of informants, because the interviews began repeating the same formula.

Essay 3 is a quantitative study. The studied companies were random sampled Finnish SMEs, however to meet the criteria they had to be employing 10–249 employees (the average size was 35 employees), and the SMEs had an annual

turnover ranging from two million to eighteen million euros. The essay is based on the responses of a final sample of 226 informants from 131 companies. We used a corresponding subdimensions of entrepreneurial management scale developed by Brown et al. (2001) to measure growth orientation. The growth orientation construct was measured with pairs of statements representing opposite ends of a continuum on a 10-point Likert scale. The scale for innovativeness was adapted from Santos-Vijande and Álvarez-González (2007) which originates with Hurley and Hult (1998). Innovativeness was measured along a 5-point bi-polar Likert scale. The scales for causation and effectuation; experimentation, affordable loss, flexibility, and in common with causation, pre-commitments were adapted from Chandler et al. (2011). The questions were based on the subdimensions of effectuation. The sub-constructs were all measured along a 5-point bi-polar Likert scale. After the data gathering and analysis, we validated the data with Amos24.

Various paths have been proposed to estimate and test the mediation model. In our review, we found the product-of-coefficients approach (Sobel, 1982, 1986), the causal step approach (Baron & Kenny, 1986), the distribution of products approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), and the bootstrapping approach (Preacher & Hayes, 2008; Hayes, 2009). For this paper, we first searched for the effect, and then tested if there was a positive relationship between independent (growth orientation) and dependent variable (innovativeness). Then we added a mediator (causation) and tested if an indirect or mediated effect implies that the independent variable causes the mediator, which, in turn gives rise to the dependent variable (Sobel, 1990), an adaptation of Baron and Kenny's (1986) three-variable non-recursive causal model. Baron and Kenny (1986, 1177) claim that mediation is strongest when there is an indirect effect, but has no direct effect on equation. The strength of effect should be measured by the size of the indirect effect, not by the lack of the direct effect (Zhao, Lynch & Chen, 2010). However, Zhao et al. (2010) conclude that the concept of direct effect can be measured statistically, but not theoretically. According their remodeling of Baron and Kenny (1986), the only requirement for mediation is that the indirect effect $a \times b$ is significant (Zhao et al., 2010).

Following these arguments and joining critics for causal step approach, claiming its effect on testing variable effects, (Fritz & MacKinnon, 2007; MacKinnon, Lockwood, Hoffman, West & Sheets, 2002; Hayes, 2009), we then introduced causation into our model as a mediator, adopting a bootstrap approach (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008). The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a significant positive relationship with causation. Causation has a significant positive impact on innovativeness. The

mediation is partial as the direct effect between growth orientation and a firm's innovativeness remains significant but decreases in size.

We first examined the relationship between growth orientation and innovativeness. The use of confirmatory factor analysis (CFA) and structural equation modeling (SEM) confirms hypothesis H1 because growth orientation has a large and significant positive effect on innovativeness ($\beta=.40$, $p<.001$). We then introduced causation into the model as a mediator. The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a significant positive relationship with causation, thus confirming Hypothesis H2a ($\beta=.29$, $p<.01$) and signaling that growth-oriented companies are more likely to adopt formal strategic planning routines. Causation has a significant positive impact on innovativeness ($\beta=.30$, $p<.01$), thus confirming Hypothesis H2b.

Essay 4 is also a quantitative study and relies on surveys conducted with two groups; managers and higher executives. We surveyed 1–4 informants from 124 companies, obtaining 224 answers. The companies studied were random sampled Finnish SMEs, employing between one and 216 employees. The annual turnover ranged from one million to 43 million euros. The growth measurement indicator used was turnover growth, the most widely-used empirical indicator of business growth in the field of entrepreneurship research (Murphy et al., 1996). Data were gathered from the financial records, adopting a longitudinal five-year perspective. The survey questions were based on the subdimensions of effectuation (Chandler, 2011) and the sub-constructs were measured along a 5-point bi-polar Likert scale.

The primary data for the study were collected through survey questionnaires between January and May 2015, usually in the offices of the participating firms. The data collection was conducted by research assistants who were university students on a strategic management course. The research assistants were free to choose their informants within the agreed qualification frame. The selection criteria included requirements that the chosen companies should be SMEs, employing not more than 250 employees. We excluded governmental and communal companies and farming and agricultural companies. We used a longitudinal five-year perspective to gather data on the SMEs' financial records extracted from the Orbis database. To meet the requirement for our bootstrapping process to have no missing values, we removed six observations from the dataset. The firms affected were start-ups at the time of the data collection and the Orbis database did not contain financial information on them for a sufficient period. After the data gathering and first analysis, we validated the data using Amos24.

Following a similar logic to that employed in Essay 3, we searched for the effect, and then tested if there was a positive relationship between independent (innovativeness) and dependent variable (business growth). Then we added a mediator (flexibility) and tested how the results differed, adopting a bootstrap approach (Preacher & Hayes, 2008). Owing to the bootstrapping process requirement of no missing values, we removed six observations from the dataset on the grounds that the financial information on the companies was not available for a sufficiently long period because the companies were start-ups at the time. Following data gathering and first analysis, we validated the data using Amos24. First, we tested the skewness and kurtosis of the scale items and we applied an acceptable limit of ± 2 indices (Field, 2000, 2009; Gravetter and Wallnau, 2014; Trochim and Donnelly, 2006); consequently, we removed one unsatisfactory item from the innovation scale. In order to investigate the relationships in this study, innovation was measured using the scale for innovativeness adapted from Santos-Vijande and Álvarez-González (2007) which originates from Hurley and Hult (1998). The innovativeness was measured along a 5-point bi-polar Likert scale.

Second, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analyzed the interrater reliability. To ensure data aggregation to the company level was possible, we used the interrater reliability analysis RWG(J) of James, Demaree, and Wolf (1984) and the $R^*WG(J)$ analysis based on equation 5 used by Lindell, Brandt, and Whitney (1999). All interrater reliability values are over the generally accepted cut-off point of 0.7 and interrater agreement results were accepted.

Third, we used CFA and SEM to test the constructs of flexibility adapted from Chandler et al. (2011) and innovation as defined by Santos-Vijande and Álvarez-González (2007). We followed the recommendation of Hair, Black, Babin, and Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the .05 significance level, and consequently we eliminated two items due to low factor loadings.

To show nomological validity, we calculated and evaluated multiple model-fit indices: the ratio of χ^2 / degrees of freedom (Wheaton, Muthén, Alwin, and Summers, 1977); the root mean square error of approximation (RMSEA) (Steiger and Lind, 1980); the comparative fit index (Hu and Bentler, 1995); the incremental fit index (Bollen, 1989), and the Tucker-Lewis coefficient (TLI; Tucker and Lewis, 1973). Values greater than .95 are commonly considered to indicate a good model fit and values greater than .9 suggest an acceptable model fit (Bentler, 1992). For RMSEA, values below .05 represent a good fit, those between .08 and .05 represent

a reasonable fit, and those between .10 and .08 represent a mediocre fit (Browne and Cudeck, 1993; Byrne, 2001; MacCallum et al., 1996).

The results suggest flexibility has a significant positive effect on business growth. There is a full mediation as the direct effect between innovativeness and business growth is no longer significant and the size decreases.

3.5 Validity and reliability

Three forms of the validity of a study have been established: construct validity, internal validity, and external validity (Yin, 2009). The higher the level of reliability and validity, the greater will be the quality of the research. Construct validity shows the level of the selected measures in understanding the studied phenomenon. Factor analysis is a relevant indicator of construct validity (Bagozzi et al., 1991). To increase the construct validity of the results, multiple sources of information were used in this study. These included, numerical and quantitative data, interviews, and secondary data. External validity indicates the generalizability of the results and findings (Yin, 2009). As the sample sizes were 231 and 224 in the quantitative studies, and the target group was selected with the chosen criteria; randomly sampled Finnish SMEs, employing between one and 216 employees (with the average staff size being 35 employees). The annual turnover ranged from one million to 43 million euros. Therefore, the findings may not be generalizable for a whole population of companies but do represent a select group of Finnish SMEs from various industries.

In article 1, The analyzing was conducted using the typology of research strategies (Scandura and Williams, 2000; McGrath, 2001), including a literature review, a sample survey, experimental simulation, a field study with primary and secondary data, a field experiment, and conclusions. The main research questions were identified, and the main theoretical contribution recognized and established. To evaluate the stage of the development of the theory, we used the framework of Edmondson and McManus, (2007) to achieve results comparable with those of Perry et al. (2012) who used the same framework

Article 2 builds on multiple data sources; archives and field observation. The main source of the information in this study is the semi-structured interview of those people experiencing the phenomenon. One major risk of this practice is being too close to the informant, adopting the informant's view, and losing the objective perspective necessary for theorizing the gathered information (Gioia, Corley & Hamilton, 2012). To improve of the quality of our interpretations, we always had a member of our team adopt an outsider perspective. All the interviewees were

company owners or leaders, and in charge of operations. Before starting the interviews, the interviewers briefly explained the research, secured the interviewees' permission to record their responses, and guaranteed them anonymity. After the data gathering and initial stages of analysis, we begin cycling between data, dimensions, themes, and the previous literature to find out how our findings confront the existing concepts. Employing researcher triangulation, we worked together to arrive at consensual interpretations of the obscure data. This part of the work was characterized by group discussions to reach a common understanding among the researchers.

The study focuses on industrial manufacturing companies to investigate companies creating real growth, new jobs, and welfare. Firms operating in the service sector are often criticized for just transferring jobs from a bigger organization to a smaller and leaner unit. The companies' financial statements were investigated to identify those that after three years of moderate growth had achieved a clear growth spurt of above 30 percent in their turnover over a period of three years. To achieve reliability, longitudinal data were used. Ten interviewees were chosen to outline in their own words (narrative) the significant events that had occurred in the company during the years of moderate growth prior to the growth spurt, and which factors they thought might have influenced the growth spurt. Subsequently, the interviewer asked questions to elicit certain themes that the interviewee had not raised spontaneously.

The questions were based on the subdimensions of effectuation defined by Chandler et al. (2011); experimentation, affordable loss, flexibility, and in common with causation, pre-commitments were used as the themes of the research interviews. After the data gathering and initial stages of analysis, we began cycling between data, dimensions, themes, and the previous literature to find out how our findings confront the existing concepts. Through researcher triangulation we worked together to arrive at consensual interpretations of the obscure data. Triangulation is described as a self-conscious setting to double check the findings (Huberman & Miles, 1994).

In Essay 3, a reliability analysis was conducted for all the different sub-scales. In this process, malfunctioning items were deleted to improve the correlations and model fit. Cronbach's alphas were tested. We used CFA to explore the underlying relationships between growth orientation, innovativeness and effectuation and causation. To show nomological validity, we calculated and evaluated multiple model-fit indices: ratio of χ^2 / degrees of freedom (Wheaton, Muthén, Alwin, & Summers, 1977); the RMSEA; Steiger & Lind, 1980); the comparative fit index (CFI; Hu & Bentler, 1995); the goodness of fit index (GFI; Jöreskog & Sörbom,

1996); incremental fit index (IFI; Bollen, 1989) and the Tucker-Lewis coefficient (TLI; Tucker & Lewis, 1973). It is commonly considered that values greater than .95 are considered a good model fit and values greater than .9 are considered an acceptable model fit (Bentler, 1992). For RMSEA values below .05 represent a good fit, between .08 and .05 represent a reasonable fit, and between .10 and .08 represent a mediocre fit (Browne & Cudeck, 1993; Byrne, 2001; MacCallum et al., 1996).

We validated the data by using SPSS24 and Amos24 to cross-validate the findings. First, we checked for the outliers, using Mahalanobis distance measures, resulting in the removal of seven observations from the dataset. This accounted for a final sample size of 224 respondents within 124 companies. Outliers were tested separately for each construct followed by testing for all data used. Second, we tested the skewness and kurtosis of the scale items and we applied an acceptable limit of ± 2 indices (Trochim & Donnelly, 2006; Field, 2000 & 2009; Gravetter & Wallnau, 2014). This resulted in the removal of one unsatisfactory item from the innovation scale.

Third, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analyzed the interrater reliability. To ensure that the data aggregation to the company level was possible, we used the interrater reliability analysis RWG(J) of James, Demaree, and Wolf (1984) and $R^*WG(J)$ analysis based on equation 5 of Lindell, Brandt, and Whitney (1999). All interrater reliability values are over the generally accepted cut-off point of 0.7 except for the RWG(J) of the growth orientation. However, James (1982) offers a cut-off point of 0.6 and Biemann, Cole, and Voelpel (2012) point out that the widely applied cut-off criterion of 0.7 is heavily criticized and is purely arbitrary. In addition, Lindell and Brand (1999) argue that the interrater agreement analysis using $R^*WG(J)$ is more generally applicable. Therefore, we decided to accept the interrater agreement results.

Fourth, we used CFA to test the factor loadings of causation (Chandler et al. 2011), growth orientation (Brown et al. 2001) and innovativeness (Santos-Vijande and Álvarez-González 2007). We followed the recommendation of Hair, Black, Babin, and Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the .05 significance level and consequently we eliminated one item from causation scale due to low factor loadings.

Fifth, we conducted a reliability analysis with Cronbach's alpha; all levels being over the 0.60 threshold (Nunnally, 1970). The convergent validity was assessed by checking whether all the latent variables' AVE measures were above the cut-off point of 0.4 offered by Bagozzi and Baumgartner (1994, p.402) and that the

construct reliability was equal to or exceeded 0.6 as stated by Bagozzi and Yi (1988, p. 82). Each pair of factors satisfied the required discriminant validity, as the square root of the AVE measures exceeds the correlation of the corresponding factors.

As both H2a and H2b hypothesis were significant, mediation analysis was conducted using a bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008). Bootstrapping was conducted with 5000 resamples (Preacher & Hayes, 2008); obtaining the 95% confidence interval of the indirect effect. The mediating role of causation in the relationship between growth orientation and innovativeness was confirmed ($\beta=.024$; CI=.003 to .067; $p<.05$). The mediation is partial as the direct effect between growth orientation and a firm's innovativeness remains significant but decreases in size ($\beta=.31$, $p<.01$).

Essay 4 tests the skewness and kurtosis of the scale items and we applied an acceptable limit of ± 2 indices (Field, 2000, 2009; Gravetter and Wallnau, 2014; Trochim and Donnelly, 2006); consequently, we removed one unsatisfactory item from the innovation scale. In order to investigate the relationships in this study, innovation was measured using the scale for innovativeness adapted from Santos-Vijande and Álvarez-González (2007) which originates from Hurley and Hult (1998). The innovativeness was measured along a 5-point bi-polar Likert scale.

Second, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analyzed the interrater reliability. To ensure data aggregation to the company level was possible, we used the interrater reliability analysis RWG(J) of James, Demaree, and Wolf (1984) and $R^*WG(J)$ analysis based on equation 5 used by Lindell, Brandt, and Whitney (1999). All interrater reliability values are over the universally accepted cut-off point of 0.7 and interrater agreement results were accepted.

Using CFA and SEM, we evaluated the measurement and structural models. The removal of one item from flexibility and innovativeness scales due to the low factor loading (<0.5) led to a change in the initial measurement model from ($X^2=37.870$ with 27 degrees of freedom giving a 1.403 ratio; RMSEA=.058; CFI=.944; IFI=.947 TLI=.926) to ($X^2=22.311$ with 14 degrees of freedom giving 1.594 ratio; RMSEA=.071; CFI=.948; IFI=.951 TLI=.923) and the result was improved by allowing pair of error variables to covariate as suggested by the modification indices ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953). Our structural model satisfied established model-fit criteria ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953).

First, we examined the relationship between innovativeness and business growth using CFA and SEM. Hypothesis H1 is confirmed because innovativeness has a medium and significant positive effect on business growth ($\beta=.20$, $p<.05$). We then introduced flexibility as a mediator to the model. Innovativeness has a medium and significant effect on flexibility ($\beta=.30$, $p<.05$), confirming Hypothesis H2a. Hypothesis H2b is also confirmed as flexibility has a significant positive effect on business growth ($\beta=.26$, $p<.05$).

As both H2a and H2b were significant, mediation analysis was conducted using a bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). Bootstrapping was conducted with 5000 resamples (Preacher & Hayes, 2008); obtaining the 95% confidence interval of the indirect effect. The mediating role of strategic flexibility in the relationship between innovativeness and business growth was confirmed ($\beta=.077$; $CI=.005$ to $.172$; $p<.05$). There is a full mediation as the direct effect between innovativeness and business growth is no longer significant and the size decreases ($\beta=.12$, $p>.10$). As the results have shown, flexibility plays a substantial role in the relationship between innovativeness and business growth. The finding bolsters previous literature indicating that flexibility is one of the key strengths of small firms (Fiegenbaum and Karnani, 1991).

4 SUMMARY OF ARTICLES AND ESSAYS

This dissertation consists of two individual articles and two essays. The two articles have been published in peer-reviewed and ABS-ranked international scientific journals. Essays 3 and 4 have been published in conference proceedings and screened in a review process, as were the first two published articles. This chapter summarizes the articles' and essays' key results and contributions. The published articles and essays are incorporated in the second part of the dissertation.

Table 3. Summary of articles and essays

	Article I	Article II	Essay III	Essay IV
Research question	Has effectuation research moved on from the nascent to the intermediate stage, or has it even already begun its transition toward the mature stage of development?	How studied industrial companies have managed to accomplish a high growth stage after a long period of slow growth?	How the dimensions of effectuation impact on firm-level innovativeness and ultimately on business growth?	Are growth oriented companies more likely to form strategic plans, innovate more and do experimentations in their operations in seeking business growth?
Theoretical background	Effectuation and causation	Effectuation and causation	Growth orientation, innovation and causation	Innovation, strategic flexibility and business growth
Research method	Follow up -literature review	Qualitative case study	Quantitative survey study. The interrater reliability analysis, and confirmatory factor analysis.	Quantitative survey study, using confirmatory factor analysis (CFA) and structural equation modeling (SEM), we evaluated the measurement and structural models.
Research context	Effectuation and Causation	Effectuation and causation in established companies (SMEs)	Established companies (SMEs)	Established companies (SMEs)
Unit of analysis	Article	Focal company	Focal company	Focal company
Case selection	Scopus Elsevier, ABI Inform and EBSCO databases, using same selection as Perry et al (2012).	Cases were selected from Voitto+ database by using generalizable search criterion via purposive sampling. Finnish manufacturing SMEs.	Random sampled Finnish SMEs with an advance selection to match the criteria.	Random sampled Finnish SMEs with an advance selection to match the criteria.
Sample	217 articles in total. 93 were chosen with a defined criteria.	Initial screening revealed 31 potential companies to closer evaluation. Ten of these were chosen for interviews.	The study utilizes survey responses from two groups; managers and higher executives, with between one and four respondents from each of the 126 companies	Based on a sample of N=229, SMEs, employing 10-249 employees, with the average-size of 35 employees, annual turnover ranging from two million to eighteen million Euros
Data source	81 articles	10 semi-structured interviews	The findings are based on a sample of 231 respondents.	229 survey respondents

4.1 Effectuation, an emerging theory of entrepreneurship; toward a mature stage of development

The first article is a follow up review summarizing the current state of knowledge in effectuation research. The articles included were analyzed using a typology of research strategies (Scandura and Williams, 2000; McGrath, 2001). The two distinguishable articles were Perry, Chandler, and Markova (2012) and Chandler et al. (2011), which both fostered the field of effectuation theory, and opened new avenues for quantitative research, justifying a follow-up review.

During the period studied, 2012–2016, effectuation research developed considerably. The number of empirical field studies has increased, and the number of conceptual articles has decreased. Today, effectuation research can be described as applying exacting methods to distinguish appropriate findings from illusive ones (Chandler and Lyon, 2001). Empirical research now dominates the effectuation research field. When framing these findings against the previous literature, the main theoretical contribution of this article is to demonstrate that effectuation research has moved on from the preliminary phase to the middle stage of theory development. Furthermore, the results indicate that effectuation theory has already begun transitioning toward an advanced stage of development. See table 4.

Table 4. Effectuation articles per year 1998–2016

Year	Conceptual	Qualitative	Quantitative	Total
2016	8	3	5 (1*)	16
2015	1	8	3	12
2014		6	2	8
2013	1	4	2 (1*)	7
2012	3	3	3 (1*)	9
2011	1	4	2	7
2010	1			1
2009		2	1	3
2008	4	1		5
2007	1			1
2006	2			2
2005	2			2
2004		2		2
2003	1			1
2002	1			1
2001	1	1		2
1998		2		2
			Total	81

4.2 Business growth in established companies; roles of effectuation and causation

Article two is a qualitative case study that illustrates how ten selected industrial companies have managed to accomplish rapid growth after a long period (3–5 years) of slow growth. A particular aim was to determine whether these companies grew by adapting to the situation and responding to the demands of the market with their resources (effectuation) or by following previously determined plans and proceeding toward set goals (causation). Effectuation was originally connected

to the creation of new business activities and an operating model covering the early stages of an organization's growth, but in just the last five years, scholars have extended the effectuation research on established companies (e.g., Kalinic et al., 2014; Coviello & Joseph, 2012; Brettel et al., 2012; Werhahn et al., 2015; Evald & Senderovitz, 2013). This paper adds business growth to the context of established companies and explores the roles of effectuation and causation in their growth trajectories. The findings indicate the usage of both logics—effectuation and causation—among which effectuation appears the dominant approach.

Case companies were selected from the Voitto+ database of 6403 companies in Southern Ostrobothnia in Western Finland by examining growth metrics (The database is Finland's most extensive in terms of financial statements and is managed by Asiakastieto Ltd). The in-depth detailed case studies and interviews with selected SMEs as key informants were conducted to extend the understanding of the phenomenon. The selection criteria set were: a focus on steady companies that have made considerable development leaps after a few years of consolidation. The interviews were conducted in a flexible and opportunistic way, building theory during the research process. The questions were based on the subdimensions of effectuation defined by Chandler et al. (2011). Finally, the comparison with conflicting and supporting literature was made to evaluate validity and generalizability.

The number of employees of the studied companies varied from 17 to 77, with an average-size of 44 employees. The annual turnover ranged from two million to eighteen million EUR. Four of the ten companies were family-owned. In addition, two of the companies had once been family-owned but had undergone a change in ownership. Three of the companies represented the metal industry and one operated in the mechanical engineering industry. Only in one of the ten companies had the rapid growth spurt resulted in part from a corporate acquisition. The remaining nine companies had achieved the growth spurt through organic growth.

Table 5. Prevalence of effectuation and causation in the studied companies. (E = effectuation as the dominant factor, C = causation)

Approach / Companies	A	B	C	D	E	F	G	H	I	J
Focus on short-term experiments to identify opportunities, E versus goal has been determined to predict the future, C	E	E	E	E	E	E	C	C	C	E
Affordable loss, E versus maximization of expected returns, C	E	E	E	E	E	E	C	E	C	E
Pre-commitments and strategic alliances to control the future, E versus competitor analysis C	E	E	E	E	E	E	C	E	E	E
Exploitation of the environmental contingencies, E versus exploitation pre-existing capabilities and resources, C	E	E	E	E	E	E	C	E	E	E

Factors explaining such a strong prevalence of effectuation included: the studied companies were entrepreneurial, small, and medium-sized, primarily managed by their owners, and characterized by informal decision making. The timing of this study being 2009–2013 was a further significant factor. This was a period when the business environment was in a turbulent state. The changes in the business environment were immensely unpredictable; this explanatory factor emerged in a number of the interviews. The interviewees reported that it was difficult to make long-term plans due to radical changes in the operating environment. They had to be constantly prepared to react to changes in the operational environment and to act in whichever way was necessitated by those changes.

This study broadens the scope of effectuation research from its original focus on new ventures and start-ups to regard established companies as a suitable context. In doing so, the study suggests that effectuation research and development output needs to include established companies, which were neglected in effectuation research for many years. Established companies have the potential to take a growth leap and become growth companies, when using logics of effectuation and causation. This observation follows the trend in the current effectuation literature, where both processes are found to be used complementarily (Sitoh, Pan & Yu, 2014; Van de Vrande, De Jong, Coviello & Joseph, 2012).

The findings strengthen the previous literature, where effectuation is considered a practical approach in a turbulent and dynamic environment in which it is difficult to predict the future (Sarasvathy, 2001; Dew et al., 2009; Fisher, 2012; Dutta et al., 2015). As the companies examined in this study were small and medium-sized, their size made this flexible management possible. Rapid and straightforward decision making was also evident; small firms can adapt more readily than bigger firms, something previously found in the literature (Alvarez & Barney, 2005; McMullen & Shepherd, 2006).

There is relatively little previous literature combining effectuation with business growth. A systematic literature review revealed seven papers that had both concepts in the key words or title. We contribute to the effectuation literature by connecting all these elements. All the informants in our study can be described as experienced leaders, so this finding supports those in prior literature.

4.3 Relationship between growth orientation and innovativeness – The mediating role of causation

Essay 3 is based on a quantitative survey, studying the growth orientation and innovativeness in SMEs. This essay contributes to the literature in two ways. First, it addresses a gap in the literature by examining the association of growth orientation with innovativeness. Second, it bridges the gap between causation and innovativeness literature by providing empirical evidence suggesting that a causation logic enhances the innovativeness of organizations. Our model shows that growth orientation affects formal and informal strategizing in the examined companies. This study suggests that growth-oriented companies are more likely to use causal logics (Sarasvathy, 2001) and innovate more. In our extensive search, we found only one article combining causation with growth orientation.

This study contributes to the entrepreneurship literature by constructing an empirical relationship between growth orientation and innovation. The findings confirm that growth orientation affects innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures. Causation logic has positive impact on innovativeness, and the relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a positive relationship with causation.

Growth orientation is an important predictor of why companies engage in innovative activities. Extant literature has established empirical support for a relationship between the growth orientation and innovation activities in

companies (Autio 2009; Kuratko and Hornsby, 2004). Following Van de Ven's (2007, 121) logical structure, in order to determine the validity of our arguments, we first searched for the effect of growth orientation on innovativeness, and then tested if that relationship was mediated by causation. The mediation is strongest when there is an indirect effect, but not a direct effect on the equation (Baron & Kenny, 1986). The strength of effect should be measured by the size of the indirect effect, not by the absence of the direct effect. According Zhao, Lynch and Chen (2010), the only requirement for mediation is that the indirect effect $a \times b$ is significant. Following a similar logic, we therefore propose the following hypothesis:

Hypothesis 1: There is a positive relationship between firms' growth orientation and their innovativeness.

Hypothesis 2: The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has positive relationship with causation (H2a) and causation has a positive impact on innovativeness (H2b).

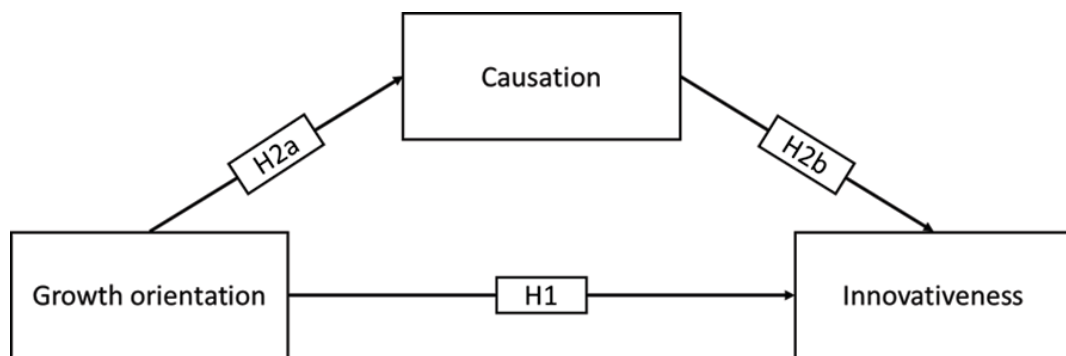


Figure 4. The relationship between growth orientation and innovativeness mediated by causation

Using CFA and SEM, we evaluated the measurement and structural models. As one item from causation was removed due to the low factor loading (<0.5) and the initial measurement model was improved from ($X^2=98.004$ with 62 degrees of freedom giving 1.581 ratio; RMSEA=.069; CFI=.921; GFI=.889; IFI=.924 TLI=.901) to ($X^2=70.850$ with 51 degrees of freedom giving a 1.389 ratio; RMSEA=.056; CFI=.954; GFI=.912; IFI=.956 TLI=.941). Our structural model satisfied established model-fit criteria ($X^2=70.850$ with 51 degrees of freedom giving a 1.389 ratio; RMSEA=.056; CFI=.954; GFI=.912; IFI=.956 TLI=.941).

Table 6. Constructs and measurement items

Construct	Items	Source	Item loading
Causation	We analyzed long run opportunities and selected what we thought would provide the best returns	Chandler et al. (2011)	0.55
	We developed a strategy to best take advantage of resources and capabilities. ^a	Chandler et al. (2011)	0.27
	We designed and planned business strategies.	Chandler et al. (2011)	0.82
	We organized and implemented control processes to make sure we met objectives.	Chandler et al. (2011)	0.64
	We researched and selected target markets and did meaningful competitive analysis.	Chandler et al. (2011)	0.60
	We had a clear and consistent vision for where we wanted to end up.	Chandler et al. (2011)	0.57
	We designed and planned production and marketing efforts.	Chandler et al. (2011)	0.68
Growth orientation	It is generally known throughout the firm that growth is our top objective. - Growth is not necessarily our top objective. Long term survival may be at least as important.	Brown et al. (2001)	0.73
	It is generally known throughout the firm that our intention is to grow as big and as fast as possible. - It is generally known throughout the firm that steady and sure growth is the best way to expand.	Brown et al. (2001)	0.88
Innovativeness	Innovation proposals are welcome in the organization.	Santos-Vijande & Álvarez-González (2007)	0.83
	Management actively seeks innovative ideas.	Santos-Vijande & Álvarez-González (2007)	0.78
	Innovation is perceived as too risky and is resisted	Santos-Vijande & Álvarez-González (2007)	0.56
	People are not penalised for new ideas that do not work.	Santos-Vijande & Álvarez-González (2007)	. ^b
	Program/Project managers promote and support innovative ideas, experimentation and creative processes.	Santos-Vijande & Álvarez-González (2007)	0.50

Notes:
a) Indicator variable dropped due to low loading as recommended by Hair et al. (2014 p.115).
b) Indicator variable removed earlier as skewness and kurtosis limits were not met.

The level of analysis in this research is the company level and includes between one and four respondents from each company, so we analyzed the interrater reliability. To ensure that data aggregation to the company level was possible, we used the interrater reliability analysis RWG(J) of James, Demaree and Wolf (1984), and the R*WG(J) analysis based on equation 5 in the study of Lindell, Brandt, and Whitney (1999). The interrater reliability results are presented in Table 7. All interrater reliability values are over the generally accepted cut-off point of 0.7 except for the RWG(J) of the growth orientation. However, James (1982) offers a cut-off point of 0.6 and Biemann, Cole & Voelpel (2012) point out that the widely applied cut-off criterion of 0.7 is heavily criticized and is purely arbitrary. In addition, Lindell and Brand (1999) argue that the interrater agreement analysis

using $R^*WG(J)$ is more generally applicable. Therefore, we decided to accept the interrater agreement results.

Table 7. Interrater reliability of latent variables

Latent variable	$r_{WG(J)}$	$r^*_{WG(J)}$
Causation	0.87	0.79
Growth orientation	0.69	0.83
Innovativeness	0.90	0.85

The reliability analysis was conducted with Cronbach's alpha and all levels were over the 0.60 threshold (Nunnally, 1970). The convergent validity was assessed by checking whether all the latent variables' AVE measures were above the cut-off point of 0.4 suggested by Bagozzi and Baumgartner (1994, p.402) and that the construct reliability was equal to or exceeded 0.6 as proposed by Bagozzi and Yi (1988, p. 82). The results of the convergent validity assessment are presented in Table 8. Each pair of factors satisfied the required discriminant validity, as the square root of the AVE measures exceeds the correlation of the corresponding factors. The Fornell–Larcker coefficients are presented in Table 9.

Table 8. The reliability and convergent validity

Latent variable	CR	AVE	Cronbach's alpha
Causation	0.812	0.423	0.802
Growth orientation	0.810	0.688	0.776
Innovativeness	0.765	0.459	0.751

We first examined the relationship between growth orientation and innovativeness. The use of CFA and SEM confirms hypothesis H1 because growth orientation has a large and significant positive effect on innovativeness ($\beta=.40$, $p<.001$). We then introduced causation into the model as a mediator. The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a significant positive relationship with causation, thus confirming Hypothesis H2a ($\beta=.29$, $p<.01$) and signaling that growth-oriented companies are more likely to adopt formal strategic planning routines. Causation has a significant positive impact on innovativeness ($\beta=.30$, $p<.01$), thus confirming Hypothesis H2b. The mediation is partial as the direct effect between growth orientation and a firm's innovativeness remains significant but decreases in size ($\beta=.31$, $p<.01$).

Table 9. Fornell–Larcker criterion. Correlations between constructs and square roots of AVEs on the diagonal.

Latent variable	Causation	Growth orientation	Innovativeness
Causation	0.651		
Growth orientation	0.286	0.829	
Innovativeness	0.389	0.398	0.678

The research is based on a survey of chief executive officers and higher executives responsible for strategizing practices in the studied companies. Based on a final sample of 224 informants in 124 companies, this research contributes to the literature by constructing an empirical relationship between growth orientation and innovation, as well as demonstrating the mediating effect of causation logic used in decision making. The growth orientation influences innovation in the studied companies. Moreover, this relationship is mediated by the causation logic (Sarasvathy, 2001). The findings confirm that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures.

We used the causation and effectuation framework to analyze the strategic choices of companies in the selection of formal and informal strategizing. Growth orientation influences formal and informal strategizing in the examined companies. Growth orientation moderately affects causation. This indicates that more growth-oriented companies are more likely to employ formal strategic planning. The causal approach ensures the focus and predictability of the operations.

One of the contributions of this research is that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures, this is tested in the context of established companies taking into account the mediating effect of the causation. This study highlights the importance of using formal strategical planning taking the causal logic into account. Growth-oriented companies are more likely to formulate strategic plans and innovate more.

4.4 Innovativeness and business growth in SMEs – The mediating role of strategic flexibility

Essay 4 is a quantitative study, investigating innovativeness and business growth in established companies. The overall aim is to study the impact of strategic flexibility on firm-level innovativeness and ultimately on business growth in 126 small and medium-sized enterprises (SMEs) in Finland. Strategic flexibility was originally perceived as an appropriate operating model to respond to environmental changes and as a major contributor to the survival and success of firms (e.g., Grewal and Tansuhaj, 2001; Katsuhiko and Hitt, 2004; Nadkarni and Nareyanan, 2007; Sanchez, 1995, 1997). We examine strategic flexibility in the context of established companies in Finland, exploring its effect on innovation and business growth. This study utilizes survey responses from two groups; managers and higher executives, with between one and four respondents from each of the 126 companies. The findings are based on a sample of 231 responses.

Business growth is one of the most prominent topics in today's entrepreneurship literature (Shane & Venkatamaran, 2000; Van de Ven, A.H., Polley, D.E., Garud, R., & Venkataraman, S., 1999). High expectations are loaded on to entrepreneurs and their SMEs at a time when markets and societies are changing rapidly (Smallbone and Massey, 2012). Strategic flexibility has been found to be influential in the relationship between innovation and business performance (Li, Su & Liu, 2010; Zhou & Wu, 2010). Innovation, on the other hand, is widely seen as one of the key sources of business growth (Dew & Sarasvathy, 2007; Gabrielsson & Gabrielsson, 2013; Helmersson & Mattsson, 2013), and even a survival factor for nascent firms (Dobson et al., 2013).

This study is designed around surveys of two groups; managers and higher executives, using between one and four informants from the same companies. Based on a sample of 231 answers, the findings indicate that causation affects innovation, and that two subdimensions of effectuation are positively associated with growth. The companies studied were randomly sampled Finnish SMEs, employing between one and 216 employees, with the average staff size being 35 employees. The annual turnover ranged from one million to 43 million euros. We measured growth with turnover growth (Murphy, Trailer, & Hill, 1996), and used a longitudinal five-year perspective to gather data on the SME's financial records. The survey questions were based on the subdimensions of effectuation and the sub-constructs were measured on a 5-point bi-polar Likert scale. After the data gathering and first analysis, we validated the data using Amos24 to cross-validate the findings.

There is a broad consensus that innovation represents one of the key factors in generating business growth (Dew and Sarasvathy, 2007; Gabrielsson and Gabrielsson, 2013; Helmersson and Mattsson, 2013), and has even been nominated as the most focal element affecting the survival of the nascent firm (Dobson et al., 2013). Prior studies indicate that SMEs do not deploy those processes universally advocated for the management of large firms (Ottenbacher and Harrington, 2008; Van de Vrande, De Jong, Vanhaverbeke, and De Rochemont, 2009; Rosenbusch et al., 2011), but utilize non-predictive effectual logic, and merge strategic flexibility into their innovation processes (Dew, Sarasvathy, Read and Wiltbank, 2008; Lingelbach, Sriram, Mersha and Saffu, 2015).

This study aims to show that strategic flexibility mediates the influence of innovativeness on business growth. Our results suggest that strategic flexibility fully mediates this relationship. We show that innovativeness influences strategic flexibility, which significantly affects business growth. This essay builds on the growing body of the innovation (Zhao, 2005; Blumentritt et al., 2005; Gabrielsson and Gabrielsson, 2013; Helmersson and Mattsson, 2013), and the following hypothesis will be proposed and evaluated in the context of SMEs:

Hypothesis 1: *There is a positive relationship between innovativeness and business growth.*

Some important factors that might be influential for innovation, need to be given more attention, such as the existing resources and facilities of the organization (Maine and Garnsey, 2006). One potential reason for the divergent findings on the relationship between innovation and business growth may be there being insufficient information on the influential factors in this relationship (Li and Atuahene-Gima, 2001).

Business growth is one of the most prominent topics in entrepreneurship and management literature today (Van de Ven, Polley, Garud, and Venkataraman, 1999; Shane and Venkataraman, 2000). High expectations are placed on entrepreneurs and SMEs by governments of countries all over the world, at a time when markets and societies are changing rapidly (Smallbone and Massey, 2012).

The company's capability represents its preparedness to deal with contextual risk factors by responding immediately to changes or threats from the market (Grewal and Tansuhaj, 2001; Su, Xie, and Li, 2009). Strategic flexibility enables a firm to prepare for changes, and to redeploy its resources more effectively, so enhancing the value of the resources directed toward innovation (Oviatt and McDougall, 2005; Li, Liu, Duan, and Li, 2008; Liu et al., 2009; Zhou and Wu, 2010).

Innovation is one of the current explanations offered for companies achieving business growth (Bhide, 2000). Strategic flexibility helps to generate profit from innovation, and therefore to foster business growth (Li, Su and Liu, 2010). Accordingly, because innovation has been shown to affect business growth, and flexibility to enable more effective use of resources, thus benefiting innovation, we propose the following hypothesis in the context of SMEs:

Hypothesis 2: The relationship between innovation and business growth is not direct but is instead mediated by flexibility. Therefore, innovativeness has positive impact on flexibility (H2a) and flexibility has a positive impact on business growth (H2b).

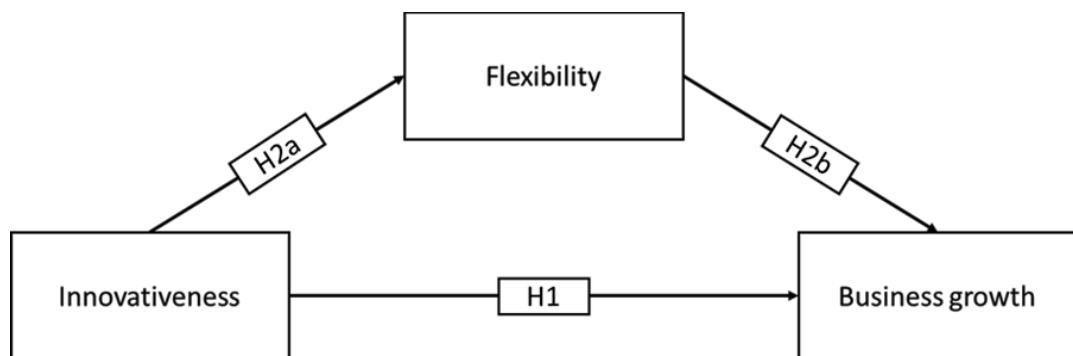


Figure 5. Interaction between flexibility, innovativeness, and business growth

The data gathering was conducted by research assistants who were students on a university strategic management course, and they were free to choose their informants according to an agreed qualification frame. The findings are based on a sample of 231 informants from two groups; managers and higher executives from 126 firms from various industries and geographic areas in Finland. We used a longitudinal five-year perspective to gather data on the SME's financial records, which were collected from the Orbis database.

We applied a longitudinal five-year perspective to gather data on the SMEs' financial records. Following data gathering and first analysis, we validated the data using Amos24 to cross-validate the findings. First, we tested the skewness and kurtosis of the scale items and we applied an acceptable limit of ± 2 indices (Field, 2000, 2009; Gravetter and Wallnau, 2014; Trochim and Donnelly, 2006); consequently, we removed one unsatisfactory item from the innovation scale. In order to investigate the relationships in this study, innovation was measured using the scale for innovativeness adapted from that of Santos-Vijande and Álvarez-González (2007) which originates with Hurley and Hult (1998). The innovativeness was measured along a 5-point bi-polar Likert scale.

Second, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analyzed the interrater reliability. To ensure data aggregation to the company level was possible, we used the interrater reliability analysis $R_{WG(j)}$ of James, Demaree, and Wolf (1984) and $R^*_{WG(j)}$ analysis based on equation 5 used by Lindell, Brandt, and Whitney (1999). The interrater reliability results are presented in Table 10. All interrater reliability values are over the universally accepted cut-off point of 0.7 and interrater agreement results were accepted.

Table 10. Interrater reliability of latent variables

Latent variable	$r_{WG(j)}$	$r^*_{WG(j)}$
Flexibility	0.87	0.84
Innovativeness	0.90	0.85

Third, we used CFA and SEM to test the constructs of flexibility adapted from Chandler et al. (2011) and innovation as defined by Santos-Vijande and Álvarez-González (2007). We followed the recommendation of Hair, Black, Babin, and Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the 0.05 significance level and consequently we eliminated two items due to low factor loadings (see Table 10.).

Table 11. Constructs and measurement items

Construct	Items	Source	Item loading
Flexibility	We allowed the business to evolve as opportunities emerged.	Chandler et al. (2011)	0.60
	We adapted what we were doing to the resources we had. ^a	Chandler et al. (2011)	0.33
	We were flexible and took advantage of opportunities as they arose.	Chandler et al. (2011)	0.66
	We avoided courses of action that restricted our flexibility and adaptability.	Chandler et al. (2011)	0.51
Innovativeness	Innovation proposals are welcome in the organization.	Santos-Vijande & Álvarez-González (2007)	0.83
	Management actively seeks innovative ideas.	Santos-Vijande & Álvarez-González (2007)	0.83
	Innovation is perceived as too risky and is resisted	Santos-Vijande & Álvarez-González (2007)	0.56
	People are not penalised for new ideas that do not work.	Santos-Vijande & Álvarez-González (2007)	- ^b
	Program/Project managers promote and support innovative ideas, experimentation and creative processes. ^a	Santos-Vijande & Álvarez-González (2007)	0.47

Notes:
a) Indicator variable dropped due to loadings below 0.50 as recommended by Hair et al. (2014 p.115).
b) Indicator variable removed earlier as skewness and kurtosis indicator limits were not met.

We tested the final model for reliability, convergent validity, (Bagozzi and Phillips, 1982), and discriminant validity (Bagozzi, Yi, and Phillips, 1991). The reliability and convergent validity results are presented in Table 12. We conducted a reliability analysis and found Cronbach's alphas to be over the 0.60 threshold (Nunnally, 1970). With the exception of flexibility, the internal consistency rating was poor at 0.499. (The Cronbach's alpha for flexibility was slightly better before data aggregation, when it was 0.53). The convergent validity was assessed by checking whether all the latent variables' AVE measures were above the cut-off point of 0.4 proposed by Bagozzi and Baumgartner (1994, p.402) and that the construct reliability was equal to or exceeded 0.6 as stated by Bagozzi and Yi (1988, p. 82). The AVE of flexibility was 0.340, and therefore under the threshold. However, Malhotra and Dash (2011) argue that AVE measures are often too strict, and that reliability should be analyzed using construct reliability alone. Therefore, as the construct reliability of flexibility was over the cut-off point of 0.6, the convergent validity was accepted. Each pair of factors recorded the required discriminant validity, as the square root of the AVE measures exceeds the correlation of the corresponding factors. The Fornell-Larcker coefficients were therefore accepted.

Table 12. Model assessment

Latent variable	CR	AVE	Cronbach's alpha
Flexibility	0.611	0.347	0.518
Innovativeness	0.795	0.570	0.757

Using CFA and SEM, we evaluated the measurement and structural models. The removal of one item from flexibility and innovativeness scales due to the low factor loading (<0.5) led to a change in the initial measurement model from ($X^2=37.870$ with 27 degrees of freedom giving a 1.403 ratio; RMSEA=.058; CFI=.944; IFI=.947 TLI=.926) to ($X^2=22.311$ with 14 degrees of freedom giving 1.594 ratio; RMSEA=.071; CFI=.948; IFI=.951 TLI=.923) and the result was improved by allowing a pair of error variables to covariate as suggested by modification indices ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953). Our structural model satisfied established model-fit criteria ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953).

First, we examined the relationship between innovativeness and business growth using CFA and SEM. Hypothesis H1 is confirmed because innovativeness has a medium and significant positive effect on business growth ($\beta=.20$, $p<.05$). We then introduced flexibility as a mediator to the model. The innovativeness then had a medium and significant effect on flexibility ($\beta=.30$, $p<.05$), confirming Hypothesis H2a. Hypothesis H2b is also confirmed as flexibility has a significant positive effect on business growth ($\beta=.26$, $p<.05$).

As both H2a and H2b hypothesis were significant, mediation analysis was conducted using a bootstrapping method (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). Bootstrapping was conducted with 5000 resamples (Preacher & Hayes, 2008) obtaining the 95% confidence interval of the indirect effect. The mediating role of strategic flexibility in the relationship between innovativeness and business growth was confirmed ($\beta=.077$; CI=.005 to .172; $p<.05$). There is a full mediation as the direct effect between innovativeness and business growth is no longer significant and the size decreases ($\beta=.12$, $p>.10$). As the results have shown, flexibility plays a substantial role in the relationship between innovativeness and business growth. The finding bolsters previous literature indicating that flexibility is one of the key strengths of small firms (Fiegenbaum and Karnani, 1991).

The results confirm previous findings indicating that growth companies leverage new information to deliver greater value for their customers. This study proposes that for entrepreneurs, having an aptitude to exploit opportunities arising from the business environment is a critical factor in their achieving business growth. Gathering information was associated with networking and building strategic alliances, and accordingly, these last two activities can evidently be shared when identifying opportunities for business growth. The findings confirm those in prior literature indicating flexibility is a key strength of SMEs (Fiegenbaum & Karnani, 1991).

5 DISCUSSION AND CONCLUSIONS

The main results and findings of this research are presented in Articles 1 and 2, and Essays 3, and 4, and discussed in this section. Theoretical contributions, managerial implications, limitations, and avenues for future studies are also presented and discussed.

5.1 Theoretical contributions

This dissertation investigates business growth in established companies, identifying factors explaining the conditions under which companies use effectuation and causation logics to grow. The effectuation research has long been focused on nascent companies, meaning there is little clarity on the growth of established companies. Recently, researchers have questioned the role of start-ups and high-growth companies as employment creators, claiming these companies are concerned with collecting investment support and maximizing profits, instead of becoming economically viable large-scale employers (Shane, 2009; Neumark et al., 2010; Haltiwanger et al., 2013). Whereas the great majority of effectuation literature considers effectuation as a tool for nascent companies, this dissertation contributes to the business growth literature by introducing empirical results on the use of the causation and effectuation logics in established companies. The overall aim of this dissertation is to enhance our understanding of how established companies grow. The results suggest that they adapt to the situation and respond to the demands of the market with their resources (effectuation), more than they follow previously determined plans to proceed toward set goals (causation).

The other theoretical value of this dissertation is to highlight the progression of effectuation theory from the early years marked by conceptual, open-ended, and broad research questions characterized by specific, measurable research questions. The findings of this study indicate that effectuation research has not only moved on from the nascent to the intermediate stage of development but has already taken the first steps toward the mature stage, marked by challenging the prevailing perceptions, considering effectuation theory to be still in its infancy (Fischer and Reuber, 2011; Perry et al, 2012).

This dissertation provides dissenting evidence that the theory has developed rapidly over the last five to six years; evidence that challenges previous claims depicting effectuation research as underdeveloped (Arend et al., 2015). This proposed development of the theory will help hasten eligibility among practitioners and effectuation theory will gain more scientific appreciation. This study provides a firm base on which to build in forthcoming effectuation research.

Although this dissertation also faced some technical challenges in order to measure the control variables, mainly with subdimensions of effectuation, the robustness of the chosen variables proved satisfactory.

This study introduces four main streams linked to effectuation theory in the scientific dialogue on current effectuation research; 1) innovation and product development, 2) internationalization, 3) existing companies, 4) effectuation and causation simultaneously. Additionally, it reveals the confrontation between the convergent and divergent groups involved in the scientific dialogue around effectuation theory. It is hoped the fruits of this debate will elaborate the effectuation research.

Article 2 is a qualitative study in comparison to prior studies in that it expands the scope of effectuation research from its original primary focus on new ventures and start-ups to include established companies as a suitable research context. In doing so, the study establishes that effectuation research and development should include established companies, which were neglected in effectuation research for many years. Established companies have the potential to take a growth leap and become growth companies, when applying the logics of effectuation and causation. The findings strengthen the previous literature stating effectuation is a practical approach in turbulent and dynamic situations in which it is difficult to predict the future (Sarasvathy, 2001; Fisher, 2012; Dutta et al., 2015). As the companies examined in this study were small and medium-sized, their size favored a flexible management style. Rapid and straightforward decision making seemed evident; small firms can adapt quickly compared to bigger firms, something previously found in the literature (Ireland, Hitt & Sirmon, 2003; Alvarez & Barney, 2005; McMullen & Shepherd, 2006).

There is relatively little previous literature combining effectuation with business growth. The systematic literature review included in this study found seven papers that had both concepts in the key words or title, but found no studies combining an investigation of these two concepts in the context of established companies. The contribution to the effectuation literature is to connect all these elements. Additionally, the vast majority of previous research has proposed that experienced entrepreneurs tend to follow effectual logic, while novices endorse causation, when framing decisions (Dew et al., 2009, Sarasvathy, 2008). All the informants in this study can be described as experienced leaders, so the results confirm and strengthen these findings of the previous literature.

Since Penrose's (1959) resource-based view examining how an organization's resources drive competitive advantage, the end of the last century was very productive in terms of developing defined business strategy theories and

explaining business growth (Porter, 1991; Prahalad & Hamel, 1990). At the beginning of the twenty-first century, there are not so many resources that are valuable, rare, and non-substitutable (Killen et al., 2012). Consequently, research on strategic management has moved on from its earlier rational and formal approach to an environment-oriented research basis. If the early strategic management literature created strategies for periods of five or even ten years, the latest tendency is to apply one-year to three-year business strategy periods, which are more applicable to modern, turbulent, and fast-changing operation environments. (Eisenhardt & Sull, 2001; Elbanna, 2006; Nag, Hambrick & Chen, 2007; Kim & Mauborgne, 2009). The results of this dissertation advance the strategic management research, suggesting that strategic management can be considered successful when it directs the company to renew its functions and does not restrict the company's operations. Instead of inventing of new and revolutionary strategic approaches, the strategic management research should focus on understanding customer goals in order to achieve business growth.

Flexibility is one of the four key elements of effectuation theory (Chandler et al., 2011). Previous literature presents SMEs' resources as more limited than those of large companies, but enjoy greater flexibility (Fiegenbaum and Karnani, 1991; Zhou & Shalley, 2003).

Essay 3 is important because it introduces a model showing that strategic flexibility mediates the influence of innovativeness on business growth. The interaction between flexibility and growth is positive and significant, explaining the mechanisms, how growth companies leverage new information to deliver greater value for their customers in the SME context. This study proposes that for entrepreneurs, having an aptitude to exploit opportunities arising from the business environment is a critical factor in their achieving business growth. Gathering information was associated with networking and building strategic alliances, and accordingly, these last two activities can be considered shared in identifying opportunities for business growth.

Essay 4 is also a quantitative study, investigating how growth orientation influences innovation in the context of SMEs. Moreover, this relationship is mediated by the causation logic (Sarasvathy, 2001). This study continues from the findings of Essay 3 and highlights the influence of growth orientation on the innovation processes. A search of the prior literature relating to the interplay of these three elements revealed a gap worthy of investigation. This research contributes to the literature by constructing an empirical relationship between growth orientation and innovation, demonstrating the mediating effect of the causation logic when used in decision making. The findings suggest that growth

orientation affects the level of innovativeness in companies. The degree of innovativeness is also affected by the causal, formal strategic planning conducted in the ventures (Dew et al., 2009; 2011; Fisher, 2012; Berends et al., 2014; 2009; Sitoh et al., 2014).

Using CFA and SEM confirmed two hypotheses; first, growth orientation has a significant and large positive effect on innovativeness, moreover, we introduce causation as a mediator to the model. The paper is noteworthy, because the relationship between growth orientation and a firm's innovativeness is mediated by causation whereas growth orientation has a significant positive relationship with causation confirming our second hypothesis, signaling that growth-oriented companies are more likely to adopt formal strategic planning. This is an observation not previously reported in prior studies. Causation has a significant positive impact on innovativeness. The mediation is partial because the direct effect between its growth orientation and the firm's innovativeness remains significant but decreases in size.

Overall this dissertation adds to our knowledge by addressing a substantial gap in effectuation and causation research. As a whole, this study provides empirical evidence on the business growth in established companies, an area largely neglected in effectuation and causation research for many years. The conceptual contribution of this dissertation raises the theoretical development of effectuation theory to another level by providing empirical material on recent research developments in the field. The framework provided, adds to our knowledge, introducing the steps required to attain and maintain competitive advantage in turbulent business environments. Based on the extensive empirical research material collected in established companies, this study highlights the importance of using formal strategic planning taking into account a causal logic. Growth-oriented companies are more likely to formulate strategic plans and innovate more. Furthermore, the innovativeness influences strategic flexibility, which significantly affects business growth, in turn leading to success.

5.2 Managerial implications

With regard to evaluating the practical and managerial implications of this dissertation, the results suggest a few interesting and useful ideas for managers and entrepreneurs operating in SMEs, since all the empirical evidence is collected in the real-life context of established companies. This dissertation investigates business growth in established companies, identifying factors explaining the conditions under which companies use effectuation and causation logics to grow,

constituting a solid base for a business venture (Sarasvathy, 2008; Dew et al., 2009; 2011; Fisher, 2012). This dissertation is joining to discussion of recent empirical studies suggesting that effectuation and causation logics can co-exist in the same organization (Lingelbach et al., 2015; Reymen et al., 2015; Sitoh et al., 2014; Van de Vrande et al., 2009).

Article 2 explores the roles of effectuation and causation in their growth trajectories. Despite the fact that the majority of the studied companies had prepared a strategy, its practical implementation had proved extremely difficult. Customer-orientation and quickly responding to demand in rapidly changing situations were perceived as methods for pursuing business growth. The majority of the studied companies seemed to rely on the resources available, referring that they followed the logic of effectuation. The findings of this study indicate the usage of both logics, effectuation and causation, from which effectuation appears the dominant approach.

In order to get business venture to the growth mode, there should be a desire and attitude toward growth, a growth orientation. It is important to have goal or objective, selected based on strategy, toward which the organization works by acquiring the necessary resources, referring to causation logic. The findings of the essay 3 confirm that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures. Causation logic has positive impact on innovativeness, and the relationship between growth orientation and firm's innovativeness is mediated by causation, whereas growth orientation has a positive relationship with causation.

Essay 4 suggests that innovativeness influences strategic flexibility, which significantly affects business growth. The companies are encouraged to maintain flexibility to changes in environment as it is found crucial for SMEs. Consequently, through the implementation of the proposed framework, we suggest that the company can gain and maintain competitive advantage in turbulent business environment by following the identified steps and create business growth on their way to success.

While in the 90's, business strategies were developed for periods of five or even ten years, in the current rapidly changing world it seems that these hierarchical approaches have come old fashioned and inefficient. By the time of the 21st century, one, two, or three years were found better suited to a rapidly changing environment. In a current ever-changing and digitizing society, strategic management can be considered successful when it directs the company to renew its actions and does not restrict the company's operations. Inventing of new and

revolutionary strategizing approaches seems to have reached their saturation point, while companies seem to benefit more for understanding their customers' goals.

This study highlights that companies selecting a customer-oriented approach, seem to have achieved success and growth regardless of the status in their field of operations. These findings are in line with Coviello and Joseph (2012). Building strategic alliances and networking emerged as one of the most common factors among the studied companies. Cooperation occurs with clients, suppliers, and competitors. We would encourage companies to strengthen their capabilities and streamline their processes, since ventures that show a high level of innovativeness and deploy their resources to fulfill their customers' requirements, appear to improve their outcome, comparing to one's that do not (Fiegenbaum and Karnani, 1991). The findings confirm those of prior literature indicating flexibility is one of the key elements of successful small firms (Fiegenbaum and Karnani, 1991). The findings also strengthen the previous research suggesting that the effectuation logic seems to suit for SMEs. That is particularly because such firms tend to have limited resources, a propensity to focus on one or a few projects, and an ability to retain a flexible approach to their business.

“Small, entrepreneurial ventures are effective in identifying opportunities but are less successful in developing competitive advantages needed to appropriate value from those opportunities. In contrast, large firms often are relatively more effective in establishing competitive advantages but are less able to identify new opportunities” (Ireland, Hitt & Sirmon 2003).

Consequently, through the implementation of the proposed concepts and framework, the company can achieve competitive advantage. The research period covered a turbulent time when the entire Eurozone faced extensive changes and dealt with a recession in the years 2009–2013. Nevertheless, this period appears to have been more successful for companies reacting to changes in their operating environments and adapting their activities to reflect the situational changes. The ability to do things differently from competitors also emerged in this study.

“We have a possibility to react quickly. If we hear from the field that something is needed in the market, we are reacting to that. There is none of this sort of hierarchy there to make things more difficult” (CEO, Case company I in Article 2).

The companies that achieved a growth spurt in this period appeared to have gained a competitive advantage by committing their clients to participate in development work and incorporating service processes alongside industrial products. These

findings strengthen the previous literature considering effectuation a practical approach in turbulent and dynamic environment in which it is difficult to predict the future (Sarasvathy, 2001; Fisher, 2012; Dutta et al., 2015)

“It doesn’t matter if the market is going up or down, there’s always a possibility to find new clients. There’s just a different reason for it. If we just work away as usual, no one is going to need to change suppliers. If potential clients are doing worse financially, the first thing they are going to do is to search for alternatives” (CEO, Case company C in Article 2).

The companies considered the level of affordable losses when making pre-commitments to their customers. The affordable losses moderately affect the pre-commitments, which in turn have a substantial effect on formal strategizing and a moderate effect on experimentation in the companies. Therefore, pre-commitments and affordable losses -approaches have a significant impact on strategizing in companies. Customers play a substantial role in the planning of future strategical moves in companies. The results confirm the previous findings that growth companies leverage new information to deliver greater value for their customers (Svensrud & Åsvoll, 2012). This study proposes that entrepreneurs’ aptitudes to exploiting opportunities arising in the business environment are critical to achieving business growth. Networking and building strategic alliances can be considered a shared factor in identifying opportunities for business growth.

“We have good relationships with our competitors, it is better to know the competitors enough to know what they do and can do, so that you know where you’re going” (CEO, Case company J in Article 2).

The findings suggest that growth-oriented companies put more emphasis on innovativeness, which is widely seen as one of the main elements in achieving business growth (Dew & Sarasvathy, 2007; Gabrielsson and Gabrielsson, 2013; Helmersson & Mattson, 2013). Growth orientation moderately affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning conducted in the ventures. Innovation moderately affects experimentation in the companies. In summary, growth-oriented companies are more likely to form formal strategic plans that emphasize the meaning of innovativeness. These companies appear more likely to adjust along the way by employing an effectual decision-making.

5.3 Limitations

As with most studies, this dissertation has several limitations, and its findings cannot be evaluated without a discussion of them. The individual limitations that offer avenues for future research are discussed in each of the four articles/essays, but in general, the further the research proceeded, the more new issues arose. First, the results should not be generalized to the whole firm population since all the studied companies were SMEs. A second factor that might affect this phenomenon relates to differences in national culture and policy, because all the studied companies and informants are from the same country.

Third, I would like to draw attention to the fact that effectuation was originally perceived as an operating model covering the early stages of an organization's growth. This raises questions around whether effectuation can be a viable construct to illuminate decision making in established companies. Whether firms employ an effectual or causal logics, will probably depend on variables such as firm size and age. These factors were not taken into consideration in the empirical research, which can be stated as one of the limitations of this study.

Fourth, more research may be necessary to test the parallel measurement scales used in this study. The chosen measures for this dissertation, subdimensions of the Chandler et al. (2011) two-sided effectuation-causation scale might demand more critical examination. Roach, Ryman and Makani (2016), Alsos et al., (2014) and Johansson and McKelvie (2012) also level some criticism at the lack of discriminant validity of characterized by the high correlation between causation and low correlation between effectuation dimensions as developed by Chandler et al. (2011). One limitation affecting our variable reliability is the low threshold for the flexibility dimension used in Essay 4. There are diverging views on applying a threshold of 0.60 (Nunnally, 1970), one of which is that the satisfactory level of reliability depends on how the measure is used. Lance, Butts and Michaels (2006) assert that the 0.60 threshold for reliability is not high enough, but this study followed the recommendation of Hair, Black, Babin and Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the 0.05 significance level, and consequently we eliminated three items due to low factor loadings. Nevertheless, it is justified to ask how biased our findings are due to the low level of variable reliability.

Fifth, when evaluating the results of this dissertation, it must be considered that when using a translation from English to Finnish in the research questions, our study might have been subject to an acculturative bias. We did, however, employ researcher triangulation among the research group to strengthen the reliability of

the translation and to minimize opportunities for errors. Nevertheless, the possibility for human error always exists when translating questions.

5.4 Avenues for future research

Some future research could be suggested as a result of this research. Along the way, the research elicited reasonable explanations for some of the questions, if not outright answers. First, the methodological aspects could be emphasized more specifically and considered in future studies. Since we found Chandler et al.'s (2011) scale did not work as well as expected in Essays 3 and 4, we would encourage future scholars to critically examine the two-sided scale. Johansson and McKelvie, (2012) have taken a step forward, distinguishing causation and effectuation as independent theories, measuring these two logics separately. Their results seem promising and could guide forthcoming research in that direction.

Second, the influence of competition and environmental factors merits more attention. Innovation might also have a mediating role in this setting. Future quantitative studies could focus on the impact of company age as a mediator in determining if effectuation truly does work better in the early stages of a company's existence, as the vast majority of previous empirical evidence suggests (Berends et al., 2014). Jiang and Tornikoski (2018) challenge this view, suggesting that in the early stages of the venture, entrepreneurs do not perceive uncertainty, so they follow the causal logic. They actively combine effectuation and causation in later phases when they face uncertainty in the environment (Jiang & Tornikoski, 2018). This is interesting and contradicts the previous findings suggesting that effectuation is at its best in the early phases of the business venture (Sarasvathy, 2008; Dew et al., 2009; Fiet et al., 2013). Therefore, this new finding provides a potential challenge for research on effectuation.

Third, the focus of this study is on companies that have achieved a growth leap after few years of slower growth or a steady phase of consolidation. It would be interesting to investigate the same variables in companies that have not been able to achieve a growth spurt but have instead continued to consolidate or deliver just modest growth. What was done differently in these companies, or can growth spurts be a consequence of some environmental or other external effect?

Fourth, the company owners and managers informing this study perceived networks and cooperation with stakeholders to be important. It would be fruitful for future research to determine how their customers, suppliers, and sub-contractors experience this cooperation. This might elicit an interesting picture of

the nature of the cooperation activities and could explain how the different parties perceive the impacts of the operations on shared activities.

Additionally, a wider range of strategies and innovation management could be included in future studies of business growth. While different management constructs were explored to some extent in the empirical Article 2, and Essays 3 and 4, some interesting aspects were omitted. Alternative strategies and effects that might be explored include: internationalization, EO, and environmental factors, which seem the most likely to influence effectuation, causation, and business growth. In addition, the differences between other emerging theories of entrepreneurship, bricolage and improvisation would be worthy of more detailed scrutiny in future research, in order to evaluate the differences and congruence between these three prominent theories of entrepreneurship.

References

- Achtenhagen, L., Naldi, L., & Melin, L. (2010). Business growth—Do practitioners and scholars really talk about the same thing? *Entrepreneurship: Theory & Practice* 34 (2): 289–316.
- Acs, Z.J. & Audretsch, D.B. (1988). Innovation in large and small firms: an empirical analysis. *American Economic Review* 78 (4), 678–690.
- Agarwal, R. & Helfat, C.E. (2009). Strategic renewal of organizations. *Organization Science* 20 (2): 281-293
- Aldrich, H.E. & Ruef, M. 2006, *Organizations evolving*, second edition. SAGE Publications Inc. DOI: 10.4135/9781446212509.
- Allard-Poesi, F. & Maréchal, C. (2001). Constructing the research problem. In R-A. Thietart (ed.). *Doing management research: A comprehensive guide*. London, UK: Sage.
- Alsos, G.A., Clausen, T.H., Hytti, U. & Solvoll, S. (2016), “Entrepreneurs social identity and the preference of causal and effectual behaviours in start-up processes”, *Entrepreneurship and Regional Development* 28 (3-4): 234-258.
- Alsos, G. A., Clausen, T.H. & Solvoll, S., (2014). Towards a better measurement scale of causation and effectuation. Paper presented at Academy of Management Meeting, Philadelphia, PA.
- Anderson, N., Potočník, K. & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management* 40 (5): 1297 – 1333.
- Ansoff, H.I. (1965). *Corporate strategy: an analytic approach to business policy for growth and expansion*. New York: McGraw-Hill.
- Antolin-Lopez, R., Martinez-del-Rio, J., Cespedes-Lorente, J. & Perez-Valls, M. (2015). The choice of suitable cooperation partners for product innovation: Differences between new ventures and established companies. *European Management Journal* 33 (6): 472-484.
- Archer, G. R.; Baker, T. & Mauer, R. (2009). Towards an alternative theory of entrepreneurial success: Integrating bricolage, effectuation and improvisation (Summary). *Frontiers of Entrepreneurship Research* 29 (6): Article 4.
- Audretsch, D. B., Coad, A., & Segarra, A. (2014). Firm growth and innovation. *Small Business Economics* 43 (4): 743–749.
- Audretsch, D.B. & Keilbach, M. (2004). Entrepreneurship and regional growth: an evolutionary interpretation. *Journal of Evolutionary Economics* 14 (5): 605–616.
- Audretsch, D.B. & Keilbach, M. (2005). *Entrepreneurship capital – Determinants and impact* (Tech. Rep. No. 4905). CEPR, London.

- Audretsch, D. B., Keilbach, M., & Lehmann, E. E. (2006). *Entrepreneurship and economic growth*. Oxford: Oxford University Press.
- Autio, E. (2009). The Finnish paradox: The curious absence of high growth entrepreneurship in Finland. *ETLA Discussion Paper*, No. 1197.
- Bagozzi, R., Yi, Y., & Phillips, L. (1991). Assessing Construct Validity in Organizational research. *Administrative Science Quarterly* 36 (3): 421–458.
- Baird, I. & Thomas, H. (1985). Toward a contingency model of strategic risk taking. *Academy of Management Review* 10 (2): 230-243.
- Baker T., Miner A. & Teesley, D. (2003). Improvising firms: bricolage, account giving and improvisational competencies in the founding process. *Research Policy* 32 (2): 255-276.
- Baker T. & Nelson, R.E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly* 50 (3): 329-366.
- Baldwin, J. & Gellatly, G. (2003). *Innovation Strategies and performance in Small Firms*. Cheltenham, Elgar.
- Barba-Navaretti, G., Castellani, D., & Pieri, F. (2014). Age and firm growth: evidence from three European countries. *Small Business Economics* 43 (4): 823–837.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology* 51 (6): 1173-1182.
- Barringer, B.R., Jones, F.F. & Neubaum, D.O. (2005). A Quantitative content analysis of the characteristics of Rapid-growth firms and their founders. *Journal of Business Venturing* 20 (5): 663-687.
- Bartram, S.M., Brown, G.W. & Jennifer Conrad, J. (2011). The effects of derivatives on firm risk and value. *Journal of Financial and Quantitative analysis* 46 (4): 967-999.
- Baum, J. A. C., Calabrese, T., & Silverman, B. S. (2000). Don't go it alone: alliance network composition and startups' performance in Canadian biotechnology. *Strategic Management Journal* 21 (3): 267-294.
- Baumol, W.J. (1990). Entrepreneurship: productive, unproductive and destructive. *Journal of Political Economy* 98 (5/1): 893–921.
- Baumol, W.J. (2002). *The free-market innovation machine: analyzing the growth miracle of capitalism*. Princeton University Press, Princeton, NJ.
- Berends, H., Jelinek, M., Reymen, I. & Stultiëns, R. (2014). Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation. *Journal of Product Innovation Management* 31 (3): 616-635.

- Blazenko, G.W. & Fu, Y. (2013). Value versus growth in dynamic equity investing. *Managerial Finance* 39, (3): 272-305.
- Blumentritt, T., Kickul, J. & Gundry, L.K. (2005). Effects of involvement on venture performance and innovation. *The International Journal of Entrepreneurship and Innovation* 6 (2), 77-84.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods and Research* 17 (3): 303-316.
- Bolwijn, P.T. & Kumpe, T. (1990). Manufacturing in the 1990s—Productivity, flexibility and innovation. *Long Range Planning* 23 (4), 44-57.
- Braunerhjelm, P., Acs, Z. J., Audretsch, D. B., & Carlsson, B. (2009). The missing link: knowledge diffusion and entrepreneurship in endogenous growth. *Small Business Economics* 34 (2): 105-125.
- Brettel, M., Mauer, R, Engelen, A. & Küpper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing* 27 (1): 167-184.
- Browne, M.W. & Cudeck, R., (1993). Alternative ways of assessing model fit. In: Bollen, K.A., Long, J.S. (Eds.), *Testing Structural Equation Models*. Sage, Newbury Park, 136-162.
- Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods* 1 (1): 8-22.
- Busenitz, L.W., Gomez, C. & Spencer, J.W. (2000). Country institutional profiles: unlocking entrepreneurial phenomena. *Academy of Management Journal* 43 (5): 994-1003.
- Bygrave, W.D. (2006). The entrepreneurship paradigm (I) revisited, in Neergaard, Helle and Ulhøi, John Parm (Eds.): *Handbook of Qualitative Research Methods in Entrepreneurship* 17-48, Elgar, Cheltenham.
- Byrne, B.M., (2001). *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming*. Lawrence Erlbaum Associates, New Jersey.
- Cabral, L. (1995). Sunk costs, firm size and firm growth. *Journal of Industrial Economics* 43 (2): 161-172.
- Cameron, R. (2011). Mixed methods research: The five Ps framework. *The Electronic Journal of Business Research Methods* 9 (2): 96-108.
- Chandler, G., DeTienne, D., McKelvie, A. & Mumford, T. (2011). Causation and effectuation processes: a validation study. *Journal of Business Venturing* 26 (3): 375-390.
- Chesbrough, H. (2003). *Open Innovation: The new imperative for creating and profiting from technology*. Boston, Harvard Business School Publishing Corporation.

- Coad, A., Daunfeldt, S.O. & Halvarsson, D. (2018). Bursting into life: firm growth and growth persistence by age. *Small Business Economics* 50 (1): 55-75.
- Coad, A., Frankish, J. S., Roberts, R. G., & Storey, D. J. (2016). Predicting new venture survival and growth: does the fog lift? *Small Business Economics* 47 (1): 217–241.
- Coad, A. & Rao, R. (2008). Innovation and firm growth in high-tech sectors: A Quantile Regression Approach. *Research Policy* 37 (4): 633–648.
- Cole, A. H. (1959). *Business enterprise in its social setting*. Cambridge, MA: Harvard University Press.
- Cooke, P., Asheim, B., Boschma, R., Martin, R., Schwartz, D. & Tödting, F. (Eds.). (2011). *Handbook of regional innovation and growth*. Cheltenham: Edward Elgar.
- Cope, J. (2005). Towards a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice* 29 (4): 373–397.
- Coviello, N.E. & Joseph, R.M. (2012). Creating major innovations with customers: Insights from small and young technology firms. *Journal of Marketing* 76 (6): 87–104.
- Covin, J., G. & Slevin, D., P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal* 10 (1): 75-87.
- Covin, J., G. & Slevin, D., P. (1990). New venture strategic posture, structure, and performance: an industry life cycle analysis. *Journal of Business Venturing* 5 (2): 123-35.
- Covin, J., G. & Slevin, D., P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice* 16 (1): 7-25.
- Covin, J., G., Slevin, D., P. & Schultz, R., L. (1994). Implementing strategic missions: effective strategic, structural, and tactical choices. *Journal of Management Studies* 31 (4): 471-503.
- Covin, J., G., Green, K., M., & Slevin, D., P. (2006). Strategic process effects on the EO - sales growth rate relationship. *Entrepreneurship Theory and Practice* 30 (1): 57-81.
- Covin, J., G. & Wales, W. (2012). The measurement of EO. *Entrepreneurship Theory and Practice* 36 (4): 677-702.
- Creswell, J. W. (2003). *Research design qualitative, quantitative and mixed methods approaches*, 2nd edition, California, Sage Publications.
- Davidsson, P. (2003). The domain of entrepreneurship research: some suggestions in cognitive approaches to entrepreneurship research, edited by J. A. Katz and D. A. Shepherd, 315–372. Oxford: Elsevier Science.
- Davidsson, P., Achtenhagen, L. & Naldi, L. (2007). *Research on Small Firm Growth: A Review*. Available 9. January 2018 at

http://eprints.qut.edu.au/2072/1/EISB_version_Research_on_small_firm_growth.pdf

Davidsson P. & Delmar, F. (2006). High-growth firms and their contribution to employment: The case of Sweden 1987–96. In P. Davidsson, F. Delmar, and J. Wiklund (Eds.), *Entrepreneurship and the growth of firms* (pp. 156–174). Cheltenham, UK: Edward Elgar.

Davidsson, P. & Wiklund, J. (2000). Conceptual and empirical challenges in the study of firm growth. In D. Sexton, H. Landström (Eds.), *The Blackwell handbook of entrepreneurship* (pp. 26–44). Oxford, MA: Blackwell.

Davidsson, P. & Wiklund, J. (2002). Conceptual and Empirical Challenges in the Study of Firm Growth. *The Blackwell Handbook of Entrepreneurship*, 26-44. Blackwell Publishing, Nova South Eastern University.

Deakins, D. & Freel, M. (1998). Entrepreneurial learning and the growth process in SMEs. *The Learning Organization* 5 (3): 144–155.

Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2014). The role of entrepreneurship in US job creation and economic dynamism. *Journal of Economic Perspectives* 28 (3): 3–24.

Delmar, F. (2000). Measuring growth: Methodological considerations and empirical results. *Entrepreneurship and Small Business Research Institute (ESBRI)*, Stockholm.

Delmar, F., Davidsson, P. & Gartner, W.B. (2003). Arriving at the high-growth firm. *Journal of Business Venturing* 18 (2): 189–216.

Delmar, F. & Wiklund, J. (2008). The effect of small business managers' growth motivation on firm growth: a longitudinal study. *Entrepreneurship, Theory and Practice* 32 (3): 437-457.

De Man, A. P., & Duysters, G. (2005). Collaboration and innovation: a review of the effects of mergers, acquisitions and alliances on innovation. *Technovation*, 25 (12): 1377–1387.

Denzin, N.K. & Lincoln, Y.S., (2005). Paradigmatic controversies, contradictions and emerging confluences. In N.K. Denzin and Y.S. Lincoln (Eds), *Sage handbook of qualitative research* (2nd ed, pp. 191-216) Thousand Oaks CA: Sage.

Dew, N., Read, S., Sarasvathy, S.D. & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: differences between experts and novices. *Journal of business venturing* 24 (4): 287–309.

Dew, N. & Sarasvathy, S. (2007). Innovations, stakeholders, and entrepreneurship. *Journal of Business Ethics* 74 (4): 267–283.

Dew, N., Sarasvathy, S.D., Read, S. & Wiltbank, R. (2008). Immortal firms in mortal markets? *European Journal of Innovation Management* 11 (3): 313–329.

Dimitratos, P., Lioukas, S. & Carter, S. (2004). The relationship between entrepreneurship and international performance: The importance of domestic environment. *International Business Review* 13 (1): 19-21.

Djankov, S., Qian, Y., Roland, G. & Zhuravskaya, E. (2006). Who are China's entrepreneurs? *American Economic Review* 96 (2): 348–352.

Dobson, S., Breslin, D., Suckley, L., Barton, R. & Rodriguez, L. (2013). Small firm survival and innovation, an evolutionary approach. *The International Journal of Entrepreneurship and Innovation* 14 (2), 69-80.

Douglas, E.J. (2013). Reconstructing entrepreneurial intentions to identify predisposition for growth. *Journal of Business Venturing*, 28 (5): 633-651.

Dubois, A. & Gadde, L-E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research* 55 (7): 553-560.

Dutta, D.K., Gwebu K.L. & Wang, J. (2015). Personal innovativeness in technology, related knowledge and experience, and entrepreneurial intentions in emerging technology industries: a process of causation or effectuation? *International Entrepreneurship and Management Journal* 11 (3): 529-555.

Eggers, F., Kraus, S., Hughes, M., Laraway, S. & Snyzerski, S. (2013). Implications of customer and entrepreneurial orientations for SME growth. *Management Decision* 51 (3): 524-546.

Eisenhardt, K.M. & Sull, D.N. (2001). Strategy as simple rules. *Harvard Business Review*,

Erzberger, C., & G. Prein. (1997). Triangulation: Validity and empirically-based hypothesis construction. *Quality & Quantity* 31 (2): 141–154.

Evers, N., & O'gorman, C. (2011). Improvised internationalization in new ventures: The role of prior knowledge and networks. *Entrepreneurship & Regional Development* 23 (7–8): 549–574.

Fairlie, R.W., & Meyer, B.D. (2003). The effect of immigration on native self-employment. *Journal of Labor Economics* 21 (3): 619–650.

Fayolle, A. (2013). Personal views on the future of entrepreneurship education. *Entrepreneurship & Regional Development* 25 (7-8): 692-701.

Field, A. (2000). *Discovering statistics using spss for windows*. London-Thousand Oaks-New Delhi: Sage publications.

Field, A. (2009). *Discovering statistics using SPSS*. London: SAGE.

Fiet, J. O., Norton, W. I. & Van Clouse, G. H. (2013). Search and discovery by repeatedly successful entrepreneurs, *International Small Business Journal* 31 (8): 890–913.

Fiegenbaum, A. & Karnani, A. (1991). Output flexibility: A competitive advantage of small firms, *Strategic Management Journal* 12 (2): 101–114.

- Fischer, E. & Reuber, R. (2011). Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing* 26 (1): 1–18.
- Fisher, G. (2012). “Effectuation, causation, and bricolage: a behavioral comparison of emerging theories in entrepreneurship research”, *Entrepreneurship Theory and Practice* 36 (5): 1019-1051.
- Fritz, M.S. & MacKinnon, D.P. (2007). Required sample size to detect the mediated effect. *Psychological Science* 18, 233-239.
- Edmondson, A. & McManus, S. (2007). Methodological fit in management field research, *Academy of Management Review* 32 (4): 1155-1179.
- Eisenhardt, K.M. & Sull, D.N. (2001). Strategy as simple rules. *Harvard Business Review* 79 (1): 106-116.
- Elbanna, S. (2006). Strategic decisionmaking: Process perspectives. *International Journal of Management Reviews*, 8 (1): 1–20.
- Gabrielsson, P. & Gabrielsson, M. (2013). A dynamic model of growth phases and survival in international business-to-business new ventures: The moderating effect of decision-making logic. *Industrial Marketing Management* 42 (8): 1357–1373.
- Gartner, W.B. (1984). Problems in business startup: the relationships among entrepreneurial skills and problem identification for different types of new ventures. In Hornaday, J.A., Tarpley, F., Timmons, J.A., and Vesper, K.H., eds, *Frontiers of Entrepreneurship Research: Proceedings of the Babson Conference on Entrepreneurship Research*, Babson College, Wellesley, MA, 496–512.
- Gartner, W.B. (1988). "Who is an entrepreneur?" Is the wrong question. *American Journal of Small Business* 12 (4): 11-32.
- Gemmell, R. M., Boland, R. J. & Kolb, D. A. (2012). The socio-cognitive dynamics of entrepreneurial ideation. *Entrepreneurship Theory and Practice* 36 Special Issue 1053–1073.
- George, B.A. & Marino, L. (2011). The epistemology of EO: conceptual formation, modeling and operationalization. *Entrepreneurship Theory and Practice* 35 (5): 989-1024.
- Gherhes, C., Williams, N., Vorley, T. & Vasconcelos, A. (2016). Distinguishing micro- businesses from SMEs: a systematic review of growth constraints. *Journal of Small Business and Enterprise Development* 23 (4): 939-963.
- Gibb, A. (1997). Small firms’ training and competitiveness. Building upon small business as a learning organization. *International Small Business Journal* 15 (3): 13–29.
- Gibb, A. & Ritchie, J. (1982). Understanding the process of starting a small business. *European Small Business journal* 1 (1): 26-45.

Gibb, A. (2000). SME policy, academic research and the growth of ignorance, mythical concepts, myths, assumptions, ritual and confusions. *International Small Business Journal*, 18 (1): 13–35.

Girod-Séville, M. & Perret, V. (2001). Epistemological foundations. In R-A. Thietart (ed.). *Doing management research: A comprehensive guide*. London, UK: Sage.

Grant, A. M., & Pollock, T.G. (2011). Publishing in AMJ—Part 3: Setting the hook. *Academy of Management Journal* 54 (5): 873-879.

Gravetter, F. & Wallnau, L. (2014). *Essentials of statistics for the behavioral sciences*. (8th ed.). Belmont, CA: Wadsworth.

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2014). *Multivariate Data Analysis: Pearson New International Edition*. (7th ed.). Harlow: Pearson Education Limited.

Hakala, H. (2013). Entrepreneurial and learning orientation: effects on growth and profitability in the software sector. *Baltic Journal of Management* 8 (1): 102-118.

Hayes, A. (2009). Beyond Baron and Kenny: statistical mediation analysis in the new millennium. *Communication Monographs* 76 (4): 408-420.

Hamlin, R., Henry, J. & Cuthbert, R. (2012). Acquiring market flexibility via niche portfolios: the case of Fisher and Paykel Appliance Holdings Ltd. *European Journal of Marketing* 46, 1302–1319.

Hall, P. (1995). Habitual owners of small businesses. In Chittenden, F. et al. *small firms: partnership for growth*. London: Paul Chapman publishing.

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics* 95 (2): 347–361.

Hambrick, D. C. & Fredrickson, J. W. (2001). Are you sure you have a strategy? *Academy of Management Executive* 15 (4): 48-59.

Harris, R. G. (2011). Models of regional growth: Past, present and future. *Journal of Economic Surveys* 25 (5): 913–951.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs* 76 (4): 408-420.

Headd, B. & Kirchhoff, B. (2009). The growth, decline and survival of small businesses: an exploratory study of life cycles. *Journal of Small Business Management* 47 (4): 531–550.

Hébert, R.F. & Link, A.N. (2006). The entrepreneur as innovator. *Journal of Technology Transfer* 31 (5): 589-597.

Hellmann, T. (2007). When do employees become entrepreneurs? *Management Science* 53 (6): 919–933.

- Helmersson, H. & Mattsson, J. (2013). Text-analytic measurement of effectuation and causation orientations among small and global business managers. *Quality & Quantity* 47 (6): 3493–3507.
- Henderson, J. & Weiler, S. (2010). Entrepreneurs and job growth: probing the boundaries of time and space. *Economic Development Quarterly* 24 (1): 23-32.
- Holden, M. T. & Lynch, P. (2004). Choosing the appropriate methodology: understanding research philosophy. *The Marketing Review* 4 (4): 397–409.
- Hu, L. & Bentler, P. (1995). Evaluating model fit in R. Hoyle (Ed.), *Structural Equation Modeling: Concepts, Issues, and Applications* (pp. 76–99). Thousand Oaks, CA: Sage Publications.
- Huberman M. & Miles, M. (1994). Data management and analysis methods. In: Denzin N, Lincoln Y, editors. *Handbook of qualitative research*. Thousand Oaks: Sage Publications, 1994.
- Hurley, R.F. & Hult, G.T. (1998). Innovation, market orientation, and organizational learning: An integration and empirical examination. *Journal of Marketing* 62 (3): 42–54.
- James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology* 67 (2): 219–229.
- James, L. R., Demaree, R. G. & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology* 69 (1): 85–98.
- Jiang, Y. & Tornikoski, E. (2018). Perceived uncertainty and behavioral logic: Temporality and unanticipated consequences in the new venture creation process. *Journal of Business Venturing*, IN PRESS
<https://doi.org/10.1016/j.jbusvent.2018.06.002>.
- Johansson, A. & McKelvie, A. (2012). Unpacking the antecedents of effectuation and causation in a corporate context. Paper presented at the Babson College Entrepreneurship Research Conference, Fort Worth, TX.
- Johnson, R. B., Onwuegbuzie, A. J. & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research* 1 (2): 112–133.
- Kalinic, I., Sarasvathy, S. & Forza, C. (2014). Expect the unexpected: Implications of effectual logic on the internationalization process. *International Business Review* 23 (3): 635–647.
- Karlsson, C. & Tavassoli, S. (2016). Innovation strategies of firms: What strategies and why? *Journal of Technology Transfer* 41 (6): 1483-1506.
- Katsuhiko, S. & Hitt, M.A. (2004). Strategic flexibility: Organizational preparedness to reverse ineffective strategic decisions. *Academy of Management Executive* 18 (4): 44–59.

- Kemelgor, B.H. (2002). A comparative analysis of corporate EO between selected firms in the Netherlands and the USA. *Entrepreneurship and Regional Development* 14 (1): 67-87.
- Killen, C.P., Kam, J., Drouin, N. & Petit, Y. (2012). Advancing project and portfolio management research: Applying strategic management theories. *International Journal of Project Management* 30 (5): 525-538.
- Kim, W. C. & R. Mauborgne (2009). How strategy shapes structure. *Harvard Business Review* 87 (9): 72-80.
- Kirzner, I.M. (1973). *Competition and Entrepreneurship*, Chicago, USA, University of Chicago Press.
- Kirzner, I.M. (1979). *Perception, Opportunity, and Profit*. University of Chicago Press, Chicago.
- Kirzner, I.M. (1982). *Uncertainty, Discovery and Human Action: A Study of the Entrepreneurial Profile in the Misesian System. Method, Process and Austrian Economics: Wssays in Honour of Ludwig von Mises, 139-159*. Lexington, Mass D.C. Heath.
- Kirzner, I.M., (1997). Entrepreneurial discovery and the competitive market process: an Austrian approach. *Journal of Economic Literature* 35 (1): 60-85.
- Knight, F.H. (1921). *Risk, Uncertainty and Profit*. Houghton Mifflin, New York.
- Koeller, T.C. & Lechler T.G. (2006) Economic and managerial perspectives on new venture growth: An integrated analysis. *Small Business Economics* 26 (5): 427-437.
- Kohtamäki, M. & Partanen, J. (2016). Co-creating value from knowledge intensive business services in manufacturing firms: The moderating role of relationship learning in supplier-customer interactions. *Journal of Business Research* 69 (7): 2498-2506.
- Kolvereid L. (1992) Growth aspirations among Norwegian entrepreneurs. *Journal of Business Venturing* 7 (3): 209-222.
- Knight, F.H. (1921). *Risk, uncertainty and profit*, Houghton Mifflin, New York.
- Kuhn T. S. (1970). *The structure of scientific revolutions*. Chicago, IL: University of Chicago.
- Lance, C. E., Butts, M. & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say?. *Organizational research methods* 9 (2): 202-220.
- Landström, H., Åström, F. & Harirchi, G. (2015). Innovation and entrepreneurship studies: One or two fields of research? *International Entrepreneurship and Management Journal* 11 (3): 493-509.

- Lange, T. (2012). Job satisfaction and self-employment: autonomy or personality? *Small Business Economics* 38 (2): 165–177.
- Lawless, M. (2014). Age or size? Contributions to job creation. *Small Business Economics* 42 (5): 815–830.
- Lazear, E.P. (2004). Balanced skills and entrepreneurship. *American Economic Review* 94 (2): 208–211.
- Lazear, E.P. (2005). Entrepreneurship. *Journal of Labor Economics* 23 (4): 649–680.
- Leitch, C., Hill, F. & Neergaard, H. (2010). Entrepreneurial and business growth and the Quest for a comprehensive theory: Tilting at windmills? *Entrepreneurship Theory and Practice* 34 (2): 249–260.
- Lévesque, M. & Minniti, M., (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing* 21 (2): 177–194.
- Levie, J. & Lichtenstein B.B. (2010). A terminal assessment of stages theory: introducing a dynamic state approach to entrepreneurship. *Entrepreneurship, Theory and Practice* 34 (2): 317–350.
- Li, Y., Liu, Y. Duan, M. & Li, F. (2008). Entrepreneurial orientation, strategic flexibilities and indigenous firm innovation in transitional China. *International Journal of Technology Management*, 41 (1/2), 223–246.
- Li, Y., Su, Z. & Liu, Y. (2010). Can strategic flexibility help firms profit from product innovation? *Technovation*, 30 (5/6): 300–309.
- Li, Y. & K. Atuahene-Gima. (2001). Product innovation strategy and the performance of new technology ventures in China. *Academy of Management Journal* 44 (6): 1123–1134.
- Liu, Y., Li, Y. & Z. Wei. (2009). How organizational flexibility affects new product development in an uncertain environment: Evidence from China. *International Journal of Production Economics* 120 (1): 18–29.
- Lindell, M. & Brand, C. (1999). Assessing interrater agreement on the job relevance of a test: A Comparison of the CVI, T, rWG(J), and r*WG(J) Indexes. *Journal of Applied Psychology* 84 (4): 640–647.
- Lindell, M., Brandt, C. & Whitney, D. (1999). A revised index of interrater agreement for multi-item ratings of a single target. *Applied Psychological Measurement* 23 (2): 136–146.
- Lingelbach, D., Sriram, V., Mersha, T. & Saffu, K. (2015). The innovation process in emerging economies. An effectuation perspective. *Entrepreneurship and innovation* 16 (1): 5–17.
- Lumpkin, G. & Dess, G. (1996). Clarifying the EO construct and linking it to performance. *Academy of Management Review* 21 (1): 135–172.

- MacKinnon, D.P. , Fritz, M.S., Williams, J. & Lockwood, C.M. (2007). Distribution of the product confidence limits for the indirect effect: Program PRODCLIN. *Behavior Research Methods* 39, 384-389.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods* 7 (1): 83-103.
- MacKinnon, D.P., Lockwood, C.M. & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research* 39, 99-128.
- March, J. (1982). Theories of choice and making decisions. *Society* 20 (1): 29–39.
- March, J. (1991). Exploration and exploitation in organizational learning graduate school of business. Stanford University, CA.
- March, J. & Simon, H. (1958). *Organizations*. Oxford, England: Wiley.
- Matalamäki, M. (2017). Effectuation, an emerging theory of entrepreneurship – towards a mature stage of the development. *Journal of Small Business and Enterprise Development* 24 (4): 928 – 949.
- Matalamäki, M., Vuorinen, T., Varamäki, E. & Sorama, K. (2017). Business growth in established companies – Roles of effectuation and causation. *Journal of Enterprising Culture* 25 (2): 123-148.
- McGrath, R. G. (2001). Exploratory learning, innovative capacity, and managerial oversight. *Academy of Management Journal* 44 (1): 118-131.
- McKelvie, A., Brattström, A. & Wennberg, K. (2017). How young firms achieve growth: reconciling the roles of growth motivation and innovative activities. *Small Business Economics* 49 (2): 273–293.
- McKelvie, A. & Wiklund, J. (2010). Advancing firm growth research: A focus on growth mode instead of growth rate. *Entrepreneurship Theory and Practice* 34 (2): 261-288.
- Michelacci, C. (2003). Low returns in R&D due to the lack of entrepreneurial skills. *The Economic Journal* 113 (484): 207–225.
- Miles, M. B. & Huberman, A. M. (1984). Drawing valid meaning from qualitative data: Toward a shared craft. *Educational Researcher* 13 (5): 20-30.
- Miles, M. B. & Huberman, A. M. (1994), *Qualitative data analysis*, 2nd Edition Thousand Oaks, CA: Sage Publishing.
- Mill, J.S. (1870). *The Principles of Political Economy: With Some of their Applications to Social Philosophy*. D. Appleton and Company, New York.
- Miller, D. (2011); Miller (1983). Revisited: A Reflection on EO research and some suggestions for the Future. *Entrepreneurship Theory and Practice* 35 (6): 873-894.

- Minniti, M. & Bygrave, W. (2001). A dynamic model of entrepreneurial learning. *Entrepreneurship Theory and Practice* 25 (3): 5–16.
- Minniti, M. (2004). Organization alertness an asymmetric information in a Spinn-Glass model. *Journal of Business Venturing* 19 (5): 637-658.
- Minniti, M. (2005). Entrepreneurship and network externalities. *Journal of economical behavior and organization* 57 (1): 1-27.
- Minniti, M., Lévesque, M. (2008). Recent developments in the economics of entrepreneurship. *Journal of Business Venturing* 27 (6): 603–612.
- Mintzberg, H. 1991. Learning 1, planning 0. *Strategic Management Journal* 12 (6): 463-466.
- Mintzberg, H. 1994. *The rise and fall of strategic planning*. New York: Free Press.
- Mintzberg, H. & McHugh, A. (1985). Strategy formation in an adhocracy. *Administrative science quarterly* 30 (2): 160–197.
- Mintzberg, H. (1978). Patterns in strategy formation. *Management science* 24 (9): 934–948.
- Murphy, G. B., Trailer, J. W. & Hill, R. C. (1996). Measuring performance in entrepreneurship research. *Journal of Business Research* 36 (1): 15–23.
- Nadkarni, S., and V. K. Narayanan. (2007). Strategy frames, strategic flexibility and firm performance: The moderating role of industry clockspeed. *Strategic Management Journal* 28 (3): 243–270.
- Nag, R., Hambrick, D.C. & Chen, M-J. (2007). What is strategic management, really? Inductive derivation of a consensus definition of the field. *Strategic Management Journal* 28 (9): 935-955.
- Naldi L. & Davidsson, P. (2014). Entrepreneurial growth: The role of international knowledge acquisition as moderated by firm age. *Journal of Business Venturing* 29 (5): 687–703.
- Neumark, D., Wall, B. & Chang, J. (2010). Do small businesses create more jobs? New evidence from the national establishment time series. National Bureau of Economic Research, Working Paper 13818.
- Nummela, N., Saarenketo, S. & Jokela, P. (2014). Strategic decision-making of a born global: A comparative study from three small open economies. *Management International Review* 54 (4): 527–550.
- OECD 2nd conference of ministers responsible for Small and mediumsized enterprises (SMEs), Promoting entrepreneurship and innovative SMEs in a global economy (2004): Towards a more responsible and inclusive globalization. Istanbul, Turkey, 3-5 June 2004. <http://www.oecd.org/cfe/smes/31919278.pdf>
- OECD. (2005). *Oslo manual: Proposed guidelines for collecting and interpreting technological innovations*. Paris: OECD

Oke, A. (2005). A framework for analyzing manufacturing flexibility. *International Journal of Operations & Production Management* 25 (10), 973–996.

Oke, A. (2007). Innovation types and innovation management practices in service firms. *International Journal of Operations & Production Management* 27, 564–587.

Oke, A. (2013). Linking manufacturing flexibility to innovation performance in manufacturing plants. *International Journal of Production Economics* 143, 242–247.

Onwuegbuzie, A. J., Johnson, R. B., & Collins, K. M. (2009). Call for mixed analysis: A philosophical framework for combining qualitative and quantitative approaches. *International Journal of Multiple Research Approaches* 3 (2): 114-139.

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed method, *Research in The Schools* 13 (1): 48-63.

Onwuegbuzie, A. J., & Leech, N. J. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology* 8 (5): 375-387.

O'Regan, N., Ghobadian, A. & Galleary, D. (2006). In search of the drivers of high growth in manufacturing SMEs. *Technovation* 26 (1): 30–41.

Ortiz-de-Urbina-Criado, M., Guerras-Martin, L.A. & Montoro-Sanchez, A. (2014). The choice of growth method: strategies and resources. *Academia* 27 (1): 30-45.

Ottenbacher, M.C. and Harrington R.J. (2008). New Service development of entrepreneurial innovations in the IT sector, identifying the levers for success. *International Journal of Entrepreneurship and Innovation* 9 (1), 21–31.

Oviatt, B. M., & P. P. McDougall. (2005). Defining international entrepreneurship and modelling the speed of internationalization. *Entrepreneurship Theory and Practice*, 29 (5): 537–54.

Parker, S.C. (2004). *The Economics of Self-employment and Entrepreneurship*. Cambridge University Press, Cambridge, UK.

Parker, S.C. & Robson, M.T. (2004). Explaining international variations in self-employment: Evidence from a panel of OECD countries. *Southern Economic Journal* 71 (2): 287–301.

Pekkola, S., Saunila, M., & Rantanen, H. (2016). Performance measurement system implementation in a turbulent operating environment. *International Journal of Productivity and Performance Management* 65 (7): 947–958.

Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.

Penrose, E.T. (1995). *The Theory of the Growth of the Firm*. 3th ed. New York: Oxford university press.

Perry, C. (1998). Processes of a case study methodology for postgraduate research in marketing. *European Journal of Marketing* 32 (9/10): 785–802.

Perry, J., Chandler, G., & Markova, G. (2012). Entrepreneurial effectuation: A review and suggestions for future research. *The entrepreneurship theory and practice* 36 (4): 837-861.

Politis, D. (2005). The process of entrepreneurial learning: a conceptual framework. *Entrepreneurship Theory and Practice* 29 (4): 399–424.

Porter, M. 1980. *Competitive strategy*. New York: Free Press.

Porter, M.E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal* 12 (1): 95-117.

Prahalad, C.K & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review* 68 (3): 79-91.

Preacher, K.J. & Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments and Computers* 36, 717-731.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods* 40 (3): 879-891.

Rannikko, H., Tornikoski, E., Isaksson, A. & Löfsten, H. (2018). Survival and growth patterns among new technology-based firms: Empirical study of cohort 2006 in Sweden. *Journal of Small Business Management* 00 (00): 00-00. IN PRESS.

Reader, D. & Watkins, D. (2006). The social and collaborative nature of entrepreneurship scholarship: A co-citation and perceptual analysis. *Entrepreneurship Theory & Practice* 30 (3): 417-441.

Reichstein, T., Dahl, M. S., Ebersberger, B., & Jensen, M. B. (2010). The devil dwells in the tails: a quantile regression approach to firm growth. *Journal of Evolutionary Economics* 20 (2): 219–231.

Reymen, I.M., Andries, P., Berends, H., Mauers, R., Stephan, U. & Van Burgh, E. (2015). Understanding dynamics of strategic decision making in venture creation: A process study of effectuation and causation. *Strategic Entrepreneurship Journal* 9 (4): 351–379.

Roach, D., Ryman, J. & Makani, J. (2016). Effectuation, innovation, and performance in SMEs: an empirical study, *European Journal of Innovation Management* 19 (2): 214–238.

Roberts, N. & Stockport, G.J. (2009). Defining strategic flexibility. *Global Journal of Flexible Systems Management* 10, 27–32.

- Rosenbusch, N., Bausch, A., & Galander, A. (2007). The impact of environmental characteristics on firm performance: A meta-analysis. *Academy of Management Proceedings* 2007, 1-6.
- Rossmann, B. G., & Rallis, F. S. (2003). *Learning in the Field: An Introduction to Qualitative Research* (2nd ed.). Thousand Oaks: Sage Publications.
- Sapienza, H.J., Autio, E., George, G. & Zahra, S. (2006). A capabilities perspective on the effects of early internationalization on firm survival and growth. *Academy of Management Review* 31 (4): 914–933.
- Sarasvathy, S. (2001). Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review* 26 (2): 243-263.
- Sarasvathy, S. (2008). *Effectuation – Elements of Entrepreneurial Expertise*. Cheltenham, UK: Edward Elgar.
- Sarasvathy, S. & Venkatamaran, S. (2011). Entrepreneurship as method: open questions for an entrepreneurial future. *Entrepreneurship Theory and Practice* 35 (1): 113–135.
- Saleh, J.H., Mark, G. & Jordan, N.C. (2009). Flexibility: a multi-disciplinary literature review and a research agenda for designing flexible engineering systems. *Journal of Engineering Design* 20, 307–323.
- Sanchez, R. (1995). Strategic flexibility in product competition. *Strategic Management Journal* 6, 35–159.
- Santos-Vijande, M. L. & Álvarez-González, L. I. (2007). Innovativeness and organizational innovation in total quality oriented firms: The moderating role of market turbulence. *Technovation* 27 (9): 514–532.
- Scandura, T.A., & Williams, E.A. (2000). Research methodology in management: Current practices, trends, and implications for future research. *Academy of Management Journal* 43 (6): 1248–1264.
- Schoonhoven C.B. & Romanelli E. (2001). *The Entrepreneurship Dynamic: Origins of Entrepreneurship and the Evolution*. Stanford University Press, Stanford California.
- Schumpeter, J.A. (1934). *The Theory of Economic Development*. London, Oxford University Press.
- Scott, M. & Bruce, R. (1987). Five stages of growth in small business. *Long Range Planning* 20 (3): 45-52.
- Scozzi, B., Garavelli, C. & Crowston, K. (2005). Methods for modelling and supporting innovation processes in SMEs. *European Journal of Innovation Management* 8 (1): 120–137.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science* 11 (4): 448-469.

- Shane, S. (2003). *A General Theory of Entrepreneurship*. Cheltenham, Edward Elgar.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics* 33 (2): 141-149.
- Shane, S. & Delmar, F. (2004). Planning for the market: Business planning before marketing and the continuation of organizing efforts. *Journal of Business Venturing* 19 (6): 767-785.
- Shane, S. & Venkatamaran, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review* 25 (1): 217-226
- Shepherd, D. & Wiklund, J. (2009). Are we comparing apples with apples or apples with oranges? Appropriateness of knowledge accumulation across growth studies. *Entrepreneurship Theory and Practice* 33 (1): 105-123.
- Singh, D., Oberoi, J.S. & Ahuja, I.S. (2013). An empirical examination of barriers to strategic flexibility in Indian manufacturing industries using analytical hierarchy process. *International Journal of Technology, Policy and Management* 13, 313-327.
- Sitoh, M.K., Pan, S.L., & Yu, C.Y. (2014) Business models and tactics in new product creation: The interplay of effectuation and causation processes. *Transactions on engineering management* 61 (2): 213-224.
- Smallbone, D. & Massey, C. (2012). Targeting for growth: a critical examination. *The International Journal of Entrepreneurship and Innovation* 13 (1), 45-55.
- Smith, M. H., & Smith, D. (2007). Implementing strategically aligned performance measurement in small Firms. *International Journal of Production Economics* 106 (2): 393-408.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation modeling. *Sociological Methodology* 13, 290-312.
- Sobel, M. E. (1986). Some new results on indirect effects and their standard errors in covariance structure models. *Sociological Methodology*, 16, 159-186.
- Sobel, M.E. (1990). Effect analysis and causation in linear structural equation models. *Psychometrika* 55 (3): 495-515.
- Song, M., Wang, T. & Parry, M.E. (2010). Do market information processes improve new venture performance? *Journal of Business Venturing* 25 (6): 556-568.
- Steenhuis, H. J., & de Bruijn, E. J. (2006). Empirical research in OM: three paradigms. In *OM in the New World Uncertainties*. Proceedings of the 17th Annual Conference of POMS, 28 April - 1 May 2006, Boston, USA. Production and Operations Management Society (POMS). January 2018 available <https://research.utwente.nl/en/publications/empirical-research-in-om-three-paradigms>

- Steiger, J. & Lind, J. (1980). Statistically based tests for the number of common factors. Paper presented at the Annual Meeting of the Psychometric Society.
- Stuart, R. & Abetti, P. (1987). Start-up ventures: Towards the prediction of initial success. *Journal of Business Venturing* 2 (3): 215-230.
- Su, Z., Xie, E. & Li, Y. (2009). Organizational slack and firm performance during institutional transitions. *Asia Pacific Journal of Management* 26, 75–91.
- Svensrud, E., & Åsvoll, H. (2012). Innovation in large corporations: A development of the rudimentary theory of effectuation. *Academy of Strategic Management Journal* 11 (1): 59–89.
- Tall, J. (2014). Yrityskauppa ja strateginen uudistuminen, *Acta Wasaensia* 305, Dissertation.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Thousand Oaks, CA: SAGE Publications.
- TenDam, H.W. (1987). Managerial flexibility: a strategic asset. *Leadership and Organization Development Journal* 8, 11–16.
- Timmons, J.A. (1994). *New venture creation: Entrepreneurship in the 21st century*, Irwin.
- Trochim, W. M. & Donnelly, J. P. (2006). *The research methods knowledge base* (3rd ed.). Cincinnati, OH: Atomic Dog.
- Ussman, A., Almeida, A., Ferreira, J. & Mendes, L. (2001). SMES and innovation Perceive barriers and behavioural patterns. *The International Journal of Entrepreneurship and Innovation* 2 (2): 111-118.
- Van de Ven, A.H. & Poole, M.S. (1995) *Organization Change: A Comprehensive Reader*. A Wiley Imprint, San Francisco.
- Van de Ven, A. H., Polley, D., Garud, R., & Venkataraman, S. (1999). *The Innovation Journey*. New York: Oxford University Press.
- Van de Ven, A. H. (2007). *Engaged scholarship: A guide for organizational and social research*. Oxford University Press on Demand.
- Van de Vrande, V., De Jong, J.P., Vanhaverbeke, W. & De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges, *Technovation* 29 (6): 423–437.
- Van Praag, C. M., & Versloot, P. H. (2007). What is the value of entrepreneurship? A review of recent research. *Small Business Economics* 29 (4): 351-382.
- Varamäki, E., Saarakkala, M. & Tornikoski, E. (2007). Kasvuyrittäjyyden olemus ja pk-yritysten kasvustrategiat Etelä-Pohjanmaalla. Seinäjoen ammattikorkeakoulun julkaisusarja A, Tutkimuksia 5.

- Wagner, M. & Zidorn, W. (2017). Effects of extent and diversity of alliancing on innovation: the moderating role of firm newness. *Small Business Economics* 49 (4): 919-936.
- Weick, K.E (1979). *The Social psychology of organizing*. 2d ed. Reading MA: Addison-Wesley.
- Weick, K. E. (1998). Improvisation as a Mindset for Organizational Analysis. *Organization Science* 9 (5): 543-555.
- Weinzimmer, L. G., Nystrom, P. C., & Freeman, S. J. (1998). Measuring organizational growth: Issues, consequences and guidelines. *Journal of Management* 24 (2): 235- 262.
- Welter, C. & Kim, S. (2018). Effectuation under risk and uncertainty: A simulation model. *Journal of Business Venturing* 33 (1): 100–116.
- Welter C., Mauer, R. & Wuebker R. (2016). Bridging behavioral models and theoretical concepts: Effectuation and bricolage in the opportunity creation frameworks. *Strategic Entrepreneurship Journal* 10 (1): 5–20.
- Velu, C. & Jacob, A., (2016). Business model innovation and owner–managers: the moderating role of competition, *R&D Management* 46 (3): 451–463.
- Werhahn, D., Mauer, R., Flatten, T. & Brettel, M. (2015). Validating effectual orientation as strategic direction in the corporate context. *European Management Journal* 33 (5): 305–313.
- Westhead, P., & M. Wright (2000). Introduction. In *Advances in Entrepreneurship*, edited by P. Westhead and M. Wright, xii–xcvi. Cheltenham: Edward Elgar.
- West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review* 51: 355-387.
- Wheaton, B., Muthén, B., Alwin, D. F. & Summers, G. F. (1977). Assessing reliability and stability in panel models. In D. R. Heise (Ed.), *Sociological methodology* (pp. 84–136). San Francisco: Jossey-Bass.
- Wiklund, J., Davidsson, P., Audretsch, D.B. & Karlsson, C. (2011). The Future of Entrepreneurship Research. *Entrepreneurship, Theory and Practice* 35 (1): 1-9.
- Wiklund, J., Patzelt, H., & Shepherd, D.A. (2009). Building an integrative model of small business growth. *Small Business Economics* 32 (4): 351–374.
- Windahl, C. & Lakemond, N. (2010). Integrated Solutions from a Service-centered Perspective: Applicability and Limitations in the Capital Goods Industry. *Industrial Marketing Management* 39 (8): 1278-1290.
- Wiltbank, R., Dew, N., Read, S. & Sarasvathy, S. (2006). What to do next? The case for non-predictive strategy. *Strategic Management Journal* 27 (10): 981–998.
- Yin, R. K. (2009). *Case Study Research: Design and Methods* (4th ed.). Thousand Oaks, CA: Sage Publications.

Zahra, S.A. Sapienza H.J. & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies* 43 (4): 917-955.

Zahra, S.A., Yavuz R. I. & Ucbasaran, D. (2006). How much do you trust me? The dark side of relational trust in new business creation in established companies. *Entrepreneurship Theory and Practice* 30 (4): 541-559.

Zahra, S.A. (1991). Predictors and financial outcomes of corporate entrepreneurship: an exploratory study. *Journal of Business Venturing* 6 (4): 259–285.

Zahra, S.A. & Covin, J.G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing* 10 (1): 43–58.

Zhao, F. (2005). Entrepreneurship and innovation in e-business, an integrative perspective. *The International Journal of Entrepreneurship and Innovation* 6 (1): 53-60.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research* 37 (2): 197-206.

Zhang, Y., Xiaofei Y. & Fengling, M. (2008). A quantitative analysis of the characteristics of rapid-growth firms and their entrepreneurs in China. *Journal of Small Business and Enterprise Development* 15 (4): 675-688.

Zhang, J. (2009). The performance of university spin-offs: An exploratory analysis using venture capita data. *Journal of Technology Transfer* 34 (3): 255-285.

Zhou, J. & Shalley, C. (2003). Research on employee creativity: A critical review and directions for future research. In J. J. Martocchio & G. R. Ferris (Eds.), *Research in personnel and human resources management* 22: 165-217. Oxford, England: Elsevier Science

Articles and essays

[1] Matalamäki M. (2017). Effectuation, an emerging theory of entrepreneurship – toward a mature stage of the development. *Journal of Small Business and Enterprise Development* Vol 24, No. 4, pp. 928 – 949. DOI 10.1108/JSBED-02-2017-0030.

[2] Matalamäki M., Vuorinen T., Varamäki E. and Sorama K. (2017). Business growth in established companies; roles of effectuation and causation. *Journal of Enterprising Culture*, Vol. 25, No. 2, pp. 123-148. DOI: 10.1142/S0218495817500054.

[3] Siltamäki M., Matalamäki M. and Vuorinen, T. (2017). Relationship between growth orientation and innovativeness – The mediating role of causation. Paper presented and published in 2017 RENT Research in Entrepreneurship and Small Business –Conference proceedings in Lund, Sweden, November 2017. ISSN 2219-5572.

[4] Matalamäki M., Siltamäki M. and Vuorinen T. (2017). Innovativeness and business growth in SMEs – The mediating role of strategic flexibility. Under review for *Management Research Review*. Paper presented and published in 2017 International Conference of Small Business ICSB World Conference –proceedings in Buenos Aires, Argentina June, 2017.

Effectuation, an emerging theory of entrepreneurship – towards a mature stage of the development

Journal of Small Business and Enterprise Development Vol 24, No. 4, pp. 928 – 949. DOI 10.1108/JSBED-02-2017-0030.

Marko Juhani Matalamäki, (Department of Management, University of Vaasa, Finland)

Abstract:

The purpose of this paper is to address the stages of development of effectuation theory and highlight the progression from the early years' conceptual articles to the recent empirical papers, characterized by specific, measurable research questions. In total, 81 peer-reviewed academic journal articles featuring effectuation as a main subject were analyzed using Scandura and Williams' (2000) modified version of McGrath's typology of research strategies. The framework of Edmonson and McManus (2007) is employed to evaluate the maturity of the research program. The main outcome is to introduce four main streams linked to effectuation theory in the current scientific dialogue: innovation and product development, internationalization, effectuation and causation simultaneously, and entrepreneurial expertise. The current study is reliant on retrospective data, which might influence the accuracy and completeness of this study, which typically leads to rationalized versions of history-associated causal decision making. This study illustrates why effectuation theory should no longer be associated only with new ventures and startups. The majority of recent studies have presented the results of effectuation logic in the context of established companies. This follow-up review presents evidence that effectuation research has moved on from the nascent to the intermediate stage of development. Furthermore, the results indicate that it has already begun its transition toward the mature stage of development.

Introduction

As interest in entrepreneurship has intensified, so new theoretical perspectives have emerged to explain entrepreneurial behavior (Leitch *et al.*, 2010; Fisher, 2012). Alternative theoretical perspectives on entrepreneurial action, such as effectuation (Saravathy, 2001), entrepreneurial bricolage (Baker and Nelson, 2005), and improvisation (Weick, 1979) suggest that entrepreneurs take various routes to identifying and exploiting opportunities. Effectuation is one of the most-cited emerging theories of entrepreneurship (Fisher, 2012; Perry *et al.*, 2012). However, it has been criticized on the grounds of its slow development progress and the unsatisfactory level of testability associated with it (Arend *et al.*, 2015; Fischer and Reuber, 2011). Scholars evaluating effectuation theory output from 1998 to 2011 would probably find that criticism at least partly justifiable. Perry *et al.*, (2012) however contend that the development of effectuation theory was not noticeably slower than other comparable emerging theories in the field of management. Certainly, over the last five years, 2012–2016, it seems to have developed remarkably quickly.

The main contribution of this study is to introduce four main streams linked to effectuation theory in the current scientific dialogue; 1) innovation and product development, 2) internationalization, 3) effectuation and causation simultaneously, and 4) entrepreneurial expertise. A second contribution arises from presenting evidence that effectuation research has moved on from the nascent to the intermediate stage of development. Furthermore, the results indicate that it has already begun its transition toward the mature stage of development. Third, this study illustrates why effectuation theory should no longer be associated only with new ventures and startups. The majority of recent studies have presented the results of effectuation logic in the context of established companies. Fourth, as a secondary contribution, this study reveals the ongoing and spirited battle between the convergent and divergent groups involved in the scientific debate around effectuation theory.

Perry *et al.*, (2012) evaluated the empirical and field research supporting the conceptual articles on the topic (Edmondson and McManus, 2007), and determined effectuation theory to be at the nascent stage of development, and transitioning toward the intermediate stage. Perry *et al.*, (2012) found 29 articles published between 1998 and 2011 with effectuation as the main topic, only six of which were empirical studies. Their primary explanation for the lack of empirical studies was that no valid measures had been developed. Chandler *et al.*, (2011) developed and validated measurement scales for causation and effectuation, which prompted a substantial change in research. These two prominent papers prompted

many new insights on effectuation theory, which justifies conducting a new literature review. This follow up review comprises two sections; the first part focuses on the roots of effectuation research between 1998–2011. The second part serves as a research methodology piece, concentrating on the years 2012–2016, a period that has witnessed substantial development in the effectuation research.

The roots of effectuation theory (1998–2011)

Sarasvathy (2001) wanted to understand the process of decision making in an uncertain operating environment or in a situation in which the market does not yet exist. Effectuation provides an explanation of why individuals end up building new business activities even when that was not their initial goal when they started their operations. They take risks merely to the extent to which they are prepared to take losses and retain the ability to adapt to changes brought on by the environment. They pursue new business opportunities arising from the pertinent changes and learn by doing (Sarasvathy, 2001; 2008).

Effectuation logic is reported to flourish in an unstable operating environment that is difficult to predict, as it allows swift reactions to changes in the environment (Sarasvathy and Dew, 2005). Continuous learning is also a significant part of effectuation logic, as changes in the operating environment also require the company to change and learn new operating methods to respond to changing situations (Sarasvathy, 2001). The causational school, which is perhaps better known as the rational planning school, is among the oldest in the strategic management field, and reflects widely cited theories such as those propounded by Ansoff (1965) and Porter (1980) emphasizing the importance of systematic analysis and integrative planning. The importance of comprehensive business planning to firm development and profitability (strategic planning) was particularly closely researched in the last two decades of the twentieth century (Armstrong, 1982, 1986; Boyd, 1991; Pearce *et al.*, 1987). Causation also has similarities to the discovery approach (Alvarez and Barney, 2007) and the classic approach (Shah and Tripsas, 2007).

Effectuation is based on the models by Knight (1921), Weick (1979), March (1982, 1991), March and Simon (1958), and Mintzberg (1978) and Mintzberg and McHugh (1985), which question decision making founded on systematic planning. While effectuation is at its best in an unpredictable environment, causation is relevant in an easily predictable operating environment. It does not work particularly well in a turbulent operating environment and in a process necessitating constant change (Sarasvathy, 2001; 2008; Sarasvathy and Dew,

2005). Between 1998 and 2011, the mainstream literature consisted of conceptual articles representing effectuation as a new paradigm. Most addressed the core definitional research questions of effectuation, such as those investigating how firms are created (Sarasvathy, 2001), what is effectuation (Dew and Sarasvathy, 2002), how entrepreneurial opportunities come into being (Sarasvathy and Dew, 2005), how entrepreneurs act in uncertain situations (Wiltbank *et al.*, 2006), how entrepreneurs behave before establishing a company, and how entrepreneurs successfully create companies (Dew *et al.*, 2009). The contribution of the debate is described as presenting and defining the concept of effectuation and contrasting it to causation (Perry *et al.*, 2012).

Effectuation theory has many supporters, like Fisher, (2012), who believes that it is one of the few viable alternative theoretical perspectives describing entrepreneurial action, and Coviello and Joseph (2012), who see effectuation as an explanation of successful new product development. There are also divergent research directions, like that of Fischer and Reuber, (2011:15) who state that scholars have identified only one variable for justifying the use of the effectuation process; that being expertise. Empirical results support the theory proposed by Sarasvathy, (2008) according to which experienced entrepreneurs are more likely to use effectuation than inexperienced entrepreneurs (Dew *et al.*, 2009; Fiet *et al.*, 2012; Sarasvathy, 2008). Some scholars argue that effectuation has yet to be properly tested (Arend *et al.*, 2015; Fischer and Reuber, 2011). The tendency to over-trust was brought up by Goel and Karri, (2006) and Karri and Goel, (2008); Chiles *et al.*, (2007) find effectuation undefined and not entirely original; while Chiles *et al.*, (2008) claim that effectuation is based on a Lachmannian view of institutions; and Baron, (2009) argues that the basic principles described in effectuation cannot actually exist. Sarasvathy and Dew, (2008) have frequently participated in these debates.

Perry *et al.*, (2012) address criticism of the slow development of effectuation theory with a comparative analysis of three other fields of management theory: *upper echelons theory*, *the resource based view of the firm*, and *the punctuated equilibrium model of organization change*. Their findings indicate that theory development for effectuation follows the expected pattern and is not slower than for these other theories. Paradigm shifts are perceived slower in fields where there is less consensus regarding accepted paradigms, theories, and models (Pfeffer, 1993). Novel ideas will be relatively slow to emerge in these fields, because the theory, concepts, and constructs must be sufficiently understood before they can be measured and tested (Perry *et al.*, 2012, p.840).

When summarizing the early empirical effectuation articles, many experimental papers examine how entrepreneurs process risks and returns compared to how non-entrepreneurs do so (Dew *et al.*, 2009; Sarasvathy and Dew, 2005) and how the two groups vary in their use of effectual and causal logic. Wiltbank *et al.*, (2006) examined how entrepreneurs predict or influence an uncertain future. Dew *et al.*, (2009) examined whether experienced entrepreneurs use effectuation more often than novice entrepreneurs. Read *et al.*, (2009) use a qualitative study to test whether there is a positive relationship between effectuation and new venture performance. Wiltbank *et al.*, (2009) examine how investors emphasize prediction (causation) or control (effectuation) in relation to their past investment success.

Perry *et al.*, (2012) conclude that the existing literature does not provide clear and precise information about the phenomenon. One reason suggested is that the sample sizes of the qualitative studies (and even of the quantitative ones) are too small. Perry *et al.*, (2012) make a significant contribution by suggesting the appropriate research questions, describing the datatype to be collected and providing clear guidelines for data analysis methods. Perry *et al.*, (2012) discovered 29 articles published between 1998 and 2011 with effectuation as a main topic. Only six of those articles were empirical studies, four were based on qualitative data, and the other two were quantitative studies. The primary proposition for the lack of quantitative studies was that no valid measures had been developed.

Chandler *et al.*, (2011) introduced and tested the first measurement scales of effectuation and causation. They proposed that effectuation is a construct with three associated subdimensions (experimentation, affordable loss, and flexibility) and one dimension shared with the causation construct (pre-commitment). Since Chandler *et al.*, (2011), the research on effectuation has intensified and moved on from conceptual papers to field studies and therefore arguably from the nascent to the intermediate phase (Edmondson and McManus, 2007). In the same period, the average sample size used in effectuation research has grown (Read *et al.*, 2016: 529). With its 87 citations in just five years, Chandler *et al.*, (2011) appears ground breaking in the development of effectuation theory.

Research methodology (follow up review)

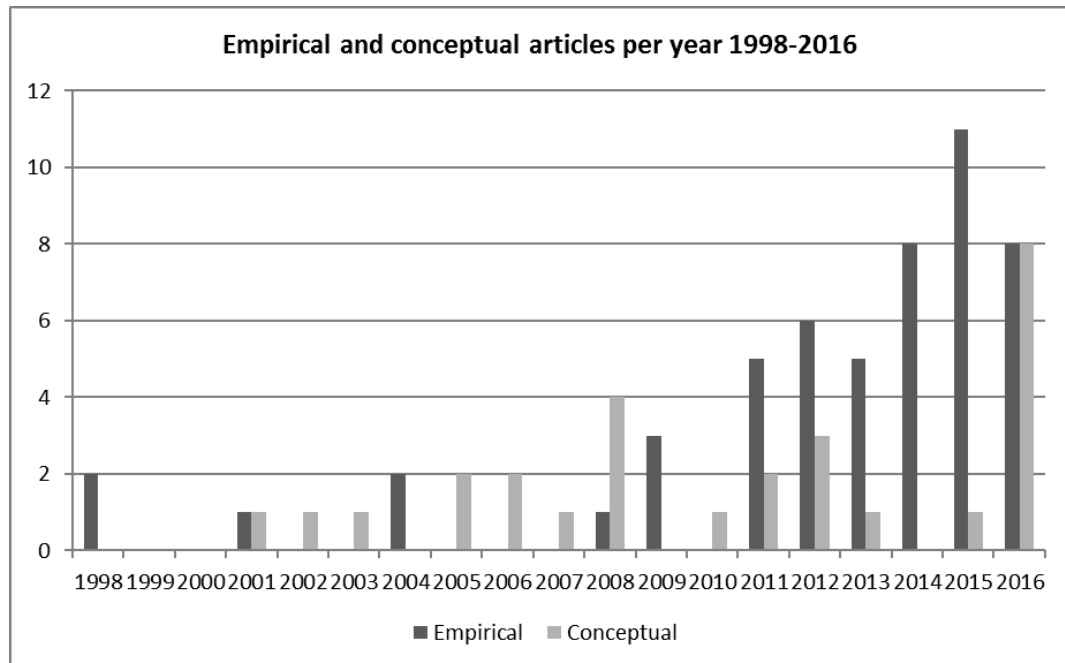
The first step in the current study was to conduct an extensive literature review on effectuation from the year 1998 (the publication date of the first paper introducing effectuation theory) to the end of the year 2016. We used the Scopus Elsevier, ABI inform, and EBSCO databases to search for social sciences and humanities articles

from peer-reviewed academic journals included in the Social Science Citation Index (SSCI). That search produced 217 articles. In total 93 articles were found by using the same selection criteria as Perry *et al.*, (2012), where the word effectuation was part of the title, abstract, or keywords, and the article cited Sarasvathy, (2001). After discarding articles that were not focused on effectuation, the list was cut to 81 articles featuring effectuation as a main subject. Identifying the substantial change in the development of the effectuation research from the year 2012 to 2016 encompassed the investigation of papers published during and just before the year 2012 to identify papers that influenced the change.

Data analysis

The articles were analyzed by using Scandura and Williams' (2000) modified version of McGrath's typology of research strategies, which includes a formal theory/literature review, a sample survey, a laboratory experiment, experimental simulation, field study—primary data, field study—secondary data, a field experiment, a judgment task, and computer simulation. The main research questions were captured and the main theoretical contribution recognized and established. For the empirical articles, we collected information about the data source and sample. To evaluate the stage of the development of the theory, the framework of Edmondson and McManus, (2007) was used to achieve comparable results with Perry *et al.*, (2012) who used same framework. It can be stated that an increasing number of articles have been written on effectuation theory since 2012. Perry *et al.*, (2012) found 29 articles written in 14 years, while this study found 52 articles written in just five years when using the same selection criteria. The number of empirical studies, the importance of which was highlighted by Perry *et al.*, (2012), has also increased notably since 2012. Of the 52 total articles, 39 studies were empirical, 25 were qualitative; while a further 14 papers were quantitative. The proportion of conceptual articles had decreased, with only 13 published between 2012 and 2016.

Figure 1. Empirical and conceptual articles per year between 1998 and 2016.



Between 1998 and 2011, the average number of articles published each year was 2.07 (14 years/29 articles). Since 2012, the average number of articles published each year has increased considerably to 10.4 articles (5 years/52 articles). Up until 2011, only two quantitative studies were published, and those appeared in 2009 and 2011. Chandler *et al.*, (2011) introduced the first validated measurement scales of effectuation. Since then, measuring from the beginning of 2012, the number of quantitative studies has risen to 14. When comparing qualitative articles; between 1998 and 2011, 11 qualitative articles were published in the 14 years. Between 2012 and 2016, the number of qualitative articles rose to 24 published articles in five years.

Table 1. Effectuation articles per year, between years 1998-2016.

Year	Conceptual	Qualitative	Quantitative	Total
2016	8	3	5 (1*)	16
2015	1	8	3	12
2014		6	2	8
2013	1	4	2 (1*)	7
2012	3	3	3 (1*)	9
2011	1	4	2	7
2010	1			1
2009		2	1	3
2008	4	1		5
2007	1			1
2006	2			2
2005	2			2
2004		2		2
2003	1			1
2002	1			1
2001	1	1		2
1998		2		2

Total 81

* Three of the articles adopted both qualitative and quantitative methods. These articles were added to the quantitative group, because the quantitative data was seen as the dominant data source.

Main streams of current effectuation research

Perry *et al.* (2012) encouraged scholars to research effectuation in established constructs. Their study set out guidelines for future research and offered suggestions for appropriate data analysis methods. Their specifically tailored proposals steered the theory of effectuation from the nascent to the intermediate stage of theory development. Reviewing the key elements of the literature between 2012 and 2016, using tables to explain the studied data, allows the dominant lines of current effectuation research to be identified. The constructs found can be divided into the following main streams: First, innovation and product development activities in conjunction with effectuation are studied by Brettel *et al.*, (2012). Coviello and Joseph, (2012) explore how firms engage with customers

during new product development. Their findings indicate that successful innovators tend to engage with customers. Svensrud and Åsvoll, (2012) studied the value of effectuation processes in the innovation activity of large companies. This is in line with concepts such as corporate entrepreneurship (Jennings and Lumpkin, 1989; Kuratko *et al.*, 2004) and entrepreneurial orientation (Lumpkin and Dess, 1996). Customers have long been recognized as instrumental to new product development, originally by Penrose, (1959) observing how they provide the inside track to innovation. This is the essence of the original idea of effectuation coined by Sarasvathy, (2001).

The second main stream of study researches internationalization through the theoretical lens of effectuation. Kalinic *et al.*, 2014; Chetty *et al.*, (2015); Fuerst & Zettinig, (2015); and Sitoh *et al.*, (2014) position the concept of effectuation in the context of internationalization. Sarasvathy *et al.*, (2014) integrate the Uppsala model with effectuation theory in an international case company. Harms and Schiele, (2012) found that expert entrepreneurs tend to use the logic of effectuation in their internationalization process. Kalinic *et al.*, (2014) conducted a qualitative study of the internationalization process of five manufacturing SMEs, and found that while “unplanned” internationalization can still involve logical decisions, entrepreneurs tend to follow an effectual rather than a causal logic, and that their decisions might be based on the affordable loss principle rather than on the maximization of expected returns (Kalinic *et al.*, 2014).

Thirdly, empirical studies have found evidence that effectuation and causation logics can work simultaneously in the same organization (Lingelbach *et al.*, 2015; Reymen *et al.*, 2015; Sitoh *et al.*, 2014). This line of research has attracted increasing scholarly attention in recent years. Causation logic ensures that the venture stays focused and predicts what is predictable, while effectuation allows it to respond flexibly to changes in its operating environment (Dew *et al.*, 2011; Dew *et al.* 2009; Sarasvathy, 2008). Berends *et al.*, (2014) reveal an early effectuation logic, which increasingly moved toward causation logic over time, in their multimethod study of product innovation processes in small manufacturing firms. Effectuation and causation are described as generic decision-making mechanisms that can coexist and are configured in specific ways during different phases in the process of new product creation. Different stages of the project call for a greater emphasis on one or other of the processes, but both processes are also used complementarily (Sitoh *et al.*, 2014; Van de Vrande *et al.*, 2009).

Fourthly, entrepreneurial experts, who frame decisions using effectual logic to identify potential markets, pay less attention to predictive information, worry more about making do with the resources to hand to invest only what they could

afford to lose, and value networks of partnerships, while novices use a predictive frame and tend to go by the book (Dew *et al.*, 2009). This line of research has attracted scholars already for 10 years, but it still remains one of the main streams.

One additional, but significant finding is that the majority of the current studies present the logics of effectuation in the context of established companies. Only three studies of established companies were published between 1998 and 2011, while in the last five years, 24 studies were published using data on established companies (e.g. Kalinic *et al.*, 2014; Coviello and Joseph, 2012). One recent progressive research stream extends effectuation logic from the entrepreneurial level to the corporate context (Brettel *et al.*, 2012; Werhahn *et al.*, 2015). Evald and Senderovitz, (2013) studied business development through internal corporate venturing in established companies. The research reveals that small and medium-sized companies' resources are more limited than those of large firms, in that they typically lack some organizational and marketing capabilities, but such firms enjoy greater flexibility than their larger counterparts (Berends *et al.*, 2014; Van de Vrande *et al.*, 2009).

Table 2. Main streams of effectuation research 1998–2016

Main contribution or related construct	1998-2001	2002-2006	2007-2011	2012-2016
Innovation and R&D	0	0	1	6
Internationalization	0	0	1	7
Effectuation, causation simultaneously	0	0	2	3
Expert entrepreneurs	0	2	4	4
Bricolage, improvisation	0	0	1	4
New companies, Startups	0	1	2	4
Scale developing	0	0	1	3
Business growth	0	0	0	3
Entrepreneurial orientation	0	1	0	2
Debate criticism	0	1	3	4
Debate supportive	0	1	0	5
Other support or construct	4	2	2	7
Total	4	8	17	52

New ventures and startups still provide the context for many articles, but the proportion of studies reporting on them has dropped considerably in recent years. Accordingly, studies on new ventures and startups are not viewed as one of the main streams in the current research. Additionally, many other constructs are studied in various contexts; Werhahn *et al.*, (2015) and Mthanti and Urban, (2014) present preliminary insights into a potential relationship among the dimensions of effectual orientation. Many scholars, including Fisher, (2012) bridge two of the most prominent emerging theories of entrepreneurship; effectuation and bricolage. Effectuation has also been studied in the context of entrepreneurship education (Mäkimurto-Koivumaa and Puhakka, 2013) and university spin-offs (Lingelbach *et al.*, 2015; Maine *et al.*, 2015), and the context of young companies and novice entrepreneurs (Daniel *et al.*, 2015; Nielsen and Lassen, 2012).

The ongoing “battle” over effectuation theory

Despite the development of effectuation theory and the research on effectuation and established constructs, there are still diverging perspectives on effectuation theory. Currently, there is an intense debate between a convergent group exemplified by Read *et al.*, (2016); Reuber *et al.*, (2016); Gupta *et al.*, (2016); and Garud and Gehman, (2016) and the diverging group, led by Arend *et al.*, (2015, 2016), constituting a counterforce alliance. This ongoing battle is inspiring and stimulating for the effectuation discourse. Arend *et al.*, (2015; 2016) claim that effectuation remains ineffectual and difficult to test through an independent framework. They propose a 3E theory-assessment framework based on Dubin's, (1969) standards. The framework is based on the natural order of theory building; input, throughput, and output. The modern version is that of Arend *et al.*, (2015) requiring a theory have *experience* (building on existing literature and valid observation), an ability to *explain* (so it is explicit and follows clear laws of interplay, specified boundaries, and properly formulated propositions), and to be *established* (evidenced through empirical testing, theory distribution, and practical implementation). Arend *et al.*, (2015) conclude that effectuation remains underdeveloped and so should be used more judiciously, and that researchers should be wary of following its dictates. Arend *et al.*, (2015) find effectuation quite limited, in that it describes only part of the entrepreneurial function. Despite the critical tone, their study contributes to the ongoing discussion of effectuation by offering a comprehensive theory-assessment framework that seeks to identify the strengths and weaknesses of the accelerating effectuation literature.

The contrasting (convergent) group is led by Read, Sarasvathy, Dew, and Wiltbank, (2016) who seek to disprove Arend *et al.*'s (2015) positivistic notions of

effectuation theory, which Read *et al.*, (2016) see as pragmatic in nature. They also claim that Arend *et al.*, (2015) are not thoroughly familiar with the latest effectuation literature, and introduce a list of 14 effectuation articles not cited by Arend *et al.*, (2015). Reuber *et al.*, (2016) find Arend *et al.*'s (2015) 3E theory inapplicable to effectuation theory because it embodies positivist criteria inappropriate to effectuation's pragmatist stance. Gupta *et al.*, (2016) claim Arend *et al.*, (2015) concentrate mainly on the *second E*, explained-variance, as the only form of theory and ignore the process theoretic research. Garud and Gehman, (2016) criticize Arend *et al.*'s (2015) statement that they provide the first formal assessment of effectuation as a theory, on the grounds that there are many ways to theorize, there cannot be one framework, such as the 3E framework, that constitutes the comprehensive theory of effectuation. Scholars still draw the meaning of theory and the criteria for its evaluation from diverse assumptions (Garud and Gehman, 2016).

This ongoing debate between the convergent and divergent groups is stimulating the scientific dialogue around effectuation theory. In the best case, this debate will be fruitful and raise the theory development of effectuation to the next level. The theory becomes more mature along with accelerating consensus among researchers, when contributions take the form of explicit theoretical models and empirical processes (Edmondson and McManus, 2007). Currently, there are still some dissenting models and processes, which are contradictory, and thus influencing the theory development of effectuation.

Discussion

To summarize the development of effectuation theory, a growing number of scholars are currently engaging in field research, studying real people, and real phenomena in their real surroundings (Edmondson and McManus, 2007, p.1155). Empirical field studies have become the primary form of effectuation research. Chandler *et al.*, (2011) boosted the quantitative study of effectuation by developing survey instruments to distinguish between effectuation and causation decision-making paradigms and research has evolved markedly since. Brettel *et al.*, (2012) differentiate between dependent and independent variables in the effectuation process. They created a survey instrument and developed a two-way measurement scale for effectuation and causation. Their contribution is to acknowledge and examine effectuation performance in the R&D context. Alsos *et al.*, (2016) develop and validate a 10-item measuring instrument, including five items for causation and five items measuring both effectual and causal subdimensions. Arend *et al.*, (2016) propose a 3E theory-assessment framework to evaluate effectuation by

offering critical guidelines for future studies. Each of these frameworks must be evaluated to understand whether these paradigms are appropriate for measuring dimensions of effectuation and causation. As is widely acknowledged, there are many ways to theorize various proceedings, so it is questionable if it is even possible to have one unanimous framework (Garud and Gehman, 2016).

While the effectuation research has intensified and undergone a revival, the number of empirical field studies has increased and the number of conceptual articles has decreased. The framework of Edmondson and McManus (2007) suggests that during the studied period of 2012–2016, the research on effectuation has moved on from the nascent to the intermediate stage of development. Furthermore, our findings suggest that the research has already begun transitioning toward the mature stage. Mature research programs are characterized by focused research questions about existing constructs, using mostly quantitative methods and citing studies that largely support the theory (Edmondson and McManus, 2007). Today effectuation research can be described as implementing rigorous methods to separate real findings from spurious results (Chandler and Lyon, 2001). Empirical research now dominates the research field, but most papers are still using qualitative methods. The year 2016 was the first when there were as many quantitative papers, as qualitative. It cannot be claimed that effectuation research has moved to the mature stage, but the transition toward it is certainly in progress.

Implications

This study has four theoretical implications. First, the study introduces the four main streams strongly linked to effectuation theory in scientific dialogue on current effectuation research; 1) innovation and product development, 2) internationalization, 3) effectuation and causation simultaneously, and 4) entrepreneurial expertise. The first two main streams in particular are evolutionary directions for effectuation researchers. These fresh new directions focus on identifying aspects of effectuation theory that have not yet stabilized. The third stream differs by recognizing that causation and effectuation are dualities rather than dichotomies, thus acknowledging their dynamic nature. The fourth stream claims that experienced entrepreneurs seem to follow certain patterns. Scholars are encouraged to further examine how practitioners adapt these patterns and under what conditions.

Second, the results show, that effectuation research has moved on from the nascent to an intermediate stage of development, and has already taken the first

steps toward the mature stage. Although effectuation may still be a relatively new line in the entrepreneurship research field, criticism based on the slow progression of the theory no longer seems merited. The evidence shows that the theory has developed rapidly in the last five years. Effectuation theory acquires scientific appreciation in the eyes of scholars as a result of the improved testability of the dimensions of the theory. That will mark a step forward for effectuation theory as an alternative explanation to a rational business planning model in the form of the causation logic. This development solidifies the foundation of effectuation theory, which forthcoming effectuation research can build upon.

Third, effectuation theory can not anymore linked to only new ventures and startups, since the majority of the recent effectuation studies have presented the results of effectuation logic in the context of established companies. The first reviews focusing on 1998–2011 find three studies of established companies and six concentrating on new ventures. In the last five years spanning 2012 and 2016, 24 studies were published that focus on established companies, while only 11 focus on new ventures. Hopefully this finding will open new avenues for scholars to implement various proceedings in business studies, concerning effectuation logics in established companies.

Fourth, a bonus finding is the discovery of the ongoing battle between the convergent and divergent groups contributing to the scientific dialogue around effectuation theory. This debate should stimulate other researchers to form their own perspective and contribute to the effectuation literature. The lively debate around the phenomenon certainly makes the theory more attractive.

The findings of this follow up review strengthen the previous literature, which presents effectuation logic as a key strength of small firms. As a general observation, entrepreneurs and owners of companies are encouraged to strengthen their capabilities to develop their processes. Managers and professionals might apply both effectual and causal processes when designing a business model and implementing it. Ventures that use effectuation logics and utilize their resources in order to meet their customers' demands appear to perform better than those that do not. Hopefully this study makes academic research at least a little more applicable to entrepreneurs, business managers, and other practitioners.

References

- Alsos, G.A., Clausen, T.H., Hytti, U. and Solvoll, S. (2016). Entrepreneur's social identity and the preference of causal and effectual behaviours in start-up processes. *Entrepreneurship and Regional Development*, Vol. 28 No 3-4, pp 234–258
- Alvarez, S.A., and Barney, J.B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, Vol 1 No 1-2, pp 11–26.
- Ansoff, H.I. (1965). *Corporate strategy: an analytic approach to business policy for growth and expansion*. New York: McGraw-Hill.
- Arend, R., Sarooghi, H. and Burkemper, A. (2015). Effectuation as ineffectual? Applying the 3E Theory-assessment framework to a proposed new theory of entrepreneurship. *Academy of Management Review*, Vol 40 No 4, pp 630–651.
- Arend, R., Sarooghi, H., and Burkemper, A. (2016). Effectuation, not being pragmatic or process theorizing, remains ineffectual: responding to the commentaries. *Academy of Management Review*, Vol 41 No 3, pp 549–556.
- Armstrong, J.S. (1982). The value of formal planning for strategic decisions: review of empirical research. *Strategic Management Journal*, Vol 3 No 3, pp 197–211.
- Armstrong, J.S. (1986). The value of formal planning for strategic decisions: Reply. *Strategic Management Journal*, Vol 7, pp 183–185.
- Baker T., Nelson, R.E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, Vol 50 No 3, pp. 329–366.
- Baron, R.A. (2009). Effectual versus predictive logics in entrepreneurial decision making: Differences between experts and novices: Does experience in starting new ventures change the way entrepreneurs think? Perhaps, but for now, caution is essential. *Journal of Business Venturing*, Vol 24 No 4, pp 310–315.
- Berends, H., Jelinek, M., Reymen, I., and Stultiëns, R. (2014). Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation. *Journal of Product Innovation Management*, Vol 31 No 3, pp. 616–635.

Boyd, B.K. (1991). Strategic planning and financial performance: a meta-analytic review. *Journal of Management Studies*, Vol 28 No 4, pp 353–374.

Brettel, M., Mauer, R., Engelen, A., and Küpper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing*, Vol 27 No 2, pp 167–184.

Chandler, G.N., and Lyon, D.W. (2001). Issues of research design and construct measurement in entrepreneurship research: The past decade. *Entrepreneurship Theory and Practice*, Vol 25 No 4, pp. 101–113.

Chandler, G., DeTienne, D., McKelvie, A., and Mumford, T. (2011). Causation and effectuation processes: a validation study. *Journal of Business Venturing*, Vol 26 No 3, pp. 375–380.

Chiles, T. H., Bluedorn, A. C., and Gupta, V. K. (2007). Beyond creative destruction and entrepreneurial discovery: A radical Austrian approach to entrepreneurship. *Organization Studies*, Vol 28 No 4, pp. 477–493.

Chiles, T. H., Gupta, V. K., and Bluedorn, A. C. (2008). On Lachmannian and effectual entrepreneurship: A rejoinder to Sarasvathy and Dew. *Organization Studies*, Vol 29 No 2, pp. 247–253.

Chetty, S. Partanen, J, Rasmussen, J., and Servais, P. (2015). Contextualizing case studies in entrepreneurship: A tandem approach to conducting a longitudinal cross-country case study. *International Small Business Journal*, Vol 32 No 7, pp 818–829.

Coviello, N. E., and Joseph, R. M. (2012). Creating major innovations with customers: Insights from small and young technology firms. *Journal of Marketing*, Vol 76 No 6, pp. 87–104.

Daniel, E., Di Domenico, M., and Sharma, S. (2015). Effectuation and home-based online business entrepreneurs. *International Small Business Journal*. Vol 33 No 8, pp 799–823.

Dew, N., Read, S., Sarasvathy, S.D., and Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: differences between experts and novices. *Journal of Business Venturing*, Vol 24 No 4, pp. 287–309.

Dew N, Read S, Sarasvathy S.D., and Wiltbank R. (2011). On the entrepreneurial genesis of new markets: effectual transformations versus causal search. *Journal of Evolutionary Economics*, Vol 21 No 2, pp. 231–253.

- Dew, N., and Sarasvathy, S. (2002). *What effectuation is not: Further development of an alternative to rational choice*. Paper presented at the Annual Meeting of the Academy of Management, Denver, CO.
- Dubin, R. (1969), *Theory building*. Free Press, New York.
- Dutta, D.K., Gwebu, K.L., and Wang, J. (2015). Personal innovativeness in technology, related knowledge and experience, and entrepreneurial intentions in emerging technology industries: a process of causation or effectuation? *International Entrepreneur Management Journal*, Vol 11, pp. 529–555.
- Edmondson, A., and McManus, S. (2007), Methodological fit in management field research. *Academy of Management Review*, Vol 32 No 4, pp 1155–1179.
- Evald, M., and Senderovitz, M. (2013). Exploring internal corporate venturing in SMEs: Effectuation at work in a new context. *Journal of Enterprising Culture*, Vol 21 No 3, pp. 275–299.
- Fiet, J.O., Norton, W.I., and Van Clouse, G.H. (2012). Search and discovery by repeatedly successful entrepreneurs. *International Small Business Journal*, Vol 31 No 8, pp. 890–91.
- Fisher, G. (2012). Effectuation, causation, and bricolage: A behavioral comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory and Practice*, Vol 36 No 5, pp. 1019–1051.
- Fischer, E., and Reuber, R. (2011). Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing*, Vol 26 No 1, pp 1–18.
- Fuerst, S., and Zettinig, P. (2015). Knowledge creation dynamics within the international new venture. *European Business Review*, Vol 27 No 2, pp. 182 – 213.
- Garud, R., and Gehman, J. (2016), Theory evaluation, entrepreneurial processes, and performativity. *Academy of Management Review*, Vol 41 No 3, pp. 544–549.
- Goel, S., and Karri, R. (2006). Entrepreneurs, effectual logic, and over-trust. *Entrepreneurship Theory and Practice*. Vol 30 No 4 pp 477–493.
- Gupta, V., Chiles, T., and McMullen, J. (2016). A process perspective on evaluating and conducting effectual entrepreneurship research. *Academy of Management Review*, Vol 41 No 3, pp. 540–544.

Harms, R., and Schiele, H. (2012). Antecedents and consequences of effectuation and causation in the international new venture creation process. *Journal of International Entrepreneurship*, Vol 10 No 2, pp 95 – 116.

Jennings, D.F., and Lumpkin, J.R. (1989). Functioning modeling corporate entrepreneurship: An empirical integrative analysis. *Journal of Management*, Vol 15 No 3, pp 485–502.

Kalinic, I., Sarasvathy, S., and Forza, C. (2014). Expect the unexpected': Implications of effectual logic on the internationalization process. *International Business Review*, Vol 23 No 3, pp. 635–647.

Karri, R., and Goel, S. (2008). Effectuation and over-trust: Response to Sarasvathy and Dew. *Entrepreneurship Theory and Practice*. Vol 32 No 4, pp 739–748.

Knight, F.H. (1921). *Risk, uncertainty, and profit*. New York: Houghton Mifflin.,

Kuratko, D.F., Hornsby, J.S., and Goldsby, M.G. (2004). Sustaining corporate entrepreneurship: A proposed model of perceived implementation/outcome comparisons at the organizational and individual levels. *International Journal of Entrepreneurship and Innovation*, Vol 5 No 2, pp 77–89.

Leitch, C., Hill, F., and Neergaard, H. (2010). Entrepreneurial and business growth and the quest for a Comprehensive Theory: Tilting at windmills. *Entrepreneurship Theory and Practice*, Vol 34 No 2, pp. 249–260.

Lingelbach, D., Sriram, V., Mersha, T., and Saffu, K. (2015). The innovation process in emerging economies. An effectuation perspective. *Entrepreneurship and Innovation*, Vol 16 No 1, pp. 5–17.

Lumpkin, G., and Dess, G. (1996). Clarifying the EO construct and linking it to performance. *Academy of Management Review*, Vol 21 No 1, pp. 135–172.

Maine, E., Soh, P., and Dos Santos, N. (2015). The role of entrepreneurial decision-making in opportunity creation and recognition. *Technovation*, Vol 39-40, pp 53–72.

March, J. (1982). Theories of choice and making decisions. *Society*, Vol 20, pp. 29–38.

March, J.G., 1991. Exploration and exploitation in organizational learning. *Organization science*, Vol 2 No 1, pp.71–87.

March, J. and Simon, H. (1958). *Organizations*. Oxford, UK: Wiley

Mintzberg, H., and McHugh, A. (1985). Strategy formation in an adhocracy. *Administrative Science Quarterly*, Vol 30 No 2, pp. 160–197.

Mintzberg, H. (1978). Patterns in strategy formation. *Management Science*, Vol 24 No 9, pp. 934–948.

Mthanti, T., and Urban, B. (2014). Effectuation and entrepreneurial orientation in high-technology firms. *Technology Analysis and Strategic Management*, Vol 26 No 2, pp 121–133.

Mäkimurto-Koivumaa, S., and Puhakka, J. (2013). Effectuation and causation in entrepreneurship education. *International Journal of Entrepreneurial Venturing*, Vol 5 No 1, pp 68–83.

Nielsen S., and Lassen, A. (2012). Identity in entrepreneurship effectuation theory: a supplementary framework. *International Entrepreneurship and Management Journal*, Vol 8 No 3, pp 373–389.

Penrose, E. T. (1959). *The theory of the growth of the firm*. Oxford: Basil Blackwell

Pearce, J.A., Freeman, E.B., and Robinson, R.B. (1987). The tenuous link between formal strategic planning and financial performance. *Academy of Management Review*, Vol 12 No 4, pp 658–675.

Perry, J., Chandler, G., and Markova, G. (2012). Entrepreneurial effectuation: A review and suggestions for future research. *Entrepreneurship theory and Practice*, Vol 36 No 4, pp. 837–861.

Pfeffer, J. (1993). Barriers to the advance of organizational science: Paradigm development as an independent variable. *Academy of Management Review*, Vol 18 No 4, pp 599–620.

Porter, M. 1980. *Competitive strategy*. New York: Free Press.

Read, S., and Sarasvathy, S. (2005). Knowing what to do and doing what you know: Effectuation as a form of entrepreneurial expertise. *Journal of Private Equity*, Vol 9 No 1, pp. 45–62.

Read, S., Sarasvathy, SD., Dew, N., and Wiltbank, R. (2016). Response to Arend, Sarooghi, and Burkemper (2015), Cocreating effectual entrepreneurship research. *Academy of Management Review*, Vol 41 No 3, pp. 528–536.

Read, S., Song, M., and Smit, W. (2009). A meta-analytic review of effectuation and venture performance. *Journal of Business Venturing*, Vol 24 No 6, pp 573–587.

Reuber, A. R., Fischer, E., and Coviello, N. (2016). Deepening the dialogue: New directions for the evolution of effectuation theory. *Academy of Management Review*, Vol 41 No 3, pp. 536–540.

Reymen, I.M., Andries, P., Berends, H., Mauers, R., Stephan, U., and Van Burgh, E. (2015). Understanding dynamics of strategic decision making in venture creation: A process study of effectuation and causation. *Strategic Entrepreneurship Journal*, Vol 9 No 4, pp. 351–379.

Sarasvathy, S., Kumar, K., York, J., and Bhagavatula, S. (2014). An Effectual approach to international entrepreneurship: Overlaps, challenges, and provocative possibilities. *Entrepreneurship Theory and Practice* Vol 38, No 1, pp 71–93.

Sarasvathy, S. (2001). Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, Vol 26 No 2, pp. 243–263.

Sarasvathy, S. (2008). *Effectuation – elements of entrepreneurial expertise*. Cheltenham, UK: Edward Elgar.

Sarasvathy, S., and Dew, N. (2005). Entrepreneurial logics for a technology of foolishness. *Scandinavian Journal of Management*, Vol 21 No 4, pp 385–406.

Sarasvathy, S., and Dew, N. (2008). Effectuation and over-trust: Debating Goel and Karri. *Entrepreneurship: Theory and Practice*, Vol 32 No 4, pp. 727–737.

Sarasvathy, S., and Dew, N. (2008). Is Effectuation Lachmannian? A Response to Chiles, Bluedorn, and Gupta, *Organization Studies*, Vol 29 No 2, pp. 239–245.

Scandura, T.A., and Williams, E.A. (2000). Research methodology in management: Current practices, trends, and implications for future research. *Academy of Management Journal*, Vol 43 No 6, pp. 1248–1264.

Shah, S.K., and Tripsas, M. (2007). The accidental entrepreneur: The emergent and collective process of user entrepreneurship. *Strategic Entrepreneurship Journal*, Vol 1 No 1-2, pp 123–140.

Sitoh, M.K., Pan, S.L., and Yu, C.Y. (2014). Business models and tactics in new product creation: The interplay of effectuation and causation processes. *Transactions on engineering management*, Vol 61 No 2, pp. 213-224.

Svensrud, E. and Åsvoll, H. (2012). Innovation in large corporations: A development of the rudimentary theory of effectuation. *Academy of Strategic Management Journal*, Vol 11 No 1, pp 59–89.

Van de Vrande, V., De Jong, J.P., Vanhaverbeke W., and De Rochemont. M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, Vol 29 No 6/7, pp. 423–437.

Weick, K. (1979). *The Social psychology of organizing*, 2nd ed., Addison-Wesley, Reading MA.

Werhahn, D., Mauer, R., Flatten, T., and Brettel, M. (2015). Validating effectual orientation as strategic direction in the corporate context. *European Management Journal*, Vol 33 No 5, pp. 305–313.

Wiltbank, R., Dew, N. Read, S., and Sarasvathy, S. (2006). What to do next? The case for non-predictive strategy. *Strategic Management Journal*, Vol 27 No 10, pp. 981–998.

Wiltbank, R., Read, S., Dew, N., and Sarasvathy, S. (2009). Prediction and control under uncertainty: outcomes in angel investing. *Journal of Business Venturing*, Vol 24 No 2, pp. 116–133.

APPENDICES

Table 3. Effectuation literature review, 1/2012–12/2016.

Article	Method	Objective	Contribution
Garud and Gehman (2016)	Conceptual, debating Arend <i>et al.</i> (2016) Supporting effectuation theory.	To explain there are many ways to theorize. There cannot be one framework, such as the 3E framework constituting the theory of effectuation.	Scholars still draw the meaning of theory and the criteria for its evaluation from diverse assumptions.
Gupta, Chiles, and McMullen (2016)	Conceptual, debating Arend <i>et al.</i> (2016) Supporting effectuation theory.	To address Arend, Sarooghi, and Burkemper's second E explained-variance-as the only form of theory and ignores process theoretic research.	Effectuation may develop more by examining processes and dynamics related to how and why events.
Reuber, Fischer, and Coviello, 2016	Conceptual, debating Arend <i>et al.</i> (2016) Supporting effectuation theory.	Theory development. How effectuation theory might be advanced.	Effectuation research has emphasized creativity, while habit has been underexplored.
Read, Sarasvathy, Dew, and Wiltbank (2016),	Conceptual, debating with Arend <i>et al.</i> (2016) Supporting effectuation theory.	To challenge Arend <i>et al.</i> 's positivistic notions of effectuation theory, which Read <i>et al.</i> see as pragmatic in nature.	Effectuation and different constructs are widely established. Including list of 14 articles, not cited by Arend <i>et al.</i>
Arend, Sarooghi, and Burkemper (2016)	Conceptual. Debating leading researchers of effectuation.	To respond to the commentaries on their (2015) article criticizing effectuation.	Conclusion is that effectuation remains ineffectual.
Alsos, Clausen, Hytti and Solvoll (2016)	Quantitative/Qualitative mixed method study: Interviews with entrepreneurs in six startups.	To examine the relationship between entrepreneurial identity and entrepreneurial behavior (causation, effectuation).	Entrepreneurial identity influences the individual predominantly in effectual or causal behavior.
Ciszewska-Mlinaric, Obloj, and Wasowska (2016)	Qualitative case study, single case.	Identifies the dominant decision-making logic and what influences its changes over time.	Early-stage internationalization ventures may apply effectuation to causation simultaneously.
Hannibal (2016)	Qualitative case study of eight inventor-founders embedded in university spin-off venturing.	To illustrate how academic socialization processes influence the appeal of involvement and the behavioral logics.	Effectuation logics allow inventor-founders to re-use academic identities in the venturing process.
Korsgaard, Anderson, and Gaddefors (2016)	Conceptual, Hudson's diagnosis.	To help researchers, practitioners, etc. to develop entrepreneurial responses to the economic crisis.	An alternative perspective on entrepreneurship is developed: Entrepreneurship as re-sourcing.
Parida, George, Lahti, and Wincent (2016)	Quantitative survey of founders of 104 startups.	To reveal the relationship between the causation or effectuation approach and the likelihood of initial venture sales.	Stronger perception of control increases the initial sales when entrepreneurs adopt a causation approach.
Pattinson (2016)	Qualitative single-case study.	To show how business growth entrepreneurs develop emergent strategies for opportunities.	Strategic thinking and entrepreneurial approaches to opportunity recognition.
Reuber, Fischer, and Coviello (2016)	Conceptual. Debating Arend, Sarooghi and Burkemper.	To contend that effectuation concentrates creativity while a second aspect of pragmatism; habit has been underexplored.	New directions to develop effectuation theory at individual, organizational, and institutional levels.
Roach, D., Ryman, J., and Makani, J. (2016)	Quantitative study: A sample of 169 informants.	To propose a scale suitable for the explication of the effectuation construct relative to innovation.	Innovation orientation and product/service innovation leading to improved firm performance.
Velu and Jacob (2016)	Quantitative survey for 111 trading platforms.	To study the relationship between owner/managers, business model innovation, and competition.	Presence of entrepreneurs as owner/managers positively influences the degree of innovation.
Welter, Mauer and Wuebker (2016)	Conceptual paper.	To contend that opportunity creation, effectuation, and bricolage relate to and complement	Reveals avenues for future research, like development of new theories of opportunity formation.

		each other, but where do they diverge?	
Appelhoff, Mauer, Collewaert and Brettel (2016)	Quantitative study: Survey with a sample of 141 German ventures.	To illustrate a founding team's causal vs. effectual decision style.	Fewer conflicts when following the causal principle of overcoming the unexpected.
Agogu�, Lundqvist and Middleton (2015)	Qualitative case study about how the entrepreneurs perceive their decision making in hindsight.	To explore mindful deviation as decision making by nascent technology entrepreneurs.	Early-stage technology entrepreneurship. How effectual and causal logics occur.
Arend, Sarooghi and Burkemper (2015)	Conceptual, methodological framework. Strong criticism for effectuation theory.	To contend that effectuation lacks empirical testing and critical analysis. To present a critique of effectuation as a theory.	Effectuation is underdeveloped as a new theory. Overlapping with bricolage, improvisation.
Dew, Read, Sarasvathy and Wiltbank (2015)	Quantitative Survey data collection. 412 entrepreneurs.	To understand when expertise matters and how.	Results indicate that entrepreneurial expertise matters in less predictable situations.
Crick and Crick (2015)	Qualitative study: Interviews with 16 managers.	To explore causation and effectuation in internationalization of UK small and medium sized enterprises.	Causation and effectuation logics reveal planned and unplanned aspects of decision making.
Crick and Crick (2015)	Qualitative study: 12 interviews with owner/managers.	To show decision making and learning among owner/managers in comparison to that in growth-oriented firms.	Causation and effectuation were found to exist among owner/managers in nascent stage of company.
Daniel, Di Domenico and Sharma (2015)	Qualitative study: Semi-structured interview for 23 informants.	To reveal how effectual processes are manifested in home-based business domain services.	Effectuation suits an online platform. The affordable loss should be extended to social status.
Dutta, Gwebu, and Wang (2015)	Quantitative study: Survey of 164 students in the USA.	To illustrate that entrepreneurial opportunities are discovered rather than created in emerging technology industries.	Both causation and effectuation principles are evident in emerging technology industries.
Fuerst and Zettinig (2015)	Qualitative study: Dynamics of the knowledge creation process the analysis of the process data.	To present the dynamic process of an international new venture (INV) through the interaction with network partners.	Dynamic model of effectuation and methods qualitative diary research, visual mapping strategy.
Lingelbach, Sriram, Mersha and Saffu (2015)	Qualitative case study: Longitudinal data from 6 innovation cases in one industry and four EEs.	To demonstrate the influence of effectuation and causation on the innovation process in emerging economies.	Combination of effectuation and causation mechanisms is influenced by the context.
Maine, Soh and Dos Santos (2015)	Qualitative study: Longitudinal research, interview data.	To present effectuation and causation as two opposing theories leading to opportunity creation and recognition.	Shift from effectuation to causation; the choice to remain in one particular mode, or adopt a combination mode.
Werhahn, Mauer, Flatten and Brettel (2015),	Quantitative study and two large survey-based studies of German companies.	To examine effectuation from the individual level to the firm level and the entrepreneurial behavior of employees.	Multidimensional scale for measuring effectual orientation. Entrepreneurship in the corporate context.
Yusuf and Sloan (2015)	Qualitative case study: Two case studies. Nonprofit start-up in community development.	To show how effectuation can be used to explain the decision process used by actors in the nonprofit sector.	Effectual decision making is particularly suited to the start-up a social entrepreneurship venture.
Berends, Jelinek, Reymen and Stultiens (2014)	Qualitative multimethod study: a in five small firms across 352 total events.	To examine the role of effectuation theory in product innovation in small firms, via a process research approach.	Analyses revealed early effectuation logic, which increasingly turned toward causation logic.
Crick and Crick (2014)	Qualitative study: Interviews with managers of 16 high-technology manufacturing SMEs.	To examine causation and effectuation in respect of the planned and unplanned nature of internationalization.	Aspects of causation and effectuation logic were evident in planned and unplanned internationalization.
Engel, Dimitrova, Khapova and Elfring (2014)	Quantitative study: survey for randomized 93 business students, no entrepreneurial experience.	Questions whether inexperienced entrepreneurs apply expert decision logic?	Novice entrepreneurs use predictive logic in an attempt to foresee the future, even when it is unpredictable.
Kalinic, Sarasvathy and Forza (2014),	Qualitative study: Five cases in the foreign market.	To reveal that entrepreneurs use effectual rather than causal logic;	Switching from causation to effectuation allows firms to

		decisions are based on the affordable loss principle.	increase the level of commitment.
Mthanti and Urban (2014)	Quantitative study: Survey for 94 high-tech firms using Chandlers (2011) measures.	To show the influence of effectuation on entrepreneurial orientation (EO) and firm performance in transforming environments.	Effectuation theory is connected in the EO–performance relationship in changing environment.
Nummela, Saarenketo, Jokela and Loane (2014)	Qualitative longitudinal study: 3 software companies in three countries, data triangulation.	To investigate the international growth process of born global firms from the perspective of strategic decision making.	Alternating periods of causation- and effectuation-based logics were found.
Sarasvathy, Kumar, York and Bhagavatula (2014)	Qualitative single-case study of an Indian family company.	To present international entrepreneurship (IE) research through the theoretical lens of effectuation.	Integrating the Uppsala model with effectuation theory; effectuation with other constructs.
Sitoh, Pan, and Yu (2014)	Qualitative case study to explore business models and product creation process.	To reveal effectuation and causation are two contrasting approaches to new business development.	Findings suggest the following effectuation and causation can coexist in new product creation.
Evald and Senderovitz (2013)	Mixed methods. Quantitative survey N=153 and Qualitative case study (N=3).	To show how SMEs can engage in business development through internal corporate venturing.	Effectuation logic makes sense, not only in its original venture creation context as suggested by Sarasvathy, but also within established SMEs.
Backes-Gellner and Moog (2013)	Quantitative study: Survey data from a sample of more than 2000 German students.	To show individuals with social skills and contacts are more disposed to become entrepreneurs.	Entrepreneurial individuals use effectuation and bricolage more often than non-entrepreneurs.
Chetty, Ojala and Leppäaho (2013)	Qualitative case study: Multiple case study of software firms from Finland and New Zealand.	To illustrate the role of effectuation in co-creating opportunities when entering foreign markets.	Entrepreneurs interweave effectuation and causation logics in their decision making.
Fiet, Norton, and Clouse (2013)	Qualitative case study: 10 participants who started 47 ventures were interviewed.	To show how to improve search effectiveness. Fiet's model of constrained, systematic search.	Repeatedly successful entrepreneurs, finds support for Fiet's model of systematic search.
Helmersson and Mattsson (2013)	Qualitative case study: PERTEX text analytic method. Using Ward's clustering method.	To investigate the reasons behind company growth.	Low fragmentation levels of sub-components can be linked to effectuation orientation.
Lam, W., Harker, M. (2013)	Qualitative case study: 11-year longitudinal study, 25 firms. Interpretive approach.	To show effectuation and entrepreneurship is neither ends-driven nor means-driven.	Effectuation theory challenges the ends-driven approach and argues for means-driven decisions.
Mäkimurto-Koivumaa and Puhakka (2013)	Conceptual paper.	To show effectuation relates to the process of creating entrepreneurship.	Effectuation could be used systematically together with causation in entrepreneurship education.
Brettel, Mauer, Engelen and Küpper (2012)	Quantitative and qualitative scale-development process in the RandD context, 400 projects.	Study moves effectuation theory from the entrepreneurial context to large companies RandD research.	This study develops a multi-factor measurement model of effectuation and causation.
Coviello and Joseph (2012)	Qualitative case study: 6 innovations were developed by small and young technology firms.	To explore how firms engage with customers during new product development.	Successful innovators tend to engage with customers.
Fisher (2012)	Qualitative case study data. The early development of 6 new ventures. Langley, 1999).	To build bridges between two of the most prominent new theories; effectuation and bricolage.	The behaviors associated with effectuation and bricolage were prevalent in all studied companies.
Harms and Schiele (2012)	Quantitative study: A survey for 65 rapidly growing small and medium enterprises (SMEs).	To investigate the antecedents and consequences of causation and effectuation in the international market entry.	Experienced entrepreneurs tend to apply effectuation rather than causation, while uncertainty does not always influence.
Nielsen and Lassen (2012)	Qualitative study: A narrative study of 10 novice student entrepreneurs.	To present a new framework on identity construction in effectuation theory; constitutes a critique of Sarasvathy (2001).	A more social constructivist view on identity is valuable to support effectuation theory.

Perry, Chandler and Markova (2012)	Review of the effectuation literature between years 2001-2011. Cited Sarasvathy (2001)	To question why is it taking so long for effectuation research to take off, and shows measures that must be developed.	Questions the lack of empirical studies; lack of measures has slowed the development of effectuation.
Politis, Winborg and Lindholm-Dahlstarnd (2012)	Quantitative study: Two surveys, first to 294 respondents, second to 120.	Investigates whether student entrepreneurs differ from other kinds of entrepreneurs.	Student entrepreneurs use a resource logic that favors effectual reasoning.
Read and Sarasvathy (2012)	Conceptual essay.	Revealing independent streams of research; effectuation and service dominant logic.	Effectuation and service dominant logic share a common logic; effectuation offers rationality.
Svensrud, E., Åsvoll, H. (2012)	Conceptual paper.	To investigate effectual innovation in large corporations, socio-dynamic model on the effectual strategies.	Effectuation processes are valuable for innovation in large corporations especially in the early stages of the venture.

Table 4. Effectuation literature review, spanning 1998–2011.

Article	Method	Objective	Contribution
Gabrielsson, J. and Politis, D. (2011)	Quantitative study. A survey with a sample of 291 informants.	To examine the influence of entrepreneurs' career motives on two alternative modes of decision-making logic; causation and effectuation.	Entrepreneurs' who identify themselves with linear or expert career motives have a stronger preference for causation. Those with spiral or transitory motives are more likely to adopt effectuation.
Harmeling, S. (2011)	Review, conceptual paper.	How entrepreneurial contingency helps us to better understand the role of time in the context of management.	We need richer, more inclusive theories of entrepreneurship and management for individuals pursuing their private obsessions.
Evers, N. and O'Gorman, C. (2011)	Qualitative case study research (N=3).	To explore how effectuation and improvisation, might explain internationalization in some new firms.	Improvisation, effectuation, and network bricolage can provide an explanation of internationalization in some new ventures.
Andersson (2011)	Qualitative case study: An explorative case study effectuation alternative to causation.	Early internationalization process and the use of effectuation in decision making.	Effectuation as a tool to create opportunities together with network partners in a born global firm.
Chandler, DeTienne, McKelvie and Mumford (2011)	Qualitative study: 35 semi-structured interviews with entrepreneurs in their start-up processes.	Develop and validate measures of causation and effectuation for new venture creation.	Subdimensions; experimentation, affordable loss, and flexibility, and pre-commitments.
Fischer and Reuber (2011)	Qualitative study: In depth, semi-structured interviews.	Social interaction plays a central role in effectuation; effectuation and social media, including Twitter.	Twitter-based interaction can trigger effectual cognitions.
Sarasvathy and Dew (2011)	Conceptual paper.	This paper critically evaluates some Austrian ideas on the firm, the concept of entrepreneurial judgment.	Effectual logic can leverage entrepreneurial judgment.
Chesbrough, (2010)	Conceptual paper.	Explores the barriers to business model innovation, and cognition in understanding these barriers.	Companies must adopt an effectual attitude toward business model experimentation. Some experiments will fail, but within affordable loss parameters, can be encouraged.

Dew, Read, Sarasvathy and Wiltbank (2009)	Qualitative case study: 27 expert entrepreneurs and 37 novices in creating a new venture.	Experts frame decisions using an effectual logic and pay less attention to predictive information.	Novices use a predictive frame and tend to go by the textbook.
Read, Dew, Sarasvathy, Song and Wiltbank (2009)	Qualitative case study of 27 expert entrepreneurs and 37 MBA students.	Do entrepreneurs use effectuation more often than novices do?	Experts use effectual logics more and causal logics less when making marketing decisions.
Wiltbank, Read, Dew and Sarasvathy (2009)	Quantitative survey of 121 angel investors.	Effectual logic in expert decision-making as opposed to that of novices.	Business angels who emphasize prediction make larger investments than those using non-predictive strategy.
Chiles, Gupta and Bluedorn (2008)	Conceptual article: Critique of Sarasvathy's theory of effectuation.	Lachmannian and effectuation approaches may share more common ground.	Encourage scholars interested in Lachmannian, effectual, and related approaches to explore.
Karri and Sanjay (2008)	Conceptual article: Debating Sarasvathy and Dew (2003).	Refutes that effectuation is based on the trait-based approach.	These assumptions need to be developed further to contribute to theory building in entrepreneurship.
Sarasvathy and Dew (2008)	Conceptual paper: Debate with Karri and Goel.	Goel and Karri are correct in claiming that effectuation supposes over-trust.	Effectuation is based on alternative behavioral assumptions that open research in entrepreneurship.
Sarasvathy and Dew (2008)	Conceptual paper: Debate with Chiles, Bluedorn, and Gupta.	Suggesting that Sarasvathy (2001) is decidedly Lachmannian.	Crucial differences draw upon recent developments in our understanding of how the human mind works.
Sarasvathy, Dew, Read, and Wiltbank (2008)	Qualitative single-case study: Conceptual contribution.	Why an effectual logic of design is necessary at the first interface of the business creation.	Key characteristics: Knightian uncertainty, goal ambiguity and environmental isotropy.
Chiles, Bluedorn and Gupta (2007)	Conceptual paper: Criticism of Sarasvathy and Dew (2003).	Do creative destruction and entrepreneurial discovery explain how entrepreneurs create opportunities?	Lachmannian entrepreneurship differs from creative destruction and entrepreneurial discovery.
Goel, and Karri (2006)	Conceptual paper.	Why do entrepreneurs over-trust?	Effectual logic with entrepreneurial personality makes entrepreneurs susceptible to over-trust.
Wiltbank, Dew, Read and Sarasvathy (2006)	Conceptual paper.	Is effectuation as appropriate not only for new ventures but for established firms as well.	Uncertainty and decision making. Opening speech for effectuation in established companies.
Sarasvathy and Dew (2005)	Experimental study: Verbal protocol analysis.	Do expert entrepreneurs frame decisions using effectual thinking?	Expert entrepreneurs use effectuation logics more often than novices.
Read and Sarasvathy (2005)	Conceptual paper.	Relationship between entrepreneurial expertise and the use of effectual logics.	Sub-constructs relate to entrepreneurial expertise: Use of effectuation and new venture performance.
Harting (2004)	Qualitative case study.	Do established organizations engage in effectuation when pursuing opportunity?	Effectuation is used in the early phase of the new venture and causation in the later phases.
Harmeling, Oberman, Venkatamaram and Stevenson (2004)	Qualitative case study.	Origins of the adverse conditions (e.g., high level of uncertainty) affecting new ventures.	Entrepreneurs use effectual logic in a new venture when uncertainty is high.
Sarasvathy, Dew, Velamuri, and Venkatamaram (2003)	Conceptual paper.	How do entrepreneurial opportunities come into being?	Uncertainty can be managed with effectuation principles: Recognition, discovering, creation.
Dew and Sarasvathy (2002)	Conceptual paper.	What is effectuation?	Effectuation is distinguished from causation: Offers a list of nine things that effectuation is not.
Sarasvathy and Kotha (2001)	Qualitative case study.	Do entrepreneurs use effectuation when faced with Knightian uncertainty?	Entrepreneurs use effectuation logics when faced with Knightian uncertainty.
Sarasvathy (2001)	Conceptual paper.	How are firms created?	Effectuation is presented and contrasted to causation.

Sarasvathy (1998)	Qualitative /experimental study: Verbal protocol analysis of 4 entrepreneurs and 4 bankers.	Effectuation is presented and contrasted to causation.	Entrepreneurs apply more effectuation related behavior and bankers more causation related behavior.
Sarasvathy, Simon and Lave (1998)	Qualitative /experimental study: As with Sarasvathy, (1998).	Similar to Sarasvathy (1998).	Similar to Sarasvathy (1998).

Business Growth in Established Companies; Roles of Effectuation and Causation.

Matalamäki, Marko¹ Vuorinen, Tero² Varamäki, Elina³ Sorama, Kirsti⁴

Journal of Enterprising Culture. Jun2017, Vol. 25 Issue 2, p123-148. DOI:
10.1142/S0218495817500054.

Abstract

This multiple case study illustrates how ten selected industrial companies have managed to accomplish rapid growth after a long period (3–5 years) of slow growth. A particular aim was to determine whether these companies grew by adapting to the situation and responding to the demands of the market with their resources (effectuation) or by following previously determined plans and proceeding towards set goals (causation). Effectuation was originally connected to the creation of new business activities and an operating model covering the early stages of an organization's growth. However, recent studies have considered effectuation in the context of an existing business. This paper adds business growth to the context of established companies and explores the roles of effectuation and causation in their growth processes. The findings indicate the usage of both logics, but in nine of the ten companies' effectuation influences as the dominant approach. Only one of the ten studied companies can be stated to follow the operating principles of causation.

Keywords: effectuation, causation, business growth, established companies

1. Introduction

Business growth constitutes one of the central elements of entrepreneurship research. As interest in entrepreneurship has intensified, new theoretical perspectives have emerged explaining entrepreneurial behaviour (Leitch, Hill and Neergaard, 2010; Fisher, 2012). One of the most cited emerging theories in entrepreneurship is effectuation (Sarasvathy, 2001; Perry, Chandler and Markova, 2011; Fisher, 2012). Effectuation has been strongly connected to the early stages of the creation of an organization and just recently introduced as logic potentially applicable to existing businesses (Berends et al., 2014; Kalinic et al., 2014; Werhahn, Mauer, Flatten and Brettel, 2015). The context of existing companies was neglected in effectuation research for many years, despite that already ten years ago Wiltbank, Dew, Read and Sarasvathy, (2006) first considered the suitability of effectuation logics in existing companies.

This research applies effectuation theory and contrasts it to the traditional approach to entrepreneurship—causation (Sarasvathy, 2001), in the context of established companies, which have had a growth spurt after long period of slow growth. The main objective was to study what had occurred during the growth process and which factors had influenced the growth process. A particular aim was to determine whether companies grew by adapting to the logics of effectuation or by following more traditional, causational traits. There is relatively little previous literature combining a scrutiny of effectuation and business growth. In the literature review, we found seven papers, which had both concepts in the key words or title, but found no studies combining these two concepts in the context of established companies. In a past few years, the literature has focused on combining effectuation and other constructs, like innovation and internationalization. These on the other hand, are widely seen as key sources of economic growth (Dew and Sarasvathy, 2007; Gabrielsson and Gabrielsson, 2013; Helmersson and Mattson, 2013). This research fills the gap in literature by combining effectuation and business growth and adding the context of established companies.

Effectuation and causation differ in at least five respects: 1) The use of available resources versus moving towards a specific goal, 2) controlled risk taking versus targeting maximum profit accompanied by higher risks, 3) building strategic alliances versus competitor analysis, 4) taking advantage of changes in the environment for the organization's benefit versus taking advantage of previously acquired knowledge, and 5) aiming to influence the future versus aiming to predict the future (Sarasvathy, 2008). Chandler et al (2011) developed Sarasvathy's work by outlining four subdimensions; 1) experimentation (focus on short terms experiment to identify opportunities versus prediction of the future, 2) affordable

loss versus maximization of expected returns, 3) emphasis on pre-commitments and strategic alliances to control the future versus competitive analyses to predict the future, and 4) exploitation of the environmental contingencies by remaining flexible versus exploitation pre-existing capabilities and resources (Chandler et al., 2011, 377).

This study has four key contributions. First, we expand the scope of effectuation research from its prior primary focus on new ventures and start-ups to include existing companies as a suitable context. Second, the results indicate, that established companies have the potential to take a growth leap and become growth companies, when using logics of effectuation as their dominant approach. Third, the findings strengthen the previous literature, where effectuation is considered a practical approach in turbulent and unstable business environment. Fourth, we confirm the current knowledge of effectuation literature, where both effectuation and causation are found to be used simultaneously in same organization.

2. Theoretical background

2.1. Effectuation and causation

Effectuation theory assumes the goal of an entrepreneur is not fully known at the beginning of the entrepreneurial process. Instead, the entrepreneur utilizes the resources available to meet the demands of the market in a flexible manner (Sarasvathy, 2001). A good example of effectuation is provided by a metaphor of a chef using whatever ingredients are in the store cupboard to decide which meal to cook, that is, the outcome relies on the available materials. In an alternative version of this activity, the chef has a recipe (plan) which he or she follows by acquiring the ingredients (resources) and using them to achieve the end result, set as the goal of the activity. This approach is called causation (Sarasvathy, 2001; 2008).

Practitioners of effectuation tend to take risks only to an extent matched by the losses they are prepared to sustain, and also ensure they are capable of reacting to changes triggered by the environment. Causal logic prescribes the calculation of expected returns, and the objective will be to maximize expected returns (Brettel et al., 2012).

At the core of causation lies an idea that there is a goal or objective, selected based on strategy, towards which the organization works by acquiring the necessary resources (Sarasvathy, 2001). Some of the resources may be new, while others may

already be available to the organization. The benefits of this approach include the organization being able to provide what the market demand in a cost-effective and timely manner (Sarasvathy, 2001, p. 250; Dew, Read, Sarasvathy and Wiltbank, 2009).

2.2. The development of effectuation theory

Effectuation theory seems to be at a crossroads. According to a main stream of the researchers, the heuristics of effectuation are widely acknowledged (Read, Sarasvathy, Dew, and Wiltbank 2016; Sitoh, Pan and Yu, 2014; Lingelbach et al 2015; Reymen, Andries, Berends, Mauer et al 2015; Dutta, Gwebu and Wang, 2015). Experienced entrepreneurs are more likely to use effectuation than inexperienced entrepreneurs (Sarasvathy, 2008; Dew et al., 2009; Fiet, Norton and Van Clouse, 2012). Experienced entrepreneurs aim to succeed with the available resources and only invest the resources they are willing to lose into a project. Companies using effectuation logic remain adaptable to changes in order to sustain progress in a rapidly changing operating environment (Sarasvathy, 2008; Dew et al., 2009). Some of the criticism concerns the testability of the theory. There are researchers, who argue that effectuation has yet to be properly tested (Arend, Saroogh & Burkemper, 2015). More recently, there have been attempts to develop measurement approaches for effectuation (Chandler *et al.*, 2011; Brettel et al., 2012; Werhahn et al., 2015).

There is a lively debate on the need for entrepreneurial action in large companies (Pongracic, 2009; Schmelter, Mauer, Borsch and Brettel, 2010). Both new and mature companies are needed to take in to consideration when expecting to create business growth. This research aims to highlight, that there is a lot of potential in existing companies. Mature companies are not in the center of the interest of the entrepreneurial discussion, when it comes to business growth. The results of this study indicate that established companies have a lot of potential to become growth companies. Maybe they ought to be in the economical discussion, as well as the new ventures and startups.

2.3. Business growth and effectuation

Literature on small firm growth suggests that little is yet known about the phenomenon, and conceptual development is still modest (Wiklund, Patzfelt and Shepherd, 2009). The research has mainly focused on factors preceding growth,

aiming to provide an explanation for growth using factors related to the entrepreneur and entrepreneurial activities. Both firms and individuals can be entrepreneurial. The focus has been on EO (e.g. Covin and Slevin 1989; Wiklund, 1999), the company and the environment, (e.g. Davidsson, 1989; Audretsch, 1995), the size or the resources of the company, (Connor, 1991; Alvarez and Busenitz, 2001) strategic orientation (Lumpkin and Dess, 1996), or characteristics of the environment (Barney, 1991; Davidsson, Kirchoff, Hatemi and Gustavsson 2002; Storey, 1996).

Three primary research streams can be detected in the research on business growth (McKelvie and Wiklund, 2010). In the first, growth is perceived as an outcome. This stream focuses on studying the factors leading to growth, and growth is perceived as a variable dependent on these factors (Barron, 1999; Batt, 2002; Baum, Locke and Smith, 2001). The second stream is focused on the consequences of growth. In this orientation, growth is considered to be the outcome of changes in the company operations, particularly in decision-making and expertise. Growth is considered to be a variable influencing other variables (Ketchen, Thomas and Snow, 1993; Phelps et al., 2007; Short, Payne and Ketchen, 2008). The third stream focuses on the growth process itself, in which growth is perceived as neither a dependent nor an independent variable, but, instead, the focus is on the growth process that has occurred. This study can be placed in the first initial category proposed by McKelvie and Wiklund (2010); that addressing growth as an outcome. This is scrutinized through the lenses of effectuation and causation to obtain new approaches into the growth of established companies.

3. Methods

3.1. Case selection

Case companies were selected from the Voitto+ database of 6403 companies in Southern Ostrobothnia area in Western Finland. (Finland's most extensive database of financial statements, run by Asiakastieto Ltd). The area was chosen because of the regional funding of the research. The companies' financial statements were investigated to identify those that had after three years of moderate growth achieved a clear growth spurt of above 30 per cent in their turnover over a period of three years. A high growth firm is a firm with at least 10 employees initially that increases sales turnover by at least 20% per year, over at least three years period (Parker, Storey and Witteloostuijn, 2010).

When the following selection criteria were applied: 1) an industrial company that had operated for at least five years, the list was narrowed in to 1003 companies 2) which employed at least ten employees at the starting point, but not more than 249 employees (this is the Eurostat definition for a small or medium-sized company) we found 182 companies and 3) whose operations had been profitable during this cycle, and the additional criteria, we found 31 companies suitable for target group. The additional criterion meant the likes of construction companies that had managed a large growth spurt in one year due to landing a big contract. These companies were excluded. Initial screening revealed 31 potential companies apparently suited to closer evaluation.

This study is based upon the growth of a firm is based on turnover growth of the firm (Murphy, Trailer and Hill, 1996). From this point on, a further inclusion criterion was set: 5) continued growth. The selected companies had continued growing after a growth spurt, or remain on this higher level. It was decided to constrain the investigation to ten companies initially, and increase the number of informants if the authors felt the saturation point of the information was not achieved. In the event, it was not necessary to expand the number of informants, because the interviews were repeating the same formula.

The number of employees of the studied companies varied from 17 to 77, with the average-size of 44 employees. The annual turnover ranged from two million to eighteen million EUR (see Table 2 on the development of turnover). Four of the ten companies were family-owned. In addition, two of the companies had once been family-owned, but had a change in ownership. Three of the companies represented the metal industry and one operated in the mechanical engineering industry. Only in one of the ten companies had the rapid growth spurt resulted in part from a corporate acquisition. The remaining nine companies had achieved the growth spurt through organic growth.

Industrial manufacturing companies were chosen to investigate companies creating real growth, new jobs, and welfare. Firms operating in the service sector are often criticized of just transferring jobs from a bigger organization to a smaller and leaner unit. Many of these companies grow, but their overall contribution to the welfare of society can be questionable (Haltiwanger, Jarmin and Miranda, 2010; Neumark, Wall and Chang, 2010).

TABLE 1. Turnovers (in thousands of euros) in the studied companies between years 2007–2013. Growth spurt year turnover in bold.

COMPANY	Industry	Established	Number of employees	2009	2010	2011	2012	2013
Case A	Metal industry	1988	17	1 169	2 045 *	2 690	2 450	2 327
Case B	Metal industry	1954	60	9 135	9 750	12 572	15 294	11 651
Case C	Metal industry	2005	39	4 167	5 816	9 553	10 336	9 554
Case D	Mechanical engineering industry	1989	34	2 777	2 610	4 727	3 961	4 168
Case E	Electro technical industry	2003	21	3 100	3 500	4 126	6 634	10 391
Case F	Construction engineering industry	1989	77	10 796	13 698	17 241	17 603	18 512
Case G	Construction engineering industry	2005	75	5 317	6 782	10 369	13 034	16 105
Case H	Construction engineering industry	1982	41	5 442	4 191	5 887	6 204	8 113
Case I	Producer goods industry	2008	29	1 642	2 866	3 876	4 062	10 647
Case J	Sports facility goods	1991	30	11 893	12 024	11 142	11 723	16 200

*Case A; year 2007: 1 136, year 2008: 1 887 thousands of euros.

3.2. Data collection

To get this far, we used multiple data sources; archives and field observation, but the hub of this study is the semi-structured interview and real-time processing by those people experiencing the phenomenon. The unit of analysis of this study is a firm, but narrative analysis of the owners/managers in charge was chosen as the methodological approach in this study. The qualitative data works well with the

selected theory, but also seemed appropriate for the target group of this study, as narratives can help understand these unique processes.

As people relate narratives on their personal experiences, they also weave, mould and fashion their sense of self in the process (Kenny, Whittle and Willmott 2011, p. 27). One major risk of this practice is being too close to the informant, and losing the perspective necessary for theorizing the gathered information (Gioia, Corley and Hamilton, 2012). For further improvement of the quality of our interpretations, we always had a member of our team to adopt an outsider perspective. All the interviewees were company owners or leaders, and in charge of the operations. Before starting the interviews, the interviewers briefly explained the research, secured the interviewees' permission to record their responses, and guaranteed them anonymity. After the data gathering and initial stages of analysis, we begin cycling between data, dimensions, themes and the previous literature to find out, how our findings confront the existing concepts. With a researcher triangulation we worked together to reach agreement about some of the data for arriving at consensual interpretations of the obscure data. This part of the work is characterized by group discussions to reach common understanding among the researchers.

The interviews aimed to isolate the reasons for the growth spurts and the preconditions affecting them. Informants were asked to provide general information on the company and its output and then moved on to investigate research themes described below. The interviewees came from different educational backgrounds and had several years of working experience. The level of education varied from only completing secondary school to completing a university degree. Some of the informants had worked in the same company for their whole career, others in different SMEs, and others in large companies. The interviews were recorded, transcribed, and annotated with a short case history. The unabridged transcriptions of the interviews were used for the final analysis. Once the interviews had been conducted, the case histories for each company were written based on their narratives. The focus was on capturing key decisions made before and during the growth spurt period. The presence of effectual or causal behaviours at each event were thoroughly investigated, compared and cross-checked using the measures introduced by Chandler et al. (2011).

The interviewees were asked to outline in their own words (narrative) the significant events that had occurred in the company during the years of moderate growth prior to the growth spurt, and which factors they thought might have influenced the growth spurt. Subsequently, the interviewer asked questions to elicit certain themes that the interviewee had not raised spontaneously. The

questions were based on the subdimensions of effectuation defined by Chandler *et al.* (2011) were used as the themes of the research interviews. With its 87 citations in only five years period, Chandler *et al.* (2011) can be stated as the most widely acknowledged conceptual framework.

4. Findings

The findings strengthen the previous findings that logics of effectuation seem to suit the studied small and medium-sized companies. That is particularly because such firms tend to have limited resources, a propensity to focus on one or a few projects, and an ability to retain a flexible approach to their business. The study period covered a turbulent time when the entire Eurozone faced extensive changes and dealt with a recession in the years 2009–2013. Nevertheless, this period appears to have been more profitable for companies that successfully reacted to changes in their operating environments and adapted their activities to reflect the situational changes. The ability to do things differently from competitors also emerged in this study. The companies that achieved a growth spurt in this period appeared to have gained a competitive advantage by committing their clients to participate in development work and developing their service processes around industrial products.

4.1. Focus on short terms experiment to identify opportunities versus prediction of the future

Major changes in the companies' operational environment and the difficulty of predicting those changes were highlighted in this study. The majority of the studied companies had prepared a strategy, its practical implementation had proved extremely difficult. Customer-orientation and quickly responding to demand in rapidly changing situations were perceived as methods for pursuing business growth. The majority of the studied companies (7/10) seemed to rely on the resources available at the starting point, that is, they followed the logic of effectuation. In three of the ten companies, the approach used could be said to be proceeding towards the goal, which indicates the use of the logic of causation.

We set out objectives of what we want to be, but the ways to do that were completely turned on their heads. We were supposed to focus on the maintenance industry, but this pretty quickly became project construction... partly due to the clients we had at the time. One thing I've

learned from the world of business is that you should never live by a certain formula, but you always have to live by your client, the client's needs, where the money comes from (Effectuation, case company I)

Small and medium-sized companies' lack the organisational and marketing capabilities of their larger counterparts, but they enjoy greater flexibility (Van de Vrande et al., 2009; Berends et al., 2014).

There was a goal. When the recession started in 2009, our turnover decreased and from that point on the aim was to start searching for where to find growth and the alternatives we thought about were expansion through product development or corporate acquisitions. In that sense we have been goal-oriented, seeking growth all the time and we still continue this. (Causation, Case H)

4.2. *Affordable loss versus aiming at maximization of expected returns*

The concept of high risk taking is extremely difficult to define; for one company, a big investment may not be a risk, while for another company it is. In this study, a high risk level was determined as occurring when the risk could endanger the continuity of the entire company operations. Only one of the companies was identified by its representative as having taken such a risk. In this case, the risk taking can be said to have followed the logic of causation. In contrast, the remaining nine out of the ten companies swore by taking controlled risks, that is, following the logic of effectuation. This correlates with previous research knowledge; entrepreneurial companies tend to take moderate risks, those that will not endanger the operations of the company (Sarasvathy, 2001; Berends et al., 2014).

Well, it's probably been more on the controlled side. Of course, we did make investments of over one million euros last summer. They really are big investments, but when looking at the size of the company, it's still on the controlled side. (Effectuation, case company B)

Case company B's turnover is more than fifteen million EUR, so the one million EUR investment can be considered moderate risk taking, which is associated with effectuation.

Yes, we have been taking risks...of course now that the world hasn't gone the way we thought it would go, that there would be growth, we have now

been more restricted and more careful, so right now we are minimising risks. (From causation towards effectuation, case company G)

Most recent research findings confirm that effectual and causal logics can work simultaneously (Sitoh et al., 2014; Dutta, et al., 2015; Lingelbach, Sriram and Mercha, 2015; Reymen et al., 2015). In this case, the causation oriented case company G adopted a high risk approach in line with its strategy. That risk has materialized and the company has accordingly been forced to change its risk taking approach to a more moderate form, a move reflecting a transition from causation logic towards effectuation.

4.3. Emphasis on pre-commitments and strategic alliances to control the future versus competitive analyses to predict the future, and

Building strategic alliances has been connected to effectuation in previous research, whereas competitor analyses and making choices based on those are a central part of the causation approach. While some of the studied companies did follow and analyze the operations of their competitors, they still focused more on their own activities and enhancing such activities based on feedback obtained from clients, distributors, manufacturers and other stakeholders.

You don't have to be best friends with the competitors, but you do have to get along with them. We have good relationships with our competitors, it is better to know the competition than not to know them. You have to follow the competitors enough to know what they know and can do so that you know where you're going, what's coming and so on. A lot of time you get this information when you build an alliance with them and you get good relationships with suppliers and other stakeholders. (Effectuation, Case company J)

Out of the ten companies, only one had used causal competitor analyses and followed a clear challenger strategy to achieve growth in its operations. This company was facing major economic challenges at the time of the interview. Its chosen strategy had not proven to be the most fruitful in the turbulent situation of a declining market. Indeed, the company operations were being redirected to include building more partnerships, by pursuing procurement cooperation and subcontracting with the firm's main competitor, for example.

The market was and has been fairly focused. In practice there has been one big firm that has been totally dominating the market and that's kind

of the market which our company targeted...Clearly the market has been looking for another worthwhile player. (Causation, Case company G)

In this case, the chosen strategy was clearly to challenge the market leader. Case company G managed to grow, but its strategy has also brought liquidity issues. The general economic conditions have not developed favorably, and the company seems to have been forced to forge an alliance with the market leader. This is indicative of the company's shift towards the effectuation approach, after strong evidence of its use of the causation form.

4.4. Exploitation of the environmental contingencies by remaining flexible versus exploitation pre-existing capabilities and resources

Flexibility is a key strength of small firms (Fiegenbaum and Karnani, 1991), they are relatively unfettered by internal bureaucracy and are often managed by an owner/director who is able to take key decisions quickly and tend to develop strong networks with their customers. The growth in all of the studied companies appears to be based at least to some extent on the utilization of changes in the operating environment. The capability of companies to benefit from changes in their operating environment can be considered one of the main factors explaining the growth spurts. Taking advantage of changes in the environment is an essential part of effectuation theory, and thus supports the idea of effectuation theory as a contributor to the companies' growth processes.

The characteristics of SMEs enable a rapid response to market changes (Chandy and Tellis, 2000; Verhees and Meulenbergh, 2004; Kogut, 1997; Qian and Li, 2003). The size of the studied companies made them easily manageable, and the company owners usually acted as the company's operative management, which allowed decision-making to be less hierarchical than in larger counterparts. It also emerged that the flow of information (e.g. regarding customer feedback) was smooth in the companies, and they were able to quickly respond to feedback on their activities. On the other hand, half of the companies considered the role of previously acquired knowledge and therefore there was evidence of some planned activities having been implemented. The companies particularly attempted to predict future changes in the field, an activity in line with causation theory.

We have a possibility to react quickly. If we hear from the field that something is what is needed, we are going to react to that. There is none of this sort of hierarchy there to make things more difficult. (Effectuation, Case company I)

It doesn't matter if the market is going up or down, there's always a possibility to find new clients. There's just a different reason for it. If we just work away as usual, no one is going to need to change suppliers. If potential clients are doing worse financially, the first thing they are going to do is to search for alternatives. (Effectuation, Case company C)

This study strengthens the findings of previous literature, which show subdimensions of effectuation suit entrepreneurial operating culture of the small and medium sized companies (Dew, Sarasvathy and Wiltbank, 2011; Dew et al 2009; Sarasvathy, 2008). Findings indicate the usage of both logics; effectuation and causation, but effectuation seems to have been the dominant approach in nine of the ten companies. Only one of the companies can be said to have been following the operating principles of causation. Three out of ten companies seemed to implement both effectuation and causation logics simultaneously, responding flexibly to changes in operation environment

TABLE 2. Subdimensions of effectuation and causation and their prevalence in the companies.

(E indicates effectuation as the dominant factor, while C indicates causation).

Approach / Companies	A	B	C	D	E	F	G	H	I	J
Focus on short terms experiment to identify opportunities, E versus goal has been determined to predict the future, C	E	E	E	E	E	E	C	C	C	E
Affordable loss, E versus maximization of expected returns, C	E	E	E	E	E	E	C	E	C	E
Pre-commitments and strategic alliances to control the future, E versus competitor analysis, C	E	E	E	E	E	E	C	E	E	E
Exploitation of the environmental contingencies, E versus exploitation pre-existing capabilities and resources, C	E	E	E	E	E	E	C	E	E	E

Factors explaining such a strong prevalence of effectuation included: the studied companies were entrepreneurial, small and medium-sized, primarily managed by their owners, and had fairly informal decision-making. The timing of this study being 2009–2013 was a further significant factor. This was a period when the business environment was in a turbulent state. The changes in business environment were immensely unpredictable; this explaining factor emerged in a

number of the interviews. The interviewees reported that it was difficult to make long-term plans due to radical changes in the operating environment. They had to be prepared to react to changes in the operational environment and to act in whichever way was required by those changes.

Transition from a product-centered to a client-centered approach was one of the most prevalent findings in this study. The industrial production companies sought a competitive advantage by becoming more customer-oriented. The studied companies listened to the market through feedback acquired from clients and reacted to the changes demanded by the market. The topic of networking emerged in every narrative. For most of the companies, this was a conscious choice and a means to seek competitive advantage in product development, know-how and, for instance, procurement of material. Networking was also perceived as a way to influence the field and its development, and as with transitioning towards service provision, as a means to legislate for the future (Sarasvathy, 2001). Only one interviewee assessed their firm to have taken a risk of such magnitude that it could have negatively affected the company's future operations. The willingness to take risks of such a magnitude is linked to the causation theory in the literature. In contrast, nine out of ten interviewees swore by taking controlled risks, which in turn is an indication of the use of an approach following the logic of effectuation (Sarasvathy, 2001).

5. Implications and limitations

This study expands the scope of effectuation research from its prior primary focus on new ventures and start-ups to include established companies as a suitable context. In doing so, the study has implications that effectuation research and development output needs to be taken to include established companies, which were neglected in effectuation research for many years. Established companies have the potential to take a growth leap and become growth companies, when using logics of effectuation and causation. Second, we strengthen the recent findings that effectuation and causation can work simultaneously in the same company. This observation follows the trend in the current effectuation literature, where both processes are found used complementarily (Sitoh, Pan, and Yu, 2014; Van de Vrande, De Jong, Coviello and Joseph, 2012). Effectuation and causation processes can coexist and that they are configured in specific ways at different phases of company's lifecycle. Third, the findings strengthen the previous literature, where effectuation is considered a practical approach in turbulent and dynamic situations in which it is difficult to predict the future (Sarasvathy, 2001; Fisher, 2012; Dutta et al., 2015). As the companies examined in this study were

small and medium-sized, their size allowed this flexible management. Rapid and straightforward decision-making was also evident; small firms can adapt more readily than bigger firms, which is previously found in literature (Alvarez and Barney, 2005; McMullen and Shepherd, 2006). Fourth, there is relatively little previous literature combining effectuation to business growth. In a systematic literature review we found seven papers, which had both concepts in the key words or title, but found no studies combining an investigation of these two concepts in the context of established companies. We contribute to the effectuation literature by connecting all these elements.

Our study has several managerial implications. First, we highlight that companies which selected a customer-oriented approach seem to have achieved success and growth regardless of the recession in their field of operations. Building strategic alliances and networking emerged as one of the most common factors in the studied companies. Cooperation occurs with clients and suppliers and also with competitors. Second, our study indicates that owner–managers are leveraging new information to connect a new technology with customers so as to deliver a better customer value proposition. Third, the study shows that entrepreneurs' abilities to leverage contingencies arising from new information are critical in promoting business growth. Networking and building strategic alliances were actions that emerged in all of the narratives gathered, and can thus be considered a shared factor in identifying opportunities for business growth.

Like any other study, our research has certain limitations, particularly regarding to the sample and measurements. As a result of re-analyzing the data, we came to the conclusion that mixed methods with quantitative data would provide more generalized information to this phenomenon. Even though, qualitative research should be able to stand on its own, how do we know that we haven't just made up an interesting conclusion of the gathered information? Well we cannot tell that for sure. Qualitative research still suffers the criticism that it does not absolutely justify its contentions and contribution. Skepticism for the qualitative research is engaging in unconventional theorizing on the basis of rather vague evidence. The more systematic approach of data gathering would visualize the phenomenon in a more rigorous way. As a conclusion, the findings of this study support the previous literature, but are to be considered generally weak, due to the lack of transparency and data triangulation (Gioia, Corley and Hamilton, 2012:18).

Acknowledgement

This research project has been funded by the European Social Fund and that support is gratefully acknowledged.

References

- Alsos, G. A., Clausen, T.H. and Solvoll, S., (2014). Towards a better measurement scale of causation and effectuation. Paper presented at Academy of Management Meeting, Philadelphia, PA.
- Alvarez S. and Barney J. (2005). "How do entrepreneurs organize firms under conditions of uncertainty?", *Journal of Management*, Vol. 31 No. 5, pp. 776-793.
- Alvarez, S.A. and Busenitz, L. W. (2001). "The entrepreneurship of resource-based theory", *Journal of Management*, Vol. 27, pp.755-775.
- Ansoff, H.I. (1965). *Corporate strategy: an analytic approach to business policy for growth and expansion*. New York: McGraw-Hill.
- Arend, R., Saroogh, H. and Burkemper, A. (2015). "Effectuation as ineffectual? Applying the 3E Theory assessment framework to a proposed new theory of entrepreneurship", *Academy of Management Review*, Vol. 40 No. 1, pp. 830-851.
- Audretsch, D. B. (1995). "Firm profitability, growth, and innovation", *Review of Industrial Organization*, Vol.10 No.5, pp.579-588.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, Vol 17 (1), pp. 99-120.
- Baron, R. A. (2009). Effectual versus predictive logics in entrepreneurial decision making: Differences between experts and novices: Does experience in starting new ventures change the way entrepreneurs think? Perhaps, but for now, "Caution" is essential. *Journal of Business Venturing*, Vol. 24, (4) pp. 310 -315.
- Barron, D. (1999). "The structuring of organizational populations", *American Sociological Review*, Vol. 64, pp. 421-445.
- Batt, R. (2002). "Managing customer services: Human resource practices, quit rates, and sales growth", *Academy of Management Journal*, Vol. 45, pp. 587-597.
- Baum, R.J., Locke, E.A. and Smith, K.G. (2001). "A multidimensional model of venture growth", *Academy of Management Journal*, Vol. 44, pp. 292-303.
- Berends, H., Jelinek, M., Reymen, I. and Stultiëns, R. (2014). "Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation", *Journal of Product Innovation Management*, Vol. 31 No. 3, pp. 616-635.

- Brettel, M., Mauer, R, Engelen, A. and Küpper, D. (2012). "Corporate effectuation: Entrepreneurial action and its impact on R&D project performance", *Journal of Business Venturing*, Vol. 27, pp. 167-184.
- Brinckmann, J., Grichnik, D. and Kapsa, D. (2010). Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning–performance relationship in small firms. *Journal of Business Venturing*, Vol. 25, pp. 24–40.
- Chandler, G., DeTienne, D., McKelvie, A. and Mumford, T. (2011). "Causation and effectuation processes: a validation study", *Journal of Business Venturing*, Vol. 26, pp. 375-390.
- Chandy, R.K. and G.J. Tellis. (2000). "The incumbent's curse? Incumbency, size, and radical product innovation", *Journal of Marketing*, Vol. 64 No. 3, pp. 1-17.
- Chiles, T.H., Bluedorn, A.C. and Gupta, V.K. (2007). "Beyond creative destruction and entrepreneurial discovery: A radical Austrian approach to entrepreneurship", *Organization Studies*, Vol. 28, pp. 467-493.
- Connor, K. (1991). "A historical comparison of resource-based theory and five schools of thought within industrial organization economics", *Journal of Management*, Vol. 17, pp. 121-154.
- Coviello, N.E. and Joseph, R.M. (2012). "Creating major innovations with customers: Insights from small and young technology firms", *Journal of Marketing*, Vol. 76 No. 6, pp. 87-104.
- Covin, J.G. and Slevin, D.P. (1989). "Strategic management of small firms in hostile and benign environments", *Strategic Management Journal*, Vol. 10, pp.75-87.
- Davidsson, P. (1989). "Entrepreneurship - and after? A study of growth willingness in small firms", *Journal of Business Venturing*, Vol. 4, pp. 211-226.
- Davidsson, P., Kirchhoff, B, Hatemi J,A. and Gustavsson, H., (2002). "Empirical analysis of business growth factors using Swedish data", *Journal of small business management*, Vol. 40 No. 4, pp. 332-349.
- Dew, N., Read, S., Sarasvathy, S.D. and Wiltbank, R. (2009). "Effectual versus predictive logics in entrepreneurial decision-making: differences between experts and novices", *Journal of business venturing*, Vol. 24, pp. 287-309.

- Dew N, Read S, Sarasvathy SD and Wiltbank R. (2011). "On the entrepreneurial genesis of new markets: effectual transformations versus causal search", *Journal of Evolutionary Economics*, Vol. 21 No. 2, pp. 231-253.
- Dew, N. and Sarasvathy, S. (2007). "Innovations, Stakeholders and Entrepreneurship", *Journal of Business Ethics*, Vol. 74, pp. 267-283.
- Dutta, D.K., Gwebu K.L. and Wang, J. (2015). "Personal innovativeness in technology, related knowledge and experience, and entrepreneurial intentions in emerging technology industries: a process of causation or effectuation?", *International Entrepreneur Management Journal*, Vol. 11, pp. 529-555.
- Eisenhardt, K.M. (1989). Building Theories of Case Study Research. *The Academy of Management Review*. Vol. 14, pp. 532-550.
- Fiet, J.O., Norton, W.I. and Van Clouse G.H. (2012). "Search and discovery by repeatedly successful entrepreneurs", *International Small Business Journal*, Vol. 31 No. 8, pp. 890-913.
- Fiegenbaum, A., and Karnani, A. (1991). "Output flexibility: A competitive advantage of small firms", *Strategic Management Journal*, Vol. 12 No. 2, pp. 101- 14.
- Fisher, G. (2012). "Effectuation, causation, and bricolage: a behavioral comparison of emerging theories in entrepreneurship research", *Entrepreneurship Theory and Practice*, Vol. 36 No. 5, pp. 1019-1051.
- Fischer, E. and Reuber, R. (2011). Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing*, 26, pp. 1–18.
- Gabrielsson, P. and Gabrielsson, M. (2013). A dynamic model of growth phases and survival in international business-to-business new ventures: The moderating effect of decision-making logic, *Industrial Marketing Management*, Vol. 42, pp. 1357-1373.
- Gioia. Corley and Hamilton (2012) Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology, *Organizational Research Methods* 16 (1) 15-31.
- Haltiwanger, J. C., Jarmin, R. S. and Miranda, J. (2010). "Who creates jobs? Small versus large versus young", *National Bureau of Economic Research*, Working Paper 16300.

Helmersson, H. and Mattsson, J. (2013). "Text-analytic measurement of effectuation and causation orientations among small and global business managers", *Qualitative and Quantitative research*, Vol. 47, pp. 3493-3507

Jennings, D.F. and Lumpkin, J.R. (1989). "Functioning modeling corporate entrepreneurship: An empirical integrative analysis", *Journal of Management*, Vol. 15 No. 3, pp. 485-502.

Kalinic, I., Sarasvathy, S. and Forza, C. (2014). "Expect the unexpected: Implications of effectual logic on the internationalization process", *International Business Review*, Vol. 23, pp. 635-647.

Kenny, K., Whittle, A., and Willmott, H. (2011). *Understanding Identity and Organizations*. London: SAGE Publications.

Ketchen, D.J., Thomas, J.B. and Snow, C.C. (1993). "Organizational configurations and performance: A comparison of theoretical approaches", *Academy of Management Journal*, Vol. 36, pp. 1278-1313.

Knight, F.H. (1921). *Risk, uncertainty and profit*, Houghton Mifflin, New York.

Kuratko, D. F., Hornsby, J. S. and Goldsby, M. G. (2004). "Sustaining corporate entrepreneurship: A proposed model of perceived implementation/outcome comparisons at the organizational and individual levels", *International Journal of Entrepreneurship and Innovation*, Vol. 5 No. 2, pp. 77-89.

Leitch, C., Hill, F. and Neergaard, H. (2010). "Entrepreneurial and Business Growth and the Quest for a "Comprehensive Theory": Tilting at Windmills", *Entrepreneurship Theory and Practice*, Vol. 34 No. 2, pp. 249-260.

Lingelbach, D., Sriram, V., Mersha, T. and Saffu, K. (2015). "The innovation process in emerging economies. An effectuation perspective", *Entrepreneurship and innovation*, Vol. 16 No. 1, pp. 5-17.

Lumpkin, G. and Dess, G. (1996). "Clarifying the entrepreneurial orientation construct and linking it to performance", *The Academy of Management Research*, Vol. 21 No. 1, pp. 135-172.

March, J. (1982). "Theories of choice and making decisions", *Society*, Vol. 20, pp. 29-39.

March, J. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2 (1), pp 71-87.

- McKelvie, A. and Wiklund, J. (2010). "Advancing firm growth research: a focus on growth mode instead of growth rate", *Entrepreneurship Theory and Practice*, Vol. 34 No. 2, pp. 261-288.
- McMullen, J.S. and Shepherd D.A. (2006). "Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur", *Academy of Management Review*, Vol. 31 (1), pp. 131-152.
- Mintzberg, H. and McHugh, A. (1985). "Strategy formation in an adhocracy", *Administrative Science Quarterly*, Vol. 30, pp. 160-197.
- Mintzberg, H. (1978). "Patterns in strategy formation", *Management Science*, Vol. 24 No. 9, pp. 934-948.
- Murphy, G. B., Trailer, J. W. and Hill, R. C. (1996). Measuring performance in entrepreneurship research, *Journal of Business Research*, Vol. 36, pp. 15-23.
- Neumark, D., Wall, B. and Chang, J. (2010). "Do Small Businesses Create More Jobs? New Evidence From the National Establishment Time Series. *National Bureau of Economic Research*, Working Paper 13818.
- Parker, S. C., Storey, D. and Witteloostuijn, A. (2010). "What happens to gazelles? The importance of dynamic management strategy", *Small Business Economics*, Vol. 35, pp. 203-226.
- Perry, J., Chandler, G. and Markova, G. (2012). "Entrepreneurial effectuation: A review and suggestions for future research", *Entrepreneurship Theory and Practice*, Vol. 36 No. 4, pp. 837-861.
- Phelps, R., Adams, R. and Bessant, J. (2007). "Life cycles of growing organizations: Are view with implications for knowledge and learning", *International Journal of Management Review*, Vol. 9, pp. 1-30.
- Pongracic, I. (2009). *Employees and entrepreneurship: Coordination and Spontaneity in Non-Hierarchical Business Organizations*, Edward Elgar, Cheltenham, UK.
- Qian, G. and Li L., (2003). "Profitability of small-and-medium-sized enterprises in high-tech industries: The case of the biotechnology industry", *Strategic Management Journal*, Vol. 24 No. 9, pp. 881-87.

Read, S., Sarasvathy, S.D., Dew, N. and Wiltbank, R. (2016). Response to Arend, Sarooghi, and Burkemper (2015). Cocreating effectual entrepreneurship research. *Academy of Management Review*, vol. 41, no. 3, pp. 528-536.

Reymen, I., Andries, P., Berends, H., Mauer, R., Stephan, U. and Van Burgh, E. (2015). "Understanding dynamics of strategic decision making in venture creation: A process study of effectuation and causation", *Strategic Entrepreneurship Journal*, Vol. 9, pp. 351-379.

Sarasvathy, S. (2001). "Causation and effectuation: towards a theoretical shift from economic inevitability to entrepreneurial contingency", *Academy of Management Review*, Vol. 26, pp. 243-263.

Sarasvathy, S. (2008). *Effectuation: Elements of Entrepreneurial Expertise*, Edward Elgar Cheltenham, UK.

Sarasvathy, S., Kumar, K., York, J., and Bhagavatula, S. (2014). An effectual approach to international entrepreneurship: overlaps, challenges, and provocative possibilities. *Entrepreneurship Theory and Practice*, Vol. 38 Issue 1, pp. 71-93.

Schmelter, R., Mauer, R., Borsch, C. and Brettel, M. (2010). "Boosting corporate entrepreneurship through HRM: Evidence from German SMEs", *Human Resource Management*, Vol. 49 No. 4, pp. 715-741.

Short, J.C., Payne, G.T. and Ketchen, D.J. (2008). "Research on organizational configurations: Past accomplishments and future challenges", *Journal of Management*, Vol. 22, pp. 9-24.

Sitoh, M.K., Pan, S.L. and Yu, C.Y. (2014). "Business models and tactics in new product creation: The interplay of effectuation and causation processes", *Transactions on Engineering Management*, Vol. 61 No. 2, pp. 213-224.

Storey, D. J. (1996). *The Ten Percenters*, Deloitte and Touche, London, UK.

Svensrud, E. and Åsvoll, H. (2012). Innovation in large corporations: A development of the rudimentary theory of effectuation. *Academy of Strategic Management Journal*, Vol 11, No. 1, pp. 59-89.

Van de Vrande, V., De Jong, J.P., Vanhaverbeke, W. and De Rochemont, M., (2009). "Open innovation in SMEs: Trends, motives and management challenges", *Technovation*, Vol 29 No. 6, pp.423-437.

Weick, K. (1979). *The Social Psychology of Organizing*. 2nd ed., Addison-Wesley, Reading MA.

Werhahn, D., Mauer, R., Flatten, T. and Brettel, M. (2015). "Validating effectual orientation as strategic direction in the corporate context", *European Management Journal*, Vol. 33, pp. 305-313.

Verhees, F. and Meulenbergh, M., (2004). "Market orientation, innovativeness, product innovation, and performance in small firms", *Journal of Small Business Management*, Vol. 42 No. 2, pp. 134-54.

Wiklund, J. (1999). "The sustainability of the entrepreneurial orientation - performance relationship", *Entrepreneurship Theory and Practice*, Vol. 24, pp. 37-48.

Wiklund, J., Patzelt, H. and Shepherd, D. (2009). "Building an integrative model of small business growth", *Small Business Economy*, Vol. 32, pp. 351-374.

Wiltbank, R., Dew, N. Read, S. and Sarasvathy, S. (2006). "What to do next? The case for non-predictive strategy", *Strategic Management Journal*. Vol. 27, pp. 981-998.

APPENDIX

Focused interview form, effectuation (translated from Finnish)

General

For each central theme, the interviewee aims to probe into the themes of the study and seek explanations for how planned and unplanned incidents and reactions to them have affected the growth spurt of the company.

A case history will be written on each company and its growth process, depicting the events that took place in the company during the examined period. The purpose is not to write a similar narrative for every company (or to ask the same focused questions), but to determine which were the key incidents occurring and choices made in the company. The purpose is also not to make any choices beforehand on the key issues resulting in the growth of the company, but to instead emphasise the unique narrative of each company. The case histories will be analysed together, aiming at recognizing the emergence of central themes and the contexts for this.

The questions A-D below are to be asked of all interviewees. Question D supports writing the case history. The D question also includes a list of the themes of this study, whose significance on the growth/change that was achieved in the company should be investigated. These themes (1-6) have been explained in more detail in the following pages of the form.

A. The name of the company and the interviewee

- and the year since which the person has worked for the company?

B. What are the current products/services provided by the company?

- have there been any changes to the products/services since the year XXXX?

C. Who are the current clients of the company?

- have there been any changes to the clients since the year XXXX?

D. THERE WAS A GROWTH SPURT IN YOUR COMPANY IN THE YEAR XXXX. WHICH FACTORS DO YOU THINK CONTRIBUTED TO THIS AND WHICH SIGNIFICANT ISSUES/INCIDENTS WOULD YOU LIKE TO RAISE?

IF YOU WERE TO PROVIDE A NARRATIVE ON THE EVENTS LEADING TO THE GROWTH SPURT, BEFORE AND AFTER, WHAT WOULD YOU SAY?

Research themes based on which more detail may be requested;

1. Experimentation focus on short terms experiment to identify opportunities versus prediction of the future.

Was the goal determined beforehand or did the company seize an opportunity that arose?

How did the chosen growth approach influence the resources later available for the company (e.g. financial resources)?

How did the company obtain the additional capacity required by the growth: increasing the company's own resources (e.g. the number of staff), making operations more efficient (e.g. with automatisation) or by utilizing the resources of others (by building networks)?

What does *strategy* mean to you?

With whom do you discuss strategy (or issues influencing the future of the company)?

What kind of a role does staff have in planning and implementing the firm's strategy?

What are the issues raised when discussing the company's future, i.e. the strategic issues?

What kind of routines do you have in relation to the company's strategy work?

When does the strategy work take place? (Annually? continuously? when there is time for it?)

Does your strategy work have physical outcomes? If you answered 'yes', what are these? (report, length? PowerPoint?)

Could you explain the forms of unofficial strategy work in your company?

Has the way in which you conduct strategy work in your company changed in some way over the years? How?

Do your clients or suppliers participate in the strategy work in any way?

Can you say that your company has followed the strategy that you have formulated?

What is the meaning of strategic planning for the growth and success of your company?

2. Affordable loss versus maximization of expected returns

When does the company particularly aim to avoid risk, when is risk taking acceptable (the nature of the outside environment, context specificity)?

When and in what kinds of situations (environmental conditions, the company's situation, the entrepreneur's situation) have risks been taken in the company?

How great a risk is acceptable in the company when the outcome pursued is very tempting? Can the risk be so high that the company's finances would be seriously jeopardized if it materialized?

Which is more important, keeping the risk at a manageable level and possibly at the same time settling for smaller financial outcomes, or to pursue bigger profits with greater risks?

If the risk taking has resulted in some sort of a crisis, how has this affected your later decisions? Are crises considered learning experiences or failures?

3. Emphasis on pre-commitments and strategic alliances to control the future versus competitive analyses to predict the future

How does networking with different stakeholders (suppliers, clients, competitors etc.) affect your operations?

How openly is information shared between the different stakeholders?

How do you determine the expectations of clients? How do you prepare for changes in clients' needs? (are clients involved in product development, or marketing etc.)

Do you engage clients and other partners in cooperation in joint activities and how do you accomplish this? (influencing the future)

How do you discover your competitors' operations and react to them?

How is information about clients' expectations and competitors shared within the company between different workers? How is this information taken into account in product and service development?

4. Exploitation of the environmental contingencies by remaining flexible versus exploitation pre-existing capabilities and resources

Has the company succeeded in utilizing changes that have occurred in the operating environment? If it has, how has this been accomplished?

How are new actions established in the company's approaches?

Have you noticed a need to provide more training for the staff as the company has grown bigger and developed?

Has the company acquired information about the industry and the market? How has the company succeeded in utilizing this information? Does information acquisition have an important role? (predicting the future)

What kind of systems (information, client management, production management systems) are in use in the company and when were they adopted?

Which financial indicators are monitored (e.g. financial statements, return on capital, indebtedness, liquidity)? Are different issues monitored in different situations?

Has the company considered it necessary to produce things differently than has traditionally been done in the field? Has this produced a competitive advantage? (bricolage)

Is there a need for anticipatory, routine-breaking and experience-based activities in the company's decision-making? Could you provide an example of an incident where these were needed? (improvisation)

Relationship between growth orientation and innovativeness – The mediating role of causation

Siltamäki M., Matalamäki M. and Vuorinen, T. (2017). Paper presented and published in 2017 RENT Research in Entrepreneurship and Small Business – Conference proceedings in Lund, Sweden, November 2017. ISSN 2219-5572.

Abstract

The objective of this study is to investigate how growth orientation influences innovation in the context of small and medium-sized enterprises (SMEs). Moreover, this study suggests that growth-oriented companies are more likely to apply a causational logic and to innovate. Based on a sample of 224 informants in 124 companies, this research contributes to the literature by constructing an empirical relationship between growth orientation and innovation, and by demonstrating the mediating effect of causation logic when used in decision making. The findings confirm that growth orientation affects the level of innovativeness in companies. That level of innovativeness is also affected by the formal strategic planning undertaken within the ventures. We used a causation and effectuation framework to analyse the strategic choices of companies in the selection of formal and informal strategizing activities. Growth orientation affects formal and informal strategizing in these examined companies. Growth orientation moderately affects causation. This indicates that companies with a strong growth orientation are more likely to use formal strategic planning. The causational approach ensures the focus and predictability of the operations.

Keywords: innovation, growth orientation, causation, SME

Introduction

Growth orientation is an important predictor of companies engaging in innovative activities (Autio, 2009). This study contributes further evidence of growth-oriented companies being more likely to use formal strategic planning. The causal approach ensures the focus and predictability of the operations. The objective of this study is to investigate how growth orientation influences innovation in the context of small and medium-sized enterprises (SMEs). Moreover, this study suggests that growth-oriented companies are more likely to apply a causal logic (Sarasvathy, 2001) and to innovate. This study highlights the importance of using formal strategic planning that incorporates a causal logic. Growth-oriented companies place more emphasis on innovativeness, which is widely seen as one of the key sources of business growth (Stam & Wennberg 2009; Rosenbusch et al. 2011; Segarra & Teruel 2014; McKelvie, Brattström & Wennberg, 2017).

Following an extensive search, we found only one article combining causation with growth orientation (Crick & Crick, 2015). The value of strategic planning in relation to business growth has been extensively debated (Burke, Fraser, & Greene, 2010; Chwolka & Raith, 2012), and causation has been studied with other constructs like entrepreneurial orientation (Mthanti & Urban, 2014), or innovation (Dew & Sarasvathy, 2007; Gabrielsson & Gabrielsson, 2013; Helmersson & Mattson, 2013) but all these studies ignore the growth orientation perspective.

Our research contributes to the literature by constructing an empirical relationship between growth orientation, causation, and innovation. The findings confirm that growth orientation affects innovativeness in companies, as does the formal strategic planning undertaken. Causation logic has a positive impact on innovativeness, and the relationship between growth orientation and a firm's innovativeness is mediated by causation, while growth orientation has a positive relationship with causation. New paragraph: use this style when you need to begin a new paragraph.

Literature review

Growth orientation

A significant volume of business growth research suggests growth orientation refers to the readiness and willingness to grow the business. The more growth

orientation increases, the more likely the company is to select growth-oriented strategies (Autere & Autio, 2000). Prior studies of business growth have found evidence for a positive effect of orientation on growth, which is hardly surprising, because the intention to take certain actions normally correlates with the actions being taken (Wiklund & Shepherd 2003; McKelvie et al., 2017). These studies investigate entrepreneurs' aspirations, intentions, or willingness to grow their firms. The studied viewpoints include: means, motive, and attitudes (Douglas, 2013; Wiklund & Shepherd, 2003), and the social, financial, and technological resources required (Davidsson and Honig, 2003; Gundry & Welsch, 2001; Knockaert et al., 2011). Strong motivation is associated with a direct and positive effect on company growth (Bellu & Sherman, 1995; Kolvereid & Bullvåg, 1996; Miner et al., 1994; McKelvie et al., 2017).

Growth orientation studies originate from the theory of intentional and planned behaviour (Ajzen 1991; Krueger, Reilly & Carsrud 2000; Wiklund & Shepherd 2003). The theory proposes that intentions to grow a business materialize as actions are taken in pursuit of the original intentions (Heinonen et al., 2004; Smallbone et al., 1995; Wiklund & Shepherd, 2003). The theory of planned behaviour is cited more than 20000 times in the Scopus database, which makes it one of the most utilized theories attempting to predict and explain the behaviour of individuals. Such behaviour is determined by a individual's intentions to perform a certain behaviour and the perceived control over the behaviour (Ajzen 1991). Intentions are determined by the attitude to those intentions, subjective norms, and perceived behavioural control (Fishbein & Ajzen 1975; Ajzen & Fishbein 1980). Ajzen (1988; 1991) added the concept of perceived behavioural control, which originates from self-efficacy theory as proposed by Bandura (1977). The theory of planned behaviour has been used in different research fields, such as psychology, health sciences, leisure studies, and marketing to explain and predict intentions and behaviours (Lortie & Castogiovanni, 2015).

Sexton and Bowman-Upton (1991) have criticized growth models that do not take into account the role of entrepreneurs and their motivations for growth. The study concludes that the growth orientation of small business managers determines how large companies are growing. There are multiple reasons why individuals start and operate their own firms, but the goal of maximizing economic returns is rarely cited in this context (Douglas, 2013; Kolvereid 1992). Many entrepreneurs start their business to pursue other kinds of personal goals, such as independence intentions (Douglas, 2013), or job satisfaction delivered through changing profession (Lange, 2012; Wiklund et al., 2003; McKelvie et al, 2017). Business growth might cause change the circumstances of the business, and they might also diverge from the entrepreneurs' own goals. Having to accept more difficult duties

as a consequence of business growth is a substantial concern for many small business owners, and it is one that affects their attitudes to business growth (Wiklund et al., 2003).

Nevertheless, if the entrepreneur has a positive attitude to the new tasks required to progress firm growth, then that positive attitude will also apply to the company's growth (Wiklund et al., 2009). Independence-oriented new ventures have even been called 'salary-substitute' new ventures (Shane, 2009). A prudent attitude toward growth may also stem from a fear of losing the informal and family characteristics of a small company (Davidsson et al., 2006). Crick & Crick (2015) investigated growth orientation with causation and effectuation among owners and managers in a qualitative study. The study found various cause consequences and effectuation-based decision making in a dynamic operating environment.

In this study, we measure growth orientation using the corresponding dimension from the opportunity-based business behaviour developed by Brown, Davidsson & Wiklund (2001).

Causation and effectuation

Sarasvathy (2001) builds her theory from centuries of ongoing conversation about causation, from Aristotle down to more recent theorizing, such as that of John Mackie (1998), who defines a cause as an insufficient but necessary component of an unnecessary but sufficient condition (Mackie, 1998). The theory of causation assumes that it must to some extent involve necessity, or that the cause must be sufficient to trigger the effect. One of the key attractions of a dispositional theory of causation should be the claim that causes dispose toward their effects (Anjum & Mumford, 2010). Causation combines a goal-oriented operation model (e.g., Bird, 1989; Bourgeois, 1985) with the maximizing of expected returns (Friedman, 1953), by using competitive analysis (Porter, 1980), and excluding unexpected, unfavourable events (Ansoff, 1979; Ansoff, 1980; Dutton & Ottensmeyer, 1987).

Causation originates from the field of strategic management, and extensive evidence suggests that strategic planning positively affects venture performance in many phases (e.g., Capon, Farley, & Hoenig, 1990; Capon, Farley, & Hulbert, 1994). It guides the action by setting goals whose achievement depends on predetermined plans and in-depth analysis of competitors, industry dynamics, and other influential aspects (Delmar & Shane, 2003). Strategic planning is a predecessor of action in new ventures and assists executives in the decision-

making process, to enable them to progress toward their goals (Fisher, Kotha & Lahiri, 2016).

The value of strategic planning in relation to business growth has been debated extensively (Burke, Fraser & Greene, 2010; Chwolka & Raith, 2012; Honig & Samuelsson, 2014). The empirical evidence suggests that there is a positive relationship between strategic planning and a company's success (Delmar & Shane, 2003; Gruber, 2007). For a company, strategic planning is positively related to business growth, scale, and revenue (Mayer-Haug, Read, Brinckmann, Grichnik & Kapsa, 2010). Strategic planning as a process, whether presented in written form or not, is beneficial and the overall impact of the relationship depends on factors such as a company's age and the cultural environment (Brinckmann et al., 2010).

Causation is contrasted with effectuation, an emerging theoretical perspective in entrepreneurship research (Sarasvathy, 2001; Fisher, 2012; Perry et al., 2012). Effectuation theory assumes that the goal of an entrepreneur is not fully known at the beginning of the entrepreneurial process. Instead, the entrepreneur utilizes available resources to exploit the opportunities (Sarasvathy, 2001). The differences between causation and effectuation can be illustrated by the metaphor of a chef using whatever ingredients are in the store cupboard to decide which meal to cook, in which case, the outcome relies on those available ingredients. In an alternative version of this activity, the chef has a recipe (plan) which he or she follows by acquiring the ingredients (resources) and using them to achieve the end result, set as the goal of the activity. This latter approach is called causation (Sarasvathy, 2001; 2008).

The causation approach differs from its effectuation counterpart in at least five respects: 1) The use of available resources versus moving toward a specific goal, 2) controlled risk taking versus targeting maximum profit accompanied by higher risks, 3) building strategic alliances versus competitor analysis, 4) taking advantage of changes in the environment for the organization's benefit versus taking advantage of previously acquired knowledge, and 5) aiming to influence the future versus aiming to predict the future (Sarasvathy, 2008; Dew et al., 2009; Alsos et al., 2016). Individuals might follow different logics when making decisions concerning business ventures.

The research literature has focused on combining causation and effectuation with other constructs like entrepreneurial orientation (Mthanti and Urban, 2014), or innovation (Dew & Sarasvathy, 2007; Gabrielsson & Gabrielsson, 2013; Helmersson & Mattson, 2013). The current research trend indicates simultaneous usage of effectuation and causation in the same organization (Sitoh et al., 2014;

Dutta, Gwebu & Wang 2015; Lingelbach et al., 2015; Matalamäki, 2017). Causation and effectuation are constantly intertwined and effectual strategies tend to become more causal as the venture develops (Sarasvathy, 2008; Reymen, Andries, Berends et al., 2015; Smolka, Verheul, Burmeister-Lamp & Heygens, 2016). The causal approach ensures focus and predictability, while that of effectuation allows a flexible response to the changes in the operational environment (Fisher, 2012; Berends et al., 2014; 2009; Sitoh et al., 2014; Matalamäki et al., 2017).

Although the current research concentrates only on causation, these two logics are difficult to separate due to their shared concurrent application in extant literature (Sarasvathy, 2001)

Innovation

The innovation process is described as beginning with an invention or the creation of a new idea. It continues with the development of that idea and concludes with its implementation (Van de Ven et al., 1999). Innovativeness represents an aspiration to break away from old technologies or practices and to advance from the current situation (Lumpkin & Dess, 1996). Innovation can be described as one of the current explanations for companies achieving business growth (Bhide, 2000; Moreira, Gherman & Sousa, 2017; Kim & Chung, 2017). Ventures that show high levels of innovativeness and utilize resources in hand to meet the needs of the markets appear to grow more than those that do not. These firms tend to be flexible and to use pre-commitments for their customers.

The findings confirm previous literature that establishes flexibility is one of the key strengths of small firms (Fiegenbaum & Karnani, 1991). The innovation process is described as characterized by the interplay of high and tide. Ideas are born, revised, and abandoned during the process of implementation (Kristinsson, Candi & Saemundsson, 2016). Open innovation scholars have challenged this idea, proposing that instead of revealing information, open innovation can foster wider collaboration and interaction between organizations, and therefore enhance the value of innovation (Mazzocchi, 2004; Gómez, Olaso & Zabala-Iturriagoitia, 2016; Greco, Grimaldi, Cricelli, 2016; Hallberg & Brattström, 2018).

Entrepreneurship and innovation are often regarded as intertwined concepts, in that both are seen as necessary and cohesive elements in creating business growth (Braunerhjelm, Acs, Audretsch, & Carlsson, 2009; Eiriz, Faria & Barbosa, 2013). Landström, Åström, and Harirchi (2015) investigate whether entrepreneurship and innovation are in fact a single field or two fields of research. The investigation

concluded that despite a few interesting overlaps in the knowledge bases they are two separate fields of research. Management innovation is introduced as a new structure, process, system, program, or practice in an organization, and its role in strategic change and organizational renewal has been widely noted by scholars (Whittington, Pettigrew, Peck et al., 1999; Walker, Chen & Aravind, 2015).

Many recent empirical studies examine innovativeness and its relevance to the effectuation and causation processes, in fact, the combination of innovation with effectuation is one of the major streams in current effectuation literature (Matalamäki, 2017). Velu and Jacob (2016) researched relationships innovation and competition. Svensrud & Åsvoll (2012) found effectuation processes valuable for innovation in large corporations. Dew, Sarasvathy, Read & Wiltbank (2008) suggested that firms utilize non-predictive effectual logic, and merge effectuation into their innovation processes.

The relationship between innovation and business growth has long been at the center of entrepreneurship research and it is crucial for employment and value creation (Bhide, 2000; Delmar et al., 2003; Storey, 1996). Economically, SMEs are regarded as a strong source of business growth (Westhead & Storey, 1996), owing to their orientation to exploiting innovations (Autio 2009; Kuratko & Hornsby, 2004). However, prior empirical innovation research has largely focused on large companies and their innovativeness (Autio, 2009).

Building of Hypothesis

The influence of growth orientation on a company's behaviour is well established in the entrepreneurship literature (Riding et al. 2010; Wiklund & Shepherd 2011; McKelvie et al., 2017) and has been largely linked to young firm growth (Delmar et al. 2003; Delmar & Wiklund 2008; Kolvereid 1992; Wiklund & Shepherd 2003; McKelvie et al. 2017). Growth orientation, growth attitude, and growth motivation are used to conceptualize this phenomenon. The extant literature asserts that growth represents a deliberate decision by representatives of the firm and that growth orientation can predict this formula (Wiklund & Shepherd 2003; McKelvie et al., 2017).

Firm's growth orientation reflects that its management is motivated to deliver growth (McKelvie et al., 2017). Motivation describes why an individual in a certain situation selects one response over another (Bargh et al. 2010: 268). Social psychologists suggest that a person motivated to pursue a certain goal will assess the expected outcome confident that it will materialize (Atkinson 1957; Bargh et

al., 2010; McKelvie et al., 2017). Growth orientation is also seen as a firm-level construct, reflecting general attitudes and a readiness by the firm's representatives to take strategic action (Hermans et al., 2015). Growth orientation is an important predictor of why companies engage in innovative activities (McKelvie et al., 2017).

Extant literature has established empirical support for a relationship between the growth orientation and innovation activities in companies (Autio 2009; Kuratko & Hornsby, 2004). In this paper, we adopt the concept of growth orientation as an established firm-level construct, reflecting attitudes toward and readiness for action among managers and senior executives (McKelvie et al., 2017). Such attitudes and readiness might suggest an organizational orientation toward a goal, rather than specific expectations of the outcomes of growth. We expect that the stronger the firm's growth orientation is, the stronger is the likelihood that managers will pursue growth-related activities, consequently achieving business growth. Following a similar logic, we therefore propose the following hypothesis in the context of SMEs:

Hypothesis 1: *There is a positive relationship between firms' growth orientation and innovativeness.*

Causation logic is comparable to planned strategy approaches that assume that returns from different alternatives can be estimated through calculation or statistical inference. When comparing alternatives, the main selection criterion is expected return. The emergent strategies are represented by effectuation logic (Sarasvathy, 2001) and they evolve under conditions of uncertainty where the expected returns cannot be estimated. Instead of using expected returns as the main selection criteria, alternatives are selected based on loss affordability (Chandler et al., 2011; Sarasvathy, 2001). The dimensions of effectuation are more difficult to measure than those of causation (Kristinsson et al., 2016: 471).

Despite the fact that both causation and effectuation logics can coexist in decision making, their focus is different (Lingelbach et al., 2015; Reymen et al., 2015; Sitoh et al., 2014). The scope of causation is more internal as the processes are based on known resources and strategic plans. Effectuation processes, however, extend beyond current resources, to opportunities that might emerge and thus provide a broader scope for outside collaboration than do those of causation (Chandler et al. 2011). There are still some dissenting models, suggesting the scale is too broad and spanning multiple disciplines (Kristinsson et al., 2016; Arend et al., 2016).

Kristinsson et al. (2016) suggest that the relationships between founders' diversity and innovation are moderated by the logic of causation. That study outlines a model of how idea generation can accelerate when decision making is based on

causation logic (Kristinsson et al., 2016). Growth-oriented business owners and managers have a greater tolerance for loss than others (Koudstaal et al., 2016; McKelvie et al., 2017). This indicates the deployment of causal practices, since greater tolerance for losses and a willingness to take greater larger risks are found to be unifying factors for the causal school (Sarasvathy, 2001). Therefore, we concentrate on causation as a mediator between growth orientation and innovativeness, a topic that has not been studied before.

Hypothesis 2: *The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a positive relationship with causation (H2a) and causation has a positive impact on innovativeness (H2b).*

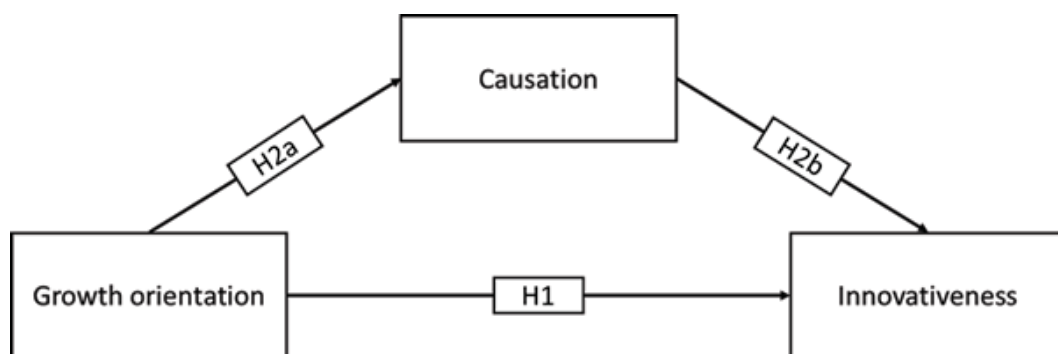


Figure 1. Research framework with the research hypothesis.

Methods

The studied companies were randomly sampled Finnish SMEs, employing 10–249 employees, with an average size of 35 employees. The annual turnover ranged from EUR 1 million to EUR 43 million. The primary data for the study were collected through survey questionnaires between January and May 2015, usually in the offices of the participating firms. The data collection was conducted by research assistants, who were university students working as a part of their strategic management course. The research assistants were free to choose their informants within the agreed qualification frame. The findings are based on a sample of 231 informants; managers and higher executives from 126 firms from various industries in Finland. We used a corresponding sub-dimension of the entrepreneurial management scale developed by Brown et al. (2001) to measure growth orientation. The growth orientation construct was measured with pairs of statements representing continuum on a ten-point scale.

The scale for innovativeness was adapted from Santos-Vijande & Álvarez-González (2007) and originated with Hurley and Hult (1998). Innovativeness was measured along a 5-point bi-polar Likert scale. The scale for causation was adapted from that of Chandler et al. (2011). Innovativeness and causation were also measured along a 5-point bi-polar Likert scale. After the data gathering and analysis, we validated the data and conducted a reliability analysis on all the different scales. In this process, malfunctioning items were deleted to improve the correlations and model fit. Following this procedure, we measured Cronbach's alpha ratings. We used confirmatory factor analysis to explore the underlying relationships between growth orientation, innovativeness, and effectuation and causation.

To show nomological validity, we calculated and evaluated multiple model-fit indices: ratio of χ^2 / degrees of freedom (Wheaton, Muthén, Alwin, & Summers, 1977); the root mean square error of approximation (RMSEA; Steiger & Lind, 1980); the comparative fit index (CFI; Hu & Bentler, 1995); the goodness of fit index (GFI; Jöreskog & Sörbom, 1996); the incremental fit index (IFI; Bollen, 1989) and the Tucker-Lewis coefficient (TLI; Tucker & Lewis, 1973). It is commonly considered that values greater than .95 are considered a good model fit and values greater than .9 are considered an acceptable model fit (Bentler, 1992). For RMSEA values below .05 represent a good fit, between .08 and .05 represent a reasonable fit, and between .10 and .08 represent a mediocre fit (Browne & Cudeck, 1993; Byrne, 2001; MacCallum et al., 1996).

Analyses and Results

We validated the data using SPSS24 and Amos24 to cross-validate the findings. First, we checked for the outliers in the sample using Mahalanobis distance measures, which resulted in our removing seven observations from the dataset. This accounted for the final sample size of 224 respondents from 124 companies. We tested outliers separately for each construct and followed that by testing for all used data. Second, we tested the skewness and kurtosis of the scale items using an acceptable limit of ± 2 indices (Trochim & Donnelly, 2006; Field, 2000 & 2009; Gravetter & Wallnau, 2014). This resulted in removing one unsatisfactory item from innovation scale.

Third, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analysed the interrater reliability. To ensure that data aggregation to the company level was possible, we used the interrater reliability analysis $R_{WG(J)}$ of James, Demaree & Wolf (1984), and the $R^*_{WG(J)}$ analysis based on equation 5 in the study of Lindell,

Brandt, and Whitney (1999). The interrater reliability results are presented in Table 1. All interrater reliability values are over the generally accepted cut-off point of 0.7 except for the $R_{WG(j)}$ of the growth orientation. However, James (1982) offers a cut-off point of 0.6 and Biemann, Cole & Voelpel (2012) point out that the widely applied cut-off criterion of 0.7 is heavily criticized and is purely arbitrary. In addition, Lindell and Brand (1999) argue that the interrater agreement analysis using $R^*_{WG(j)}$ is more generally applicable. Therefore, we decided to accept the interrater agreement results.

Table 1. Interrater reliability of latent variables.

Latent variable	$r_{WG(j)}$	$r^*_{WG(j)}$
Causation	0.87	0.79
Growth orientation	0.69	0.83
Innovativeness	0.90	0.85

Fourth, we used confirmatory factor analysis to test the factor loadings of causation (Chandler et al. 2011), growth orientation (Brown et al. 2001), and innovativeness (Santos-Vijande & Álvarez-González 2007). We followed the recommendation of Hair, Black, Babin & Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the .05 significance level, and consequently we eliminated one item from the causation scale owing to low factor loadings (see Table 2.).

Table 2. Constructs and measurement items.

Construct	Items	Source	Item loading
Causation	We analyzed long run opportunities and selected what we thought would provide the best returns	Chandler et al. (2011)	0.55
	We developed a strategy to best take advantage of resources and capabilities. ^a	Chandler et al. (2011)	0.27
	We designed and planned business strategies.	Chandler et al. (2011)	0.82
	We organized and implemented control processes to make sure we met objectives.	Chandler et al. (2011)	0.64
	We researched and selected target markets and did meaningful competitive analysis.	Chandler et al. (2011)	0.60
	We had a clear and consistent vision for where we wanted to end up.	Chandler et al. (2011)	0.57
	We designed and planned production and marketing efforts.	Chandler et al. (2011)	0.68
Growth orientation	It is generally known throughout the firm that growth is our top objective. - Growth is not necessarily our top objective. Long term survival may be at least as important.	Brown et al. (2001)	0.73
	It is generally known throughout the firm that our intention is to grow as big and as fast as possible. - It is generally known throughout the firm that steady and sure growth is the best way to expand.	Brown et al. (2001)	0.88
Innovativeness	Innovation proposals are welcome in the organization.	Santos-Vijande & Álvarez-González (2007)	0.83
	Management actively seeks innovative ideas.	Santos-Vijande & Álvarez-González (2007)	0.78
	Innovation is perceived as too risky and is resisted	Santos-Vijande & Álvarez-González (2007)	0.56
	People are not penalised for new ideas that do not work.	Santos-Vijande & Álvarez-González (2007)	-. ^b
	Program/Project managers promote and support innovative ideas, experimentation and creative processes.	Santos-Vijande & Álvarez-González (2007)	0.50

Notes:
a) Indicator variable dropped due to low loading as recommended by Hair et al. (2014 p.115).
b) Indicator variable removed earlier as skewness and kurtosis limits were not met.

Fifth, we conducted a reliability analysis with Cronbach's alpha and found all levels were over the 0.60 threshold (Nunnally, 1970). The convergent validity was assessed by checking whether all the latent variables' AVE measures were above the cut-off point of 0.4 offered by Bagozzi & Baumgartner (1994, p.402) and that the construct reliability equalled or exceeded 0.6 as proposed by Bagozzi & Yi (1988, p. 82). The results of the convergent validity assessment are presented in Table 3. Each pair of factors satisfied the required discriminant validity, as the square root of the AVE measures exceeds the correlation of the corresponding factors. The Fornell–Larcker coefficients are presented in Table 4.

Table 3. The reliability and convergent validity.

Latent variable	CR	AVE	Cronbach's alpha
Causation	0.812	0.423	0.802
Growth orientation	0.810	0.688	0.776
Innovativeness	0.765	0.459	0.751

Using confirmatory factor analysis (CFA) and structural equation modelling (SEM), we evaluated the measurement and structural models. As one item from causation was removed due to the low factor loading (<0.5) and the initial measurement model was improved from ($X^2=98.004$ with 62 degrees of freedom giving a 1.581 ratio; RMSEA=.069; CFI=.921; GFI=.889; IFI=.924 TLI=.901) to ($X^2=70.850$ with 51 degrees of freedom giving 1.389 ratio; RMSEA=.056; CFI=.954; GFI=.912; IFI=.956 TLI=.941). Our structural model satisfied established model-fit criteria ($X^2=70.850$ with 51 degrees of freedom giving 1.389 ratio; RMSEA=.056; CFI=.954; GFI=.912; IFI=.956 TLI=.941).

Table 4. Fornell–Larcker criterion. Correlations between constructs and square roots of AVEs on the diagonal.

Latent variable	Causation	Growth orientation	Innovativeness
Causation	0.651		
Growth orientation	0.286	0.829	
Innovativeness	0.389	0.398	0.678

We first examined the relationship between growth orientation and innovativeness. The use of CFA and SEM confirms hypothesis H1 because growth orientation has a large and significant positive effect on innovativeness ($\beta=.40$, $p<.001$). We then introduced causation into the model as a mediator. The relationship between growth orientation and a firm's innovativeness is mediated by causation, whereas growth orientation has a significant positive relationship with causation, thus confirming hypothesis H2a ($\beta=.29$, $p<.01$) and signalling that growth-oriented companies are more likely to adopt formal strategic planning routines. Causation has a significant positive impact on innovativeness ($\beta=.30$, $p<.01$), thus confirming hypothesis H2b.

As both H2a and H2b hypothesis were significant, mediation analysis were conducted using bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004).

Bootstrapping was conducted with 5000 resamples (Preacher & Hayes, 2008) obtaining the 95% confidence interval of the indirect effect. The mediating role of causation in the relationship between growth orientation and innovativeness was confirmed ($\beta=.024$; CI= .003 to .067; $p<.05$). The mediation is partial as the direct effect between growth orientation and a firm's innovativeness remains significant but decreases in size ($\beta=.31$, $p<.01$).

Discussion

Theoretical contributions

Growth intentions are subjective measures and desires held by entrepreneurs. According to extant literature, the intentions to grow the business are realized as the actions are taken to progress the original intentions (Heinonen et al. 2004; Smallbone et al. 1995; Wiklund & Shepherd 2003). It is more likely that the company selects growth-oriented strategies (Autere & Autio, 2000).

Based on a final sample of 224 informants in 124 companies, this research contributes to the literature by constructing an empirical relationship between growth orientation and innovation, and by demonstrating the mediating effect of causation logic. The findings confirm that growth orientation affects the level of innovativeness in companies. That level of innovativeness is also affected by the formal strategic planning undertaken within the ventures. We used a causation and effectuation framework to analyse the strategic choices of companies in the selection of formal and informal strategizing activities. Growth orientation affects formal and informal strategizing in these examined companies. Growth orientation moderately affects causation. This indicates that companies with a strong growth orientation are more likely to use formal strategic planning. The causal approach ensures the focus and predictability of the operations.

One of the contributions of this research is to establish that growth orientation affects the innovativeness in companies. The degree of innovativeness is also affected by the formal strategic planning undertaken in the ventures; this is tested in the context of established companies taking into account the mediating effect of the causation.

Managerial Implications

This study investigates how growth orientation influences innovation in the context of SMEs. Moreover, this relationship is mediated by causation logic (Sarasvathy, 2001). The research is based on a survey of chief executive officers and senior executives responsible for strategy practice in the studied companies. This study highlights the importance of using formal strategic planning taking into account a causal logic. Growth-oriented companies place more emphasis on innovativeness, which is widely seen as one of the key sources of business growth. Growth-oriented companies are more likely to formulate strategic plans and to innovate more (Dew & Sarasvathy, 2007; Gabrielsson & Gabrielsson, 2013; Helmersson & Mattson, 2013). Growth orientation largely affects the level of innovativeness in a firm, and that is also affected by the formal strategic planning undertaken within those ventures. Innovation moderately affects experimentation in firms. In summary, growth-oriented companies are more likely to formulate formal strategic plans that emphasize the meaning of innovativeness.

Limitations and future research

As with most studies, this study has several limitations, and its findings cannot be evaluated without a discussion of those limitations. First, the results should not be generalized to the whole firm population since all the studied companies were SMEs. A second factor that might affect this phenomenon relates to differences in national culture and policy, because all the studied companies and informants are from the same country. Third, whether firms employ a causal approach to innovation will depend on variables such as firm size and age. These factors were not taken into consideration in the empirical research, which can be stated as one of the limitations. Fourth, even though this study presents a valid and reliable scale development process, more research may be necessary to process the parallel measurement scales it uses. As one item from causation was removed due to its low factor loading, the Chandler et al. (2011) causation scale did not work as well as expected, as explained in Section 5. The scale, even though it is widely used and approved among scholars, might require some critical examination.

In addition, we would like to draw attention to the causation and effectuation scale introduced by Chandler et al. (2011). The dimensions of that effectuation scale did not work as well as expected, and accordingly, those dimensions of effectuation were omitted from our research. The scale, although widely used by scholars, might benefit from some critical examination. Causation and effectuation logics are difficult to separate owing to their shared concurrent application in extant literature. While this research concentrates only on causation, the absence of the dimensions of effectuation must be considered a limitation for this study.

References

- Ajzen, I. & Fishbein M. (1980). *Understanding Attitudes and Predicting Social Behaviour*. Englewood Cliffs: Prentice Hall.
- Ajzen, I. (1988). *Attitudes, Personality, and Behaviour*. Chicago, IL: Dorsey Press.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50, 179–211.
- Alsos, G.A., Clausen, T.H., Hytti, U. & Solvoll, S. (2016). Entrepreneur's social identity and the preference of causal and effectual behaviours in start-up processes. *Entrepreneurship and Regional Development*, 28 (3-4): 234-258.
- Anjum, R. and Mumford, S. (2010). *A Powerful Theory of Causation. The Metaphysics of Powers*, Routledge 2010: 143-59. Anna Marmodoro (ed.)
- Ansoff, H.I. (1979). *Strategic management*. London, U.K.: Macmillan.
- Ansoff, H.I. (1980). Strategic issue management. *Strategic Management Journal* 1, 131–148.
- Arend, R., Sarooghi, H. & Burkemper, A. (2015). Effectuation as ineffectual? Applying the 3E Theory-assessment framework to a proposed new theory of entrepreneurship. *Academy of Management Review*, 40(4), 630-651.
- Atkinson, J. W. (1957). Motivational determinants of risk-taking behaviour. *Psychological Review*, 64(1), 359–372.
- Audretsch, D.B. (1995). Firm profitability, growth, and innovation. *Review of Industrial Organization*, 10(5), 579–588.
- Autere, J. & Autio, A. (2000). *Is entrepreneurship learned? Influence of mental models on growth motivation, strategy, and growth*. Academy of Management Conference.
- Autio, E. (2009). *The Finnish paradox: The curious absence of high growth entrepreneurship in Finland*. ETLA Discussion Paper, No. 1197.
- Bagozzi, R.P. & Baumgartner, H. (1994). The evaluation of structural equation models and hypothesis testing. In Bagozzi, R. (Ed.), *Principles of Marketing Research* 386–422. Oxford: Blackwell Business.

- Bagozzi, R., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioural change. *Psychological review*, 84(2), 191-205.
- Bargh, J. A., Gollwitzer, P. M. & Oettingen, G. (2010). Motivation. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology*, Vol. 1 (5th ed., pp. 268–316)
- Bellu, R. R. & Sherman, H. (1995). Predicting business success from task motivation and attributional style: a longitudinal study. *Entrepreneurship and Regional Development*, 7, 349–63.
- Bentler, P.M., (1992). On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*, 112, 400–404.
- Berends, H., Jelinek, M., Reymen, I. & Stultiëns, R. (2014). Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation. *Journal of Product Innovation Management*, 31(3), 616–635.
- Bhide, A. (2000). *The origin and evolution of new businesses*. Oxford University Press, New York.
- Biemann T., Cole M. & Voelpel, S. (2012). Within-group agreement: On the use (and misuse) of rWG and rWG(J) in leadership research and some best practice guidelines. *The Leadership Quarterly*, 23(1), 66–80.
- Bird, B.J. (1989). *Entrepreneurial behaviour*. Reading, MA: Addison-Wesley.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods and Research*, 17, 303–316.
- Bourgeois, L.J. (1985). Strategic goals, perceived uncertainty, and economic performance in volatile environments. *Academy of Management Journal*, 28, 548–573.
- Braunerhjelm, P., Acs, Z. J., Audretsch, D. B. & Carlsson, B. (2009). The missing link: knowledge diffusion and entrepreneurship in endogenous growth. *Small Business Economics*, 34(2), 105–125.
- Brettel, M., Mauer, R, Engelen, A. & Küpper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing*, 27, 167–184.

- Brinckmann, J., Grichnik, D. & Kapsa, D. (2010). Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning–performance relationship in small firms. *Journal of Business Venturing*, 25(1), 24–40.
- Brown, T. E., Davidsson, P. & J. Wiklund (2001). An Operationalization of Stevenson's Conceptualization of Entrepreneurship as Opportunity- Based Firm Behaviour. *Strategic Management Journal*, 22(10), 953–968.
- Browne, M.W. & Cudeck, R., (1993). Alternative ways of assessing model fit. In: Bollen, K.A., Long, J.S. (Eds.), *Testing Structural Equation Models*. Sage, Newbury Park, 136–162.
- Burke, A., Fraser, S. & Greene, F.J. (2010). The Multiple Effects of Business Planning on New Venture Performance. *Journal of Management Studies*, 47(3), 391-415.
- Byrne, B.M., (2001). *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming*. Lawrence Erlbaum Associates, New Jersey.
- Capon, N., Farley, J.U. & Hoenig, S. (1990). Determinants of financial performance: A meta-analysis. *Management Science*, 36, 1143–1159.
- Capon, N., Farley, J.U. & Hulbert, J.M. (1994). Strategic planning and financial performance: More evidence. *Journal of Management Studies*, 31, 105–110.
- Chandler, G., DeTienne, D., McKelvie, A. & Mumford, T. (2011). Causation and effectuation processes: a validation study. *Journal of Business Venturing*, 26, 375–390.
- Chwolka, A. & Raith, M.G. (2012). The value of business planning before start-up—A decision theoretical perspective. *Journal of Business Venturing*, 27, 385–399.
- Coad, A. & Rao, R. (2008). Innovation and firm growth in high-tech sectors: A quantile regression approach. *Research Policy*, 37, 633–648.
- Coviello, N.E. & Joseph, R.M. (2012). Creating major innovations with customers: Insights from small and young technology firms. *Journal of Marketing*, 76 (6): 87–104.
- Covin, J. G., Slevin, D. P. & Heeley, M. B. (1999). Pioneers and followers: Competitive tactics, environment, and firm growth. *Journal of Business Venturing*, 15, 175–210.

Crick, D. & Crick, J. (2015). Learning and decision making in marketing planning: a study of New Zealand vineyards. *Marketing Intelligence & Planning*, 33(5), 707–732.

Davidsson, P. & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301–331.

Davidsson, P., Achtenhagen, L. & Naldi, L. (2006). What do we know about small firm growth? In: Parker, S. (Ed.), *The Life Cycle of Entrepreneurial Ventures*. Springer, New York, pp. 361–398.

Delmar, F., Davidsson, P. & Gartner, W.B. (2003). Arriving at the High-growth Firm. *Journal of Business Venturing*, 18(2), 189–216.

Delmar, F. & Shane, S. (2003). Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24, 1165–1185.

Delmar, F. & Wiklund, J. (2008). The effect of small business managers' growth motivation on firm growth: a longitudinal study. *Entrepreneurship, Theory and Practice*, 32(3), 437–457.

Dew N., Read S., Sarasvathy S. & Wiltbank R. (2008). Outlines of a behavioural theory of the entrepreneurial firm. *Journal of Economic Behaviour & Organization*, 66(1), 37–59.

Dew, N., Read, S., Sarasvathy, S.D. & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: differences between experts and novices. *Journal of business venturing*, 24, 287–309.

Dew, N. & Sarasvathy, S. (2007). Innovations, Stakeholders and Entrepreneurship. *Journal of Business Ethics*, 74, 267–283.

Douglas, E.J. (2013). Reconstructing entrepreneurial intentions to identify predisposition for growth. *Journal of Business Venturing*, 28, 633–651

Dutton, J.E. & Ottensmeyer, E. (1987). Strategic issue management systems: Forms, functions, and contexts. *Academy of Management Review*, 12, 355–365.

Dutta, D.K., Gwebu K.L. & Wang, J. (2015). Personal innovativeness in technology, related knowledge and experience, and entrepreneurial intentions in emerging technology industries: a process of causation or effectuation? *International Entrepreneur Management Journal*, 11, 529–555.

Edmondson, A. & McManus, S. (2007). Methodological fit in management field research. *Academy of Management Review*, 32(4), 1155-1179.

Eiriz, V., Faria, A. & Barbosa, N. (2013). Firm growth and innovation: Towards a typology of innovation strategy. *Innovation: Management, policy & practice*, 15(1), 97-111.

Fiegenbaum, A. & Karnani, A. (1991). Output flexibility: A competitive advantage of small firms. *Strategic Management Journal*, 12(2), 101-114.

Field, A. (2000). *Discovering statistics using spss for windows*. London-Thousand Oaks-New Delhi: Sage publications.

Field, A. (2009). *Discovering statistics using SPSS*. London: SAGE.

Fishbein, M., & I. Ajzen. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Fisher, G. (2012). Effectuation, causation, and bricolage: a behavioural comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory and Practice*, 36(5), 1019-1051.

Fisher, G., Kotha, S. & Lahiri, A. (2016). Changing with the times: An integrated view of identity, legitimacy and new venture life cycles. *Academy of Management Review*, 41, 383-409.

Friedman, M. (1953). *Essays in positive economics*. Chicago, IL: University of Chicago Press.

Gabrielsson, P. & Gabrielsson, M. (2013). A dynamic model of growth phases and survival in international business-to-business new ventures: The moderating effect of decision-making logic. *Industrial Marketing Management*, 42, 1357-1373.

Gómez, I.P., Olaso, J.R. & Zabala-Iturriagoitia, J.M. (2016). Trust builders as open Innovation intermediaries. *Innovation, Management, Policy & Practice*, 18(2), 145-163.

Gravetter, F. & Wallnau, L. (2014). *Essentials of statistics for the behavioural sciences*. (8th ed.). Belmont, CA: Wadsworth.

Greco, M., Grimaldi, M. & Cricelli, L. (2016). An analysis of the open innovation effect on firm performance. *European Management Journal*, 34(5), 501-516.

- Gruber, M. (2007). Uncovering the value of planning in new venture creation: A process and contingency perspective. *Journal of Business Venturing*, 22, 782–807.
- Gundry, L. K. & Welsch, H. P. (2001). The ambitious entrepreneur: high growth strategies of women-owned enterprises. *Journal of Business Venturing*, 16(5), 453–470.
- Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1998). *Multivariate data analysis* (Fifth ed.). Upper Saddle River: Prentice Hall.
- Hallberg, N.L. & Brattström, A. (2018). Concealing or revealing? Alternative paths to profiting from innovation. *European Management Journal*, IN PRESS. <https://www.sciencedirect-com/science/article/pii/S0263237318300495>.
- Heinonen, J., Nummela, N. & Pukkinen, T. (2004). *To grow or not to grow? An analysis of internationally growth orientated Finnish SMEs*. Paper presented at the EIBA Annual Conference, Slovenia, 5–8 December.
- Helmersson, H. & Mattsson, J. (2013). Text-analytic measurement of effectuation and causation orientations among small and global business managers. *Qualitative and Quantitative research*, 47, 3493–3507.
- Hermans, J., Vanderstraeten, J., van Witteloostuijn, A., Dejardin, M., Ramdani, D. & Stam, E. (2015). Ambitious entrepreneurship: a review of growth aspirations, intentions and expectations. In J. Katz, A. C. Corbett, & A. McKelvie (Eds.), *Advances in entrepreneurship, Emergence & Growth*, 17, 127–160.
- Honig, B. & Samuelsson, M. (2014). Data replication and extension: A study of business planning and venture-level performance. *Journal of Business Venturing Insights*, 1(1), 18–25.
- Hu, L. & Bentler, P. (1995). Evaluating model fit. In R. Hoyle (Ed.), *Structural Equation Modelling: Concepts, Issues, and Applications*, 76–99. Thousand Oaks, CA: Sage Publications.
- Hurley, R. F. & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: An integration and empirical examination. *Journal of Marketing*, 62(3), 42–54.
- James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology*, 67, 219–229.

- James, L. R., Demaree, R. G. & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69 (1), 85–98.
- Jöreskog, K. G. & Sörbom, D. (1996). *LISREL 8: The Simplis Command Language*. Chicago: Scientific Software International.
- Kalinic, I., Sarasvathy, S. & Forza, C. (2014). Expect the unexpected': Implications of effectual logic on the internationalization process. *International Business Review*, 23(3), 635–647.
- Kim J.S. & Chung, G.H. (2017). Implementing innovations within organizations: a systematic review and research agenda. *Innovation: Organization and Management*, 19(3), 372-399.
- Knockaert, M., Ucbasaran, D., Wright, M. & Clarysse, B. (2011). The relationship between knowledge transfer, top management team composition, and performance: The case of science-based entrepreneurial firms. *Entrepreneurship Theory and Practice*, 35(4), 777 – 803.
- Kolvereid L. (1992) Growth aspirations among Norwegian entrepreneurs. *Journal of Business Venturing*, 7 (3): 209-222.
- Kolvereid, L. & Bullvåg, E. (1996). Growth intentions and actual growth: the impact of entrepreneurial choice. *Journal of Enterprising Culture*, 4(1), 1–17.
- Koudstaal, M., Sloof, R. & van Praag, M. (2016). Risk, uncertainty, and entrepreneurship: evidence from a lab-in-the-field experiment. *Management Science*, 62(10), 2897–2915.
- Kristinsson, K., Candi, M. & Saemundsson, J. (2016). The relationship between founder team diversity and innovation performance: The moderating role of causation logic. *Long Range Planning*, 49, 464–476
- Krueger, N.F., Reilly, M.D. & Carsrud A.L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15, 411–432.
- Kuratko, D.F., Hornsby, J.S. & Goldsby, M.G. (2004). Sustaining corporate entrepreneurship: A proposed model of perceived implementation/outcome comparisons at the organizational and individual levels. *International Journal of Entrepreneurship and Innovation*, 5(2), 77–89.

- Landström, H., Åström, F. & Harirchi, G. (2015). Innovation and Entrepreneurship Studies: One or Two Fields of Research?. *International Entrepreneurship and Management Journal*, 11 (3): 493–509.
- Lange, T. (2012). Job satisfaction and self-employment: autonomy or personality? *Small Business Economics*, 38(2), 165–177.
- Lindell, M. & Brand, C. (1999). Assessing Interrater Agreement on the Job Relevance of a Test: A Comparison of the CVI, T, rWG(J), and r*WG(J) Indexes. *Journal of Applied Psychology*, 84(4), 640–647.
- Lindell, M., Brandt, C. & Whitney, D. (1999). A revised index of interrater agreement for multi-item ratings of a single target. *Applied Psychological Measurement*, 23(2), 136–146.
- Lingelbach, D., Sriram, V., Mersha, T. & Saffu, K. (2015). The innovation process in emerging economies. An effectuation perspective. *Entrepreneurship and innovation*, 16(1), 5–17.
- Lortie, J. & Castrogiovanni, G. (2015). The theory of planned behaviour in entrepreneurship research: what we know and future directions. *International Entrepreneurship and Management Journal*, 11, 935–957.
- Lumpkin, G. & Dess, G. (1996). Clarifying the EO construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.
- MacCallum, R.C., Browne, M.W. & Sugawara, H.M., (1996). Power analysis and determination of sample size for covariance structure modelling. *Psychological Methods* 1, 130–149.
- Mackie, J. L. (1998). Causes and conditions. In E. Sosa & M. Tooley (Eds.), *Causation*: 33-55.
- MacKinnon, D.P. , Fritz, M.S., Williams, J. & Lockwood, C.M. (2007). Distribution of the product confidence limits for the indirect effect: Program PRODCLIN. *Behavior Research Methods*, 39, 384-389.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7 (1): 83-103.

MacKinnon, D.P., Lockwood, C.M. & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128.

Matalamäki, M. (2017). Effectuation, an emerging theory of entrepreneurship – towards a mature stage of the development. *Journal of Small Business and Enterprise Development*, 24(4), 928 – 949.

Matalamäki, M., Vuorinen, T., Varamäki, E. & Sorama, K. (2017). Business growth in established companies – Roles of effectuation and causation. *Journal of Enterprising Culture*, 25(2), 123-148.

Mazzocchi, S. (2014). Open innovation: The new imperative for creating and profiting from technology. *Innovation: Management, Policy & Practice*, 6(3), 474-474.

Mayer-Haug, K., Read, S., Brinckmann, J., Dew, N., & Grichnik, D. (2013). Entrepreneurial talent and venture performance: A meta-analytic investigation of SMEs. *Research Policy*, 42, 1251–1273.

McKelvie, A., Brattström, A. & Wennberg, K. (2017). How young firms achieve growth: reconciling the roles of growth motivation and innovative activities. *Small Business Economics*, 49(2), 273–293.

Miner, J. B., Smith, N. R. & Bracker, J. S. (1994). Role of entrepreneurial task motivation in the growth of technologically innovative businesses: interpretations from follow-up data. *Journal of Applied Psychology*, 79(4), 627–630.

Moreira, M.R., Gherman, M. & Sousa P.S. (2017). Does innovation influence the performance of healthcare organizations? *Innovation: Organization & Management*, 19(3), 335-352.

Mthanti, T. & Urban, B. (2014). Effectuation and entrepreneurial orientation in high-technology firms. *Technology Analysis and Strategic Management*, 26(2), 121–133.

Nunnally Jr, J.C. (1970). *Introduction to psychological measurement*. New York: McGraw-Hill.

Perry, J., Chandler, G. & Markova, G. (2012). Entrepreneurial effectuation: A review and suggestions for future research. *Entrepreneurship Theory and Practice*, 36(4), 837–861.

- Porter, M.E. (1980). *Competitive strategy: Techniques for analysing industries and competitors*. New York: Free Press.
- Prajogo, D. & McDermott, C. M. (2014), Antecedents of Service Innovation in SMEs: Comparing the Effects of External and Internal Factors. *Journal of Small Business Management*, 52, 521–540.
- Preacher, K.J. & Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments and Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40 (3): 879-891.
- Read, S., Song, M. & Smit, W. (2009). A meta-analytic review of effectuation and venture performance. *Journal of Business Venturing*, 24(6), 573–587.
- Reymen, I., Andries, P., Berends, H., Mauer, R., Stephan, U. & Van Burgh, E. (2015). Understanding dynamics of strategic decision making in venture creation: A process study of effectuation and causation. *Strategic Entrepreneurship Journal*, 9, 351–379.
- Riding, A., Orser, B. J., Spence, M. & Belanger, B. (2010). Financing new venture exporters. *Small Business Economics*, 38(1), 147–163.
- Roach, D., Ryman, J. & Makani, J. (2016). Effectuation, innovation and performance in SMEs: an empirical study. *European Journal of Innovation Management*, 19(2), 214–238.
- Rosenbusch, N., Brinckmann, J. & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441–457.
- Santos-Vijande, M. L. & Álvarez-González, L. I. (2007). Innovativeness and organizational innovation in total quality oriented firms: The moderating role of market turbulence. *Technovation*, 27(9), 514–532.
- Sarasvathy, S. (2001). Causation and effectuation: towards a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26, 243–263.

Sarasvathy, S. & Dew, N. (2005). Entrepreneurial logics for a technology of foolishness. *Scandinavian Journal of Management*, 21(4), 385-406.

Sarasvathy, S. (2008). *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar Cheltenham, UK.

Segarra, A. & Teruel, M. (2014). High-growth firms and innovation: an empirical analysis for Spanish firms. *Small Business Economics*, 43, 805–821.

Sexton, D.L. & Bowman-Upton N.B. (1991.). *Entrepreneurship: creativity and growth*. Macmillan, 1991 Michigan University.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141-149.

Sitoh, M.K., Pan, S.L. & Yu, C.Y. (2014). Business models and tactics in new product creation: The interplay of effectuation and causation processes. *Transactions on Engineering Management*, 61(2), 213–224.

Smallbone, D., Leigh, R. & North, D. (1995). The characteristics and strategies of high growth SMEs. *International Journal of Entrepreneurial Behaviour & Research*, 3(1), 44–56.

Smolka, K.M., Verheul, I., Burmeister-Lamp, K. & Heugens, P. (2016). Get it together! Synergistic effects of causal and effectual decision-making logics on venture Performance. *Entrepreneurship Theory and Practice* (2018 IN PRESS).

Stam, E. & Wennberg, K. (2009). The roles of R&D in new firm growth. *Small Business Economics*, 33(1), 77–89.

Storey, D. J. (1996). *The Ten Percenters*, Deloitte and Touche, London, UK.

Steiger, J. & Lind, J. (1980). *Statistically based tests for the number of common factors*. Paper presented at the Annual Meeting of the Psychometric Society.

Svensrud, E. & Åsvoll, H. (2012). Innovation in large corporations: A development of the rudimentary theory of effectuation. *Academy of Strategic Management Journal*, 11(1), 59–89.

Trochim, W. M. & Donnelly, J. P. (2006). *The research methods knowledge base*. (3rd ed.). Cincinnati, OH: Atomic Dog.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38(1), 1–10.

- Van de Ven, A.H., Polley, D.E., Garud, R. & Venkataraman, S. (1999), *The Innovation Journey*. New York: Oxford University Press.
- Virtanen, M. & Heimonen, T. (2007). *Comparative Analysis of Fast Growing and Highly Successful Firms in Urban and Rural Areas*. Paper presented at 52nd ICSB World Conference, Turku, Finland, June 13-15.
- Walker, R.M., Chen, J. & Aravind, D. (2015). Management innovation and firm performance: An integration of research findings. *European Management Journal*, 33(5), 407-422.
- Velu, C. & Jacob, A., (2016). Business model innovation and owner–managers: the moderating role of competition. *R&D Management*, 46(3), 451–463.
- Werhahn, D., Mauer, R., Flatten, T. & Brettel, M. (2015). Validating effectual orientation as strategic direction in the corporate context. *European Management Journal*, 33(5), 305–313.
- Westhead P. & Storey, D. (1996). Management Training and Small Firm Performance: Why is the Link So Weak? *International Small Business Journal: Researching entrepreneurship*, 14(4), 13-24.
- Wheaton, B., Muthén, B., Alwin, D. & Summers, G. (1977). Assessing reliability and stability in panel models. In D. Heise (Ed.), *Sociological Methodology*. San Francisco, CA: Jossey-Bass, 84–136.
- Whittington, R., Pettigrew, A., Peck, S., Fenton, E., & Conyon, M. (1999). Change and complementarities in the new competitive landscape: a European panel study, 1992-1996, *Organization Science*, 10, 583-600.
- Wiklund, J., Patzelt, H. & Shepherd, D.A. (2009). Building an integrative model of small business growth. *Small Business Economics*, 32(4), 351-374.
- Wiklund, J., & D. Shepherd (2003). Aspiring for, and Achieving Growth: The Moderating Role of Resources and Opportunities. *Journal of Management Studies*, 40(8), 1919–1941.
- Wiklund, J., & Shepherd, D. A. (2011). Where to from here? EO as experimentation, failure, and distribution of outcomes. *Entrepreneurship Theory and Practice*, 35, 925–946.
- Wiltbank, R., Dew, N., Read, S. & Sarasvathy, S. (2006). What to do next? The case for non-predictive strategy. *Strategic Management Journal*, 27(10), 981–998.

Wiltbank, R., Read, S., Dew, N. & Sarasvathy, S. (2009). Prediction and control under uncertainty: outcomes in angel investing. *Journal of Business Venturing*, 24, 116-133.

Innovativeness and business growth in SMEs – The mediating role of strategic flexibility

Matalamäki Marko, Siltamäki Marko and Vuorinen Tero (2017). Under review for *Management Research Review*. Paper presented and published in 2017 International Conference of Small Business ICSB World Conference –proceedings in Buenos Aires, Argentina June, 2017.

1. Introduction

The relationships between innovation and business growth have long been central to entrepreneurship research. Prior research suggests such relationships are crucial for employment and value creation (Storey, 1994; Bhide, 2000; Delmar et al., 2003; Parker et al., 2010). SMEs are generally accepted as a strong source of business growth (Westhead and Storey, 1994), and one of the reasons is that they are highly innovation-oriented (Autio 1998; Kuratko and Hodgetts, 2001). The publications addressing growth entrepreneurship typically focus on exploring growth among new companies (Delmar, 2000; Autio, 2009; McKelvie and Wiklund, 2010). The general economic debate also sets high expectations for growth entrepreneurship on the part of new companies and start-ups. One of the often-cited emerging theories in the disciplines of entrepreneurship and management is strategic flexibility (Li, Su and Liu, 2010; Zhou and Wu, 2010). Strategic flexibility is found influential to the relationship between innovation and business growth (Li, Su and Liu, 2010).

Companies displaying a high level of innovativeness deploy their resources to meet their customers' demands. This quantitative study investigates innovativeness and business growth in established companies. The main contribution of this study is to show that strategic flexibility mediates the influence of innovativeness on business growth. In our study, strategic flexibility fully mediates this relationship. We show that innovativeness influences strategic flexibility, which significantly affects business growth. The overall aim is to study the impact of strategic flexibility on firm-level innovativeness and ultimately on business growth in 126 small and medium-sized enterprises (SMEs) in Finland. As previous literature suggests, innovativeness affects business growth (Bhide, 2000; Delmar et al., 2003; Westhead and Storey, 1996; Autio, 2009; Kuratko and Hornsby, 2004). However, this research demonstrates that the relationship is not direct but is instead mediated by flexibility and possibly by other constructs not tested in this research.

Our results suggest flexibility is a key element in the relationship between innovativeness and business growth as the mediating effect is full. We therefore propose further research tests other mediating variables to elicit the essence of the relationship between innovativeness and business growth. The results confirm previous findings indicating that growth companies leverage new information to deliver greater value for their customers. This study proposes that for entrepreneurs, having an aptitude to exploit opportunities arising from the business environment is a critical factor in their achieving business growth.

2. Theoretical background

The theoretical frame of this paper comprises the following three main elements; strategic flexibility, innovation, and business growth. Strategic flexibility is originally perceived as an appropriate operating model to respond to environmental uncertainties enabling the success of companies (Grewal and Tansuhaj, 2001; Katsuhiko and Hitt, 2004; Li, Su and Liu, 2010). We examine strategic flexibility in the context of established companies in Finland, exploring its effect on innovation and business growth. This study utilises survey responses from managers and higher-level executives, with between one and four respondents from each of the 126 companies involved. The findings are based on a sample of 231 responses.

The relationships between innovation and business growth have long been at the centre of entrepreneurship research, and are considered crucial for employment and value creation (Storey, 1994; Bhide, 2000; Delmar et al., 2003; Parker et al., 2010). We add strategic flexibility to this setup, which is one of the emerging theories of management studies, challenging the traditional understanding of entrepreneurial decision making. The entrepreneur utilises the resources to meet the demands of the market in a flexible manner and enables the firm to reorganise its organisational processes and strategies to respond to changes in operation environment (Sanchez, 1995; Zhou and Wu, 2010).

Business growth

Business growth has become one of the most studied topics in entrepreneurship research in last ten years (Davidsson and Delmar, 2006; Shepherd and Wiklund, 2009; McKelvie and Wiklund, 2010; Henderson and Weiler, 2010). It has attracted the sustained interest of scholars for fifty years, and has been studied from various

viewpoints, including measures, types, and stages of growth (Davidsson et al., 2010; Leitch et al., 2010; McKelvie and Wiklund, 2010). Many types of stakeholder can affect business growth for any company, including the entrepreneur/business owner, customers, suppliers, funders, academics, and policy makers. All these players have different beliefs, values, expectations, and agendas that can potentially alter the growth mode, rate, and motivation of the company (Gibb, 2000).

The impact of globalisation and internationalisation have also been studied intensively alongside growth (e.g. Sapienza et al., 2006; Naldi and Davidsson, 2014), as are gender, learning, performance and different strategies affecting growth (Leitch et al., 2010). The conceptual development of the business growth studies has still been criticised for being slow (Wiklund et al., 2009: 351; Leitch et al., 2010). The publications addressing growth entrepreneurship typically focus on exploring growth among new companies (Delmar, 2000; Autio, 2009; McKelvie and Wiklund, 2010). The general economic debate also sets high expectations for growth entrepreneurship on the part of new companies and start-ups. The current research in contrast aims to highlight the potential of established companies, which are not a central focus of the entrepreneurial discussion on business growth. Both new and established companies generate growth, but the potential of the latter is often overlooked in economics discussions. This study aims to stimulate discussion on how established businesses can create opportunities for growth.

But why would we research established companies, should we not direct our interest to new companies if we expect to see growth and job creation from that sector? Prior research reveals that established companies generating business growth have a very high rate of survival of between 90–96 per cent. Start-up companies reach barely half that rate, somewhere between 35 and 50 per cent (Delmar, 2000; Davidsson and Delmar, 2006). A study of Swedish survivor firms found less than two per cent of the ten-year employment growth came from firms of two years old or less, while almost 75 per cent of employment growth was generated by companies of ten years old or more (Davidsson and Delmar, 2006).

The method chosen to accelerate business growth in an established company might be either organic or external. Young and small firms tend to follow the organic growth strategy, while large established companies often choose the external growth strategy (Delmar, Davidsson and Gartner 2003; Agarwal and Helfat 2009), which often involves mergers and acquisitions. Mergers and acquisitions are often shortcuts to rapid growth; and also have great potential to contribute to corporate renewal (Tall, 2014). The growth strategy based on external resources is accordingly an option that confers significant benefits in a

dynamic business environment. Its advantages include improved management of operations, efficiency, flexibility, lower capital needs, and giving access to a risk-sharing network of actors, as well as to new sub-contracting and partner companies (Varamäki, Saarakkala and Tornikoski 2007, 14–15).

Prior research identifies entrepreneurs having experience from the same field of operations to be a factor that can contribute to business growth. Other studies have shown that the companies with the most impressive growth are younger than average and their owners have a stronger than average educational background. Young firms are found more growth oriented and innovative than older companies (Barringer et al., 2005, Zhang et al., 2008; Shane, 2009). One uniting factor for the growth companies is, that they tend to be small businesses with fewer than 20 employees (Barringer et al., 2005; Zhang et al., 2008; Shane, 2009).

Differences between older and younger firms have also been identified relating to spheres of experience, level of education, gender and business management skills (Barringer et al., 2005, Zhang et al. 2008). Shane (2009) warned policymakers against thinking that creating more start-up companies for any sector would boost depressed economic regions. Shane also asserts that a start-up-company is not always very innovative, does not create employment and produces no prosperity for its environment. The current knowledge on start-ups' total economic contribution and the impact on societal well-being is quite modest (Davidsson and Delmar, 2006, 157).

McKelvie and Wiklund (2010) introduce three main streams to the research on company growth; First, growth as an outcome, which focuses on exploring the growth of pre-factors; where growth thus depends on another value. The second trend focuses on the consequences of the growth, that is, the increased size of the changes brought about by the company's operations. Central to this approach is the analysis of changes in decision making or expertise. The third main stream focuses more on the growth process in which growth is neither a dependent nor independent variable, meaning the interest lies in the processes themselves (McKelvie and Wiklund, 2010, p. 264). More research should target to the growth process itself (McKelvie and Wiklund, 2010).

Five most common business growth indicators are identified in order of prevalence: 1) sales, 2) employees, 3) profit, 4) assets and 5) equity (Davidsson and Wiklund, 2000; Shepherd and Wiklund, 2009). The time period over which business growth is measured varies from one to several years. Weinzimmer et al. (1998) found that the prevailing timeframes used were five and three years; Shepherd and Wiklund (2009) reported one and five years; and Davidsson and

Delmar (2006) found one or three years. To achieve reliable and comparable results, we decided to use the five-year time span in this research.

Strategic flexibility

Strategic flexibility is one of the emerging theories of management studies, challenging the conventional understanding of entrepreneurial decision making (Oviatt and McDougall, 2005; Li, Liu, Duan and Li, 2008; Liu et al., 2009; Combe, 2012). Zhou and Wu, 2010 defines strategic flexibility as handling the change by exploiting the arising opportunities. As societal and environmental changes are characterised by high level of complexity, the goal of an entrepreneur cannot be fully known at the beginning of the decision-making process. Instead, the entrepreneur utilises the resources available to meet the expectations of the market in a flexible manner (Sarasvathy, 2001, Chaston, 2012: 141-142). Doing so, enables a firm reorganise its organisational processes and respond to environmental changes with defined strategy (Sanchez, 1995; Zhou and Wu, 2010; Brozovic, 2018). Therefore, strategic flexibility is evaluated to be at its best in a complex business environment (Grewal and Tansuhaj, 2001; Katsuhiko and Hitt, 2004; Nadkarni and Nareyanan, 2007).

The existing literature has studied strategic flexibility from the viewpoint of multiple configurations and constructs, e.g. proactive strategic flexibility and its relation to new markets creation (TenDam, 1987), relevance of quality of management (Escrig-Tena et al., 2011; Fernandez-Perez and Gutierrez, 2013), interaction in niche markets (Hamlin et al., 2012), and cooperation and networks (Mason and Mouzas, 2012). Sanchez (1995, p. 138) presented two features of strategic flexibility; *resource flexibility* and *coordination flexibility*.

“Strategic flexibility depends on the inherent flexibilities of the resources available to the firms and on the firm’s flexibilities in applying those resources to alternative courses of action” (Sanchez, 1995, p. 138).

Resource flexibility refers to an ability to switch between various solutions of a given resource for particular tasks. It can be divided into three dimensions of the resource utilisation: (1) available resources, (2) resource exchange costs and (3) exchange time required for that change (Li, Su, et al., 2010; Sanchez, 1995). Coordination flexibility refers to the ability to change between various resources, both internal and external (Sanchez, 1995). It can also be divided to three subdimensions: (1) defining the resources that can be applied, (2) configuring a

variety of resources, and (3) the deployment of the chosen resources (Li et al., 2010; Sanchez, 1997).

Manufacturing flexibility is described as one of the key competitive factors for manufacturing organisations (Oke, 2013). The concept of manufacturing flexibility consists of drivers, enablers, executors and measures of flexibility (Oke, 2003; 2005). The significance of flexibility in different competitiveness factors, including cost efficiency, quality assurance, and process reliability has been recognised in previous studies (Bolwijn and Kumpe, 1990; Oke, 2007). The previous research of management has considered flexibility with innovation as performance objectives of firms (Oke, 2007; 2013).

Oke's (2005) framework identifies *mix flexibility*, such as the flexibility of the system, depending on other influential elements, including transitional periods, scalability of the products, network chains, organisational abilities, and information technology. Mix flexibility directly affects the competitive performance of the manufacturing companies (Oke, 2005). Zhang et al. (2003) identified it as an independent factor affecting customer satisfaction and firm performance. Customer experience satisfaction can be influenced by various factors, such as manufacturing efficiency, product quality, delivery capacity, flexibility, and costs (Zhang et al. 2003).

More recently, there has been published reviews evaluating the state of the art of the strategic flexibility, introducing advanced definitions (Saleh et al., 2009), its relation to other emerging theoretical concepts (Roberts and Stockport, 2009; Combe, 2012). The empirical research results of strategic flexibility has been presented (e.g. Dibrell et al. 2007; Gylling et al., 2012; Guiette and Vandembemt 2014; Verdu-Jover et al., 2014) and meta-review by Brozovic (2018), introducing 141 articles and eight book chapters from year 1978 to 2017 related to strategic flexibility (Brozovic, 2018). Singh et al. (2013) and Hamlin et al. (2012) investigated the barriers to strategic flexibility. Their conclusion is, that most of the obstacles mentioned in a research on strategic flexibility are organisational stiffness, bad governance practices, lack of resources in cost management, and other closely related obstacles limiting the suitability and willingness for strategic changes.

Innovation

Innovation constitutes a fundamental element of entrepreneurship (Schumpeter, 1934, 1982) and is widely seen as one of the key factors generating business growth

(Porter, 1980). Innovativeness represents the aspiration to break away from old technologies or practices and to move forward from the current situation, standing out from competition (Porter, 1980; Lumpkin and Dess, 1996). Innovation can be described as one of the current explanations for companies achieving business growth (Bhide, 2000). The innovation process is described as beginning with an invention or the creation of a new idea, proceeding with the development and implementation of that idea (Van de Ven et al., 1999). Entrepreneurship and innovation are often regarded as intertwined concepts, in that both are seen as necessary and cohesive elements in creating business growth (Braunerhjelm, Acs, Audretsch, and Carlsson, 2009). Landström, Åström, and Harirchi (2015) conducted an extensive review to investigate whether entrepreneurship and innovation are in fact one or two fields of research. Their conclusion was that despite a few interesting overlaps in the knowledge bases, they are two separate fields of research.

When comparing large and small businesses and the impact of innovation on their business, some differences can be noted. Innovation activities have found implicating increased risk level (Eisenhardt and Martin, 2000). SMEs has more limited resources, and are therefore more vulnerable for failures in decision making, while large companies have more slack resources to absorb failure decisions (Acs and Audretsch, 1988; Nohria and Gulati, 1996). Large organisations tend to be more experienced of running innovation projects successfully, while SMEs often lack this experience (Majchrzak et al., 2004; Rosenbusch et al., 2011). SMEs though, can be beneficial by adjusting faster to changes to operation environment due to their agility and less hierarchical organisation structure (Van de Ven, 1986).

Dew, Sarasvathy, Read, and Wiltbank (2008) suggested firms utilise non-predictive effectual logic, and incorporate effectuation (Sarasvathy, 2001) into their innovation processes. Lingelbach, Sriram, Mersha and Saffu (2015) studied the innovation process in emerging economies. They found that flexibility is underemphasised, while pre-commitment is overemphasised. Berends, Jelinek, Reymen and Stultiëns (2014) analysed innovation activities in small enterprises and found flexibility an essential factor for well-being of small firms. Coviello and Joseph (2012) explore how innovators create networks in cooperation with their customers, and reported that cognitive, structural, and relational flexibility all lead to learning agility. Roach et al. (2016) proposed a scale to explicate the effectuation construct relative to innovation and business growth. Velu and Jacob (2016) researched relationships between owner-managers, innovation and competitive factors. Svensrud and Åsvoll (2012) found that pursuing an opportunity will reduce flexibility over time. Brettel, Mauer, Engelen, and Küpper (2012) offer

results supporting the importance of the moderating effect of innovation in the R&D process, suggesting organisation flexibility as suited to accommodating new information.

3. Building of hypotheses

The relationships between innovation and business growth have long been central to entrepreneurship research. Prior research suggests such relationships are crucial for employment and value creation (Storey, 1994; Bhide, 2000; Delmar et al., 2003; Parker et al., 2010). SMEs are generally accepted as a strong source of business growth (Westhead and Storey, 1994), and one of the reasons is that they are highly innovation-oriented (Autio 1998; Kuratko and Hodgetts, 2001). Recent research has raised a question, whether the innovation occurs differently in SMEs than in large firms (Rosenbusch, Brinckmann and Bausch, 2011; Prajogo and McDermott, 2014; Roach et al., 2016). The empirical literature indicates that innovativeness affects business growth in SMEs (Delmar et al., 2003; Kuratko and Hornsby, 2004; Autio 2009; Rosenbusch et al., 2011).

There is a wide consensus, that innovation represents one of the key factors generating business growth (Dew and Sarasvathy, 2007; Gabrielsson and Gabrielsson, 2013; Helmersson and Mattsson, 2013), and has even been nominated as the most focal element affecting to the survival of the nascent firm (Dobson et al., 2013). Prior studies indicate, that SMEs differ from large companies, how they innovate and utilize their resources. They do not deploy those processes universally accepted for the management of large firms (Ottenbacher and Harrington, 2008; Van de Vrande, De Jong, Vanhaverbeke, and De Rochemont, 2009; Rosenbusch et al., 2011). Instead they utilise non-predictive effectual logic, and merge strategic flexibility into their innovation processes (Dew, Sarasvathy, Read and Wiltbank, 2008; Lingelbach, Sriram, Mersha and Saffu, 2015). This article builds on the growing body of the innovation (Zhao, 2005; Blumentritt et al., 2005; Gabrielsson and Gabrielsson, 2013; Helmersson and Mattsson, 2013), and the following hypothesis will be proposed and evaluated in the context of SMEs:

Hypotheses 1: *There is a positive relationship between innovativeness and business growth.*

Some important factors that might be influential for innovation, need to be given more attention, such as existing resources and facilities of the organisation (Maine and Garnsey, 2006). One potential declaration for the divergent findings on the relationship between innovation and business growth, may origin of the insufficient information on the influential factors in this relationship (Li and Atuahene-Gima, 2001).

Business growth is one of the most prominent topics in today's entrepreneurship and management literature (Van de Ven, Polley, Garud, and Venkataraman, 1999; Shane and Venkataraman, 2000). High expectations are placed on entrepreneurs and their small and medium-sized enterprises (SMEs) by governments of the countries all over the world, at a time when markets and societies are changing rapidly (Smallbone and Massey, 2012). Strategic flexibility is found influential to the relationship between innovation and business growth (Li, Su and Liu, 2010).

The company's capability represents the preparedness for contextual risk factors by responding immediately to changes or threats of the market (Grewal and Tansuhaj, 2001; Su, Xie, and Li, 2009). Strategic flexibility enables a firm to prepare for changes, and to redeploy its resources more effectively so enhancing the value of resources directed towards innovation (Oviatt and McDougall, 2005; Li, Liu, Duan, and Li, 2008; Liu et al., 2009;; Zhou and Wu, 2010). Innovation is one of the current explanations offered for companies achieving business growth (Bhide, 2000). Strategic flexibility helps to generate profit from innovation, and therefore to foster business growth (Li, Su and Liu, 2010). Accordingly, because innovation has been shown to affect business growth, and flexibility to enable more effective use of resources, thus benefiting innovation, we propose the following hypothesis in the context of SMEs:

Hypotheses 2: *The relationship between innovation and business growth is not direct, but is mediated by flexibility. Therefore, innovativeness has positive impact on flexibility (H2a) and flexibility has a positive impact on business growth (H2b).*

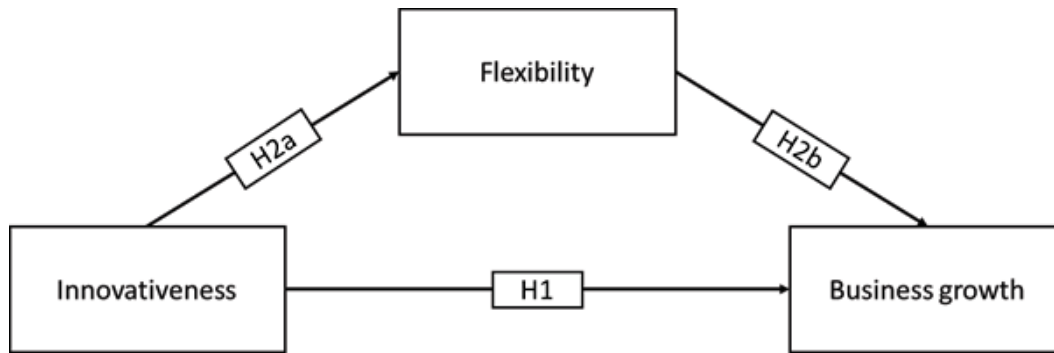


Figure 1. Research framework with the research hypothesis.

This research aims to test is the relationship between innovativeness and business growth direct, or is mediated by strategic flexibility. The main goal is to build a model that shows how flexibility affects the impact of innovativeness on business growth.

4. Methodology

Data collection and analysis

The companies studied were randomly sampled Finnish SMEs, employing between one and 216 employees, with the average-staff size being 35 employees. The annual turnover ranged from one million to 43 million euros. The primary data set for this study was collected through survey questionnaires between January and May 2015, usually in the offices of the participating firms. The data gathering was conducted by research assistants who were students on a university strategic management course, and they were free to choose their informants according to an agreed qualification frame. The findings are based on a sample of 231 informants from two groups; managers and higher executives from 126 firms from various industries and geographical areas in Finland. We used a longitudinal five-year perspective to gather data on the SME's financial records, which were collected from the Orbis database.

For measuring growth, we used turnover growth, the most often used empirical growth indicator in the entrepreneurship and small business research (Murphy, Trailer, and Hill, 1996). We applied a longitudinal five-year perspective to gather data on the SMEs' financial records. Due to the requirement of no missing values of bootstrapping we removed six observations from the dataset as for those

companies financial information was not available for long enough as those companies were start-ups at the time. Also the turnover growth needed to be transformed to positive by summing with standard variable in order to avoiding negative values for which bootstrapping cannot be performed.

Following data gathering and first analysis, we validated the data using Amos24 to cross-validate the findings. First, we tested the skewness and kurtosis of the scale items and we applied an acceptable limit of ± 2 indices (Field, 2000, 2009; Gravetter and Wallnau, 2014; Trochim and Donnelly, 2006); consequently, we removed one unsatisfactory item from the innovation scale. In order to investigate the relationships in this study, innovation was measured using the scale for innovativeness adapted from Santos-Vijande and Álvarez-González (2007) which originates from Hurley and Hult (1998). The innovativeness was measured along a 5-point bi-polar Likert scale.

Second, because the level of analysis in this research is the company level and includes between one and four respondents from each company, we analysed the interrater reliability. To ensure data aggregation to the company level was possible, we used the interrater reliability analysis $R_{WG(J)}$ of James, Demaree, and Wolf (1984) and $R^*_{WG(J)}$ analysis based on equation 5 used by Lindell, Brandt, and Whitney (1999). The interrater reliability results are presented in Table 1. All interrater reliability values are over the universally accepted cut-off point of 0.7 and interrater agreement results were accepted (see Table 1.).

Table1. Interrater reliability of latent variables.

Latent variable	$r_{WG(J)}$	$r^*_{WG(J)}$
Flexibility	0.87	0.84
Innovativeness	0.90	0.85

Third, we used confirmatory factor analysis and structural equation modelling (SEM) to test the constructs of flexibility adapted from Chandler et al. (2011) and innovation as defined by Santos-Vijande and Álvarez-González (2007). We followed the recommendation of Hair, Black, Babin, and Anderson (2014, p.115) that factor loadings should be at least 0.50 with a sample size of 120 to be significant at the .05 significance level and consequently we eliminated two items due to low factor loadings (see Table 2.).

Table 2. Constructs and measurement items.

Construct	Items	Source	Item loading
Flexibility	We allowed the business to evolve as opportunities emerged.	Chandler et al. (2011)	0.60
	We adapted what we were doing to the resources we had. ^a	Chandler et al. (2011)	0.33
	We were flexible and took advantage of opportunities as they arose.	Chandler et al. (2011)	0.66
	We avoided courses of action that restricted our flexibility and adaptability.	Chandler et al. (2011)	0.51
Innovativeness	Innovation proposals are welcome in the organization.	Santos-Vijande & Álvarez-González (2007)	0.83
	Management actively seeks innovative ideas.	Santos-Vijande & Álvarez-González (2007)	0.83
	Innovation is perceived as too risky and is resisted.	Santos-Vijande & Álvarez-González (2007)	0.56
	People are not penalised for new ideas that do not work.	Santos-Vijande & Álvarez-González (2007)	-. ^b
	Program/Project managers promote and support innovative ideas, experimentation and creative processes. ^a	Santos-Vijande & Álvarez-González (2007)	0.47

Notes:
a) Indicator variable dropped due to loadings below 0.50 as recommended by Hair et al. (2014 p.115).
b) Indicator variable removed earlier as skewness and kurtosis indicator limits were not met.

To show nomological validity, we calculated and evaluated multiple model-fit indices: ratio of χ^2 / degrees of freedom (Wheaton, Muthén, Alwin, and Summers, 1977); the root mean square error of approximation (RMSEA) (Steiger and Lind, 1980); the comparative fit index (Hu and Bentler, 1995); incremental fit index (Bollen, 1989) and the Tucker-Lewis coefficient (TLI; Tucker and Lewis, 1973). It is commonly considered that values greater than .95 constitute a good model fit and values greater than .9 suggest an acceptable model fit (Bentler, 1992). For RMSEA, values below .05 represent a good fit, between .08 and .05 represent a reasonable fit, and between .10 and .08 represent a mediocre fit (Browne and Cudeck, 1993; Byrne, 2001; MacCallum et al., 1996).

5. Results

We tested the final model for reliability, convergent validity, (Bagozzi and Phillips, 1982), and discriminant validity (Bagozzi, Yi, and Phillips, 1991). The reliability and convergent validity results are presented in Table 3. We conducted a reliability analysis and found Cronbach's alphas to be over the 0.60 threshold (Nunnally, 1970). With the exception of flexibility, the internal consistency rating was poor at 0.499. (The Cronbach's alpha for flexibility was slightly better before data

aggregation, when it was 0.53). The convergent validity was assessed by checking whether all the latent variables' AVE measures were above the cut-off point of 0.4 proposed by Bagozzi and Baumgartner (1994, p.402) and that the construct reliability was equal to or exceeded 0.6 as stated by Bagozzi and Yi (1988, p. 82). The AVE of flexibility was 0.340, and therefore under the threshold. However, Malhotra and Dash (2011) argue that AVE measures are often too strict, and that reliability should be analysed using construct reliability alone. Therefore, as the construct reliability of flexibility was over the cut-off point of 0.6, the convergent validity was accepted. Each pair of factors recorded the required discriminant validity, as the square root of the AVE measures exceeds the correlation of the corresponding factors. The Fornell–Larcker coefficients were therefore accepted.

Table 3. Model assessment.

Latent variable	CR	AVE	Cronbach's alpha
Flexibility	0.611	0.347	0.518
Innovativeness	0.795	0.570	0.757

Using confirmatory factor analysis (CFA) and structural equation modelling (SEM), we evaluated the measurement and structural models. The removal of one item from flexibility and innovativeness scales due to the low factor loading (<0.5) led to in change in the initial measurement model from ($X^2=37.870$ with 27 degrees of freedom giving a 1.403 ratio; RMSEA=.058; CFI=.944; IFI=.947 TLI=.926) to ($X^2=22.311$ with 14 degrees of freedom giving 1.594 ratio; RMSEA=.071; CFI=.948; IFI=.951 TLI=.923) and the result was improved by allowing pair of error variables to covariate as suggested by modification indices ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953). Our structural model satisfied established model-fit criteria ($X^2=17.691$ with 13 degrees of freedom giving 1.361 ratio; RMSEA=.055; CFI=.971; IFI=.972 TLI=.953)..

First, we examined the relationship between innovativeness and business growth using CFA and SEM. Hypothesis H1 is confirmed because innovativeness has a medium and significant positive effect on business growth ($\beta=.20$, $p<.05$). We then introduced flexibility as a mediator to the model. The innovativeness has a medium and significant effect on flexibility ($\beta=.30$, $p<.05$), confirming hypothesis H2a. Hypothesis H2b is also confirmed as flexibility has a significant positive effect on business growth ($\beta=.26$, $p<.05$).

As both H2a and H2b hypothesis were significant, mediation analysis were conducted using bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). Bootstrapping was conducted with 5000 resamples (Preacher & Hayes, 2008) obtaining the 95% confidence interval of the indirect effect. The mediating role of strategic flexibility in the relationship between innovativeness and business growth was confirmed ($\beta=.077$; CI=.005 to .172; $p<.05$). There is a full mediation as the direct effect between innovativeness and business growth is no longer significant and the size decreases ($\beta=.12$, $p>.10$). As the results have shown, flexibility plays a substantial role in the relationship between innovativeness and business growth. The finding bolsters previous literature indicating that flexibility is one of the key strengths of small firms (Fiegenbaum and Karnani, 1991).

6. Contributions and Implications

The results suggest some potentially useful ideas for managers and entrepreneurs operating SMEs, since all the empirical evidence was collected in the real-life context of established companies. Flexibility seems to be a key element between innovativeness and business growth as the mediating effect is full. We therefore advocate further research to test other mediating variables to reveal the true nature of the relationship between innovativeness and business growth.

This study highlights that companies opting for a customer-oriented approach seem to have achieved success and growth regardless of the prevailing conditions in their field of operations. The results of this study strengthen the previous findings that logics based on strategic flexibility seem to suit SMEs, particularly because such firms tend to have limited resources, a propensity to focus on one or a few projects, and an ability to retain a flexible approach to their business. The studied period appears to have been a more successful one for those companies that reacted to changes in their operating environments and that adapted their activities to reflect changes to their situations.

The results confirm previous findings indicating that growth companies leverage new information to deliver greater value for their customers. This study proposes that for entrepreneurs, having an aptitude to exploit opportunities arising from the business environment is a critical factor in their achieving business growth. Gathering information was associated with networking and building strategic alliances, and accordingly, these last two activities can be considered shared in identifying opportunities for business growth. We would encourage companies to strengthen their capabilities and streamline their processes, since ventures that

show a high level of innovativeness and deploy their resources to fulfil their customers' requirements, appear to improve their outcome, comparing to one's that do not (Fiegenbaum and Karnani, 1991). The findings confirm those of prior literature indicating flexibility is one of the key elements of successful small firms (Fiegenbaum and Karnani, 1991).

7. Limitations and avenues for future research

As an extension to this study, upcoming research could explore a wider range of constructs explaining the business growth coming from innovativeness. While different entrepreneurial constructs were explored to some extent, a few interesting aspects were not addressed. The wider range of constructs open to exploration could include: internationalisation, entrepreneurial orientation and environmental effects. Flexibility might also have a mediating role in these settings. We would encourage quantitative studies on the impact of company age as a control variable in determining if flexibility truly comprises one of the key competitive factors for manufacturing organisations (Berends et al., 2014). Whether firms employ a strategic flexibility approach to innovation will depend on variables such as firm size and age (Roach et al., 2016). Berends et al. (2014) raised the question of how organisational size affects the degree to which principles of flexibility are used in product innovation. The current research opens new avenues for understanding flexibility in relation to the context of organisation-level innovation by contributing quantitative results on this phenomenon.

Using a translation from English to Finnish in the research questions might have opened our study up to an accordsant bias, even though we did employ researcher triangulation among the research group to strengthen the reliability of the translation and to minimise opportunities for errors. Another factor that might affect this phenomenon relates to differences in national culture, since all the informants are from the same country. Cross cultural sampling in future studies could provide more versatile and generalisable results.

References

- Agarwal, R. & Helfat, C.E. (2009). Strategic Renewal of Organizations. *Organization Science* 20, 2, 281-293.
- Acs, Z.J., Audretsch, D.B. (1988). Innovation in large and small firms: an empirical analysis. *American Economic Review*, 78 (4), 678–690.
- Autio, E. (2009). The Finnish paradox: The curious absence of high growth entrepreneurship in Finland. ETLA Discussion Paper, No. 1197.
- Bagozzi, R.P. and Baumgartner, H. (1994). The evaluation of structural equation models and hypothesis testing. In Bagozzi, R. (Ed.), *Principles of Marketing Research* (pp. 386–422). Oxford: Blackwell Business.
- Bagozzi, R., and Phillips, L. W. (1982). Representing and testing organizational theories: A holistic construal. *Administrative Science Quarterly*, 27 (3), 459–490.
- Bagozzi, R., and Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16 (1), 74.
- Bagozzi, R., Yi, Y., and Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36 (3), 421–458.
- Barringer, B.R., Jones, F.F., Neubaum, D.O. (2005). “A Quantitative Content Analysis of the Characteristics of Rapid-growth Firms and Their Founders”, *Journal of Business Venturing* 5, 663-87.
- Bentler, P.M. (1992). On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*, 112, 400–404.
- Berends, H., Jelinek, M., Reymen, I. and Stultiëns, R. (2014). Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation, *Journal of Product Innovation Management*, 31 (3), 616–635.
- Bhide, A. (2000). *The origin and evolution of new businesses*. Oxford University Press, New York.
- Blumentritt, T., Kickul, J. and Gundry, L.K. (2005). Effects of involvement on venture performance and innovation. *The International Journal of Entrepreneurship and Innovation*, 6 (2), 77-84.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods and Research*, 17, 303–316.

- Bolwijn, P.T. & Kumpe, T. (1990). Manufacturing in the 1990s—Productivity, flexibility and innovation. *Long Range Planning*, 23 (4), 44-57.
- Braunerhjelm, P., Acs, Z. J., Audretsch, D. B., and Carlsson, B. (2009). The missing link: knowledge diffusion and entrepreneurship in endogenous growth. *Small Business Economics*, 34 (2), 105–125.
- Brettel, M., Mauer, R, Engelen, A. and Küpper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing*, 27, 167–184.
- Browne, M.W. & Cudeck, R., (1993). Alternative ways of assessing model fit. In: Bollen, K.A., Long, J.S. (Eds.), *Testing Structural Equation Models*. Sage, Newbury Park, 136–162.
- Brozovic, D. (2018). Strategic Flexibility: A Review of the Literature. *International Journal of Management Reviews*, 20 (1), 3–31.
- Byrne, B.M., (2001). *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming*. Lawrence Erlbaum Associates, New Jersey.
- Chandler, G., DeTienne, D., McKelvie, A. and Mumford, T. (2011). Causation and effectuation processes: a validation study. *Journal of Business Venturing*, 26, 375–390.
- Chaston, I. (2012). *Strategy for Sustainable Competitive Advantage: Surviving Declining Demand and China's Global Development*. New York, NY: Routledge.
- Combe, I.A. and Greenley, G.E. (2004). Capabilities for strategic flexibility: a cognitive content framework. *European Journal of Marketing*, 38, 1456–1480.
- Combe, I.A., Rudd, J.M., Leeflang, P.S.H. and Greenley, G.E. (2012). Antecedents to strategic flexibility: management cognition, firm resources and strategic options. *European Journal of Marketing*, 46, 1320–1339.
- Coviello, N.E., and Joseph, R.M. (2012). Creating major innovations with customers: Insights from small and young technology firms. *Journal of Marketing*, 76 (6), 87–104.
- Davidsson P., and Delmar, F. (2006). High-growth firms and their contribution to employment: The case of Sweden 1987–96. In P. Davidsson, F. Delmar, and J. Wiklund (Eds.), *Entrepreneurship and the growth of firms* (pp. 156–174). Cheltenham, UK: Edward Elgar.

Davidsson, P., and Wiklund, J. (2000). Conceptual and empirical challenges in the study of firm growth. In D. Sexton, H. Landström (Eds.), *The Blackwell handbook of entrepreneurship* (pp. 26–44). Oxford, MA: Blackwell.

Delmar, F., 2000. Measuring Growth: Methodological Considerations and Empirical Results. Entrepreneurship and Small Business Research Institute (ESBRI), Stockholm.

Delmar, F., Davidsson, P. & Gartner, W.B. (2003). Arriving at the High-growth Firm. *Journal of Business Venturing* 18, 2, 189–216.

Dew, N., Read, S., Sarasvathy, S.D., and Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: differences between experts and novices. *Journal of business venturing*, 24, 287–309.

Dew, N., and Sarasvathy, S. (2007). Innovations, Stakeholders, and Entrepreneurship. *Journal of Business Ethics*, 74, 267–283.

Dew, N., Sarasvathy, S.D., Read, S., and Wiltbank, R. (2008). Immortal firms in mortal markets? *European Journal of Innovation Management*, 11 (3), 313–329.

Dobson, S., Breslin, D., Suckley, L., Barton, R. and Rodriguez, L. (2013). Small firm survival and innovation, an evolutionary approach. *The International Journal of Entrepreneurship and Innovation*, 14 (2), 69-80.

Eisenhardt, K.M., Martin, J.A. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, 21 (10/11), 1105–1121.

Escrig-Tena, A.B., Bou-Llusar, J.C., Beltran-Martin, I. and Roca-Puig, V. (2011). Modelling the implications of quality management elements on strategic flexibility. *Advances in Decision Sciences*, 2011, <http://dx.doi.org/10.1155/2011/694080>

Fernandez-Perez, V. and Gutierrez, L.G. (2013). External managerial networks, strategic flexibility and organisational learning: a comparative study among non-QM, ISO and TQM firms. *Total Quality Management and Business Excellence*, 24, 243–258.

Fiegenbaum, A., and Karnani, A. (1991). Output flexibility: A competitive advantage of small firms, *Strategic Management Journal*, 12 (2), 101–114.

Field, A. (2000). *Discovering statistics using spss for windows*. London-Thousand Oaks-New Delhi: Sage publications.

- Field, A. (2009). *Discovering statistics using SPSS*. London: SAGE.
- Fisher, G. (2012). Effectuation, causation, and bricolage: a behavioral comparison of emerging theories in entrepreneurship research, *Entrepreneurship Theory and Practice*, 36 (5), 1019–1051.
- Gabrielsson, P., and Gabrielsson, M. (2013). A dynamic model of growth phases and survival in international business-to-business new ventures: The moderating effect of decision-making logic, *Industrial Marketing Management*, 42, 1357–1373.
- Garud, R. and Gehman, J. (2016). Theory Evaluation, Entrepreneurial Processes, and Performativity *Academy of Management Review*, 41 (3), 544-549.
- Gilbert, C. G. (2005). Unbundling the structure of inertia: Resource versus routine rigidity. *Academy of Management Journal*, 48 (5): 741–763.
- Gravetter, F., and Wallnau, L. (2014). *Essentials of statistics for the behavioral sciences*. (8th ed.). Belmont, CA: Wadsworth.
- Grewal, G., and P. Tansuhaj. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing*, 65 (2): 67–80.
- Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2014). *Multivariate Data Analysis: Pearson New International Edition*. (7th ed.). Harlow: Pearson Education Limited.
- Hamlin, R., Henry, J. and Cuthbert, R. (2012). Acquiring market flexibility via niche portfolios: the case of Fisher and Paykel Appliance Holdings Ltd. *European Journal of Marketing*, 46, pp. 1302–1319.
- Helmerson, H., and Mattsson, J. (2013). Text-analytic measurement of effectuation and causation orientations among small and global business managers, *Qualitative and Quantitative research*, 47, 3493–3507.
- Hu, L., and Bentler, P. (1995). Evaluating model fit in R. Hoyle (Ed.), *Structural Equation Modelling: Concepts, Issues, and Applications* (pp. 76–99). Thousand Oaks, CA: Sage Publications.
- Hurley, R. F., and Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: An integration and empirical examination. *Journal of Marketing*, 62 (3), 42–54.

- James, L. R., Demaree, R. G., and Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69, 85–98.
- Katsuhiko, S., and M. A. Hitt. (2004). Strategic flexibility: Organizational preparedness to reverse ineffective strategic decisions. *Academy of Management Executive*, 18 (4): 44–59.
- Kuratko, D.F., Hornsby, J.S. & Goldsby, M.G. (2004). Sustaining corporate entrepreneurship: A proposed model of perceived implementation/outcome comparisons at the organizational and individual levels. *International Journal of Entrepreneurship and Innovation*, 5 (2), 77–89.
- Landström, H., Åström, F., and Harirchi, G. (2015). Innovation and entrepreneurship studies: One or two fields of research? *International Entrepreneurship and Management Journal*, 11 (3), 493–509.
- Leitch, C., Hill, F., and Neergaard, H. (2010). Entrepreneurial and Business Growth and the Quest for a “Comprehensive Theory”: Tilting at Windmills, *Entrepreneurship Theory and Practice*, 34 (2), 249–260.
- Li, Y., Y. Liu, Y. Duan, and M. F. Li. (2008). Entrepreneurial orientation, strategic flexibilities and indigenous firm innovation in transitional China. *International Journal of Technology Management*, 41 (1/2), 223–246.
- Li, Y., Z. Su, and Y. Liu. (2010). Can strategic flexibility help firms profit from product innovation? *Technovation*, 30 (5/6): 300–309.
- Li, H., and K. Atuahene-Gima. (2001). Product innovation strategy and the performance of new technology ventures in China. *Academy of Management Journal*, 44 (6): 1123–1134.
- Liu, Y., Y. Li, and Z. Wei. (2009). How organizational flexibility affects new product development in an uncertain environment: Evidence from China. *International Journal of Production Economics*, 120 (1): 18–29.
- Lindell, M., Brandt, C., and Whitney, D. (1999). A revised index of interrater agreement for multi-item ratings of a single target. *Applied Psychological Measurement*, 23 (2), 136–146.
- Lingelbach, D., Sriram, V., Mersha, T., and Saffu, K. (2015). The innovation process in emerging economies. An effectuation perspective, *International Journal of Entrepreneurship and Innovation*, 16 (1), 5–17.

- MacCallum, R.C., Browne, M.W. & Sugawara, H.M., (1996). Power analysis and determination of sample size for covariance structure modelling. *Psychological Methods* 1, 130–149.
- Majchrzak, A., Cooper, L.P., Neece, O.E. (2004). Knowledge reuse for innovation. *Management Science*, 50 (2), 174–188.
- Malhotra, N. K., and Dash, S. (2011). *Marketing Research an Applied Orientation*. London: Pearson Publishing.
- Mason, K. and Mouzas, S. (2012). Flexible business models. *European Journal of Marketing*, 46, pp. 1340–1367.
- McKelvie, A., and Wiklund, J. (2010). Advancing firm growth research: a focus on growth mode instead of growth rate, *Entrepreneurship Theory and Practice*, 34, (2), 261–288.
- MacKinnon, D.P. , Fritz, M.S., Williams, J. & Lockwood, C.M. (2007). Distribution of the product confidence limits for the indirect effect: Program PRODCLIN. *Behavior Research Methods*, 39, 384-389.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7 (1): 83-103.
- MacKinnon, D.P., Lockwood, C.M. & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128.
- Murphy, G. B., Trailer, J. W., and Hill, R. C. (1996). Measuring performance in entrepreneurship research, *Journal of Business Research*, 36, 15–23.
- Nadkarni, S., and V. K. Narayanan. (2007). Strategy frames, strategic flexibility and firm performance: The moderating role of industry clockspeed. *Strategic Management Journal*, 28 (3): 243–270.
- Nohria, N., Gulati, R. (1996). Is slack good or bad for innovation? *Academy of Management Journal*, 39 (5), 1245–1264.
- Nunnally Jr, J.C. (1970). *Introduction to psychological measurement*. New York: McGraw-Hill.
- Oke, A. (2005). A framework for analyzing manufacturing flexibility. *International Journal of Operations & Production Management*, 25 (10), 973–996.

- Oke, A. (2007). Innovation types and innovation management practices in service firms. *International Journal of Operations & Production Management*, 27, 564–587.
- Oke, A. (2013). Linking manufacturing flexibility to innovation performance in manufacturing plants. *International Journal of Production Economics*, 143, 242–247.
- Ottensbacher, M.C. and Harrington R.J. (2008). New Service development of entrepreneurial innovations in the IT sector, identifying the levers for success. *International Journal of Entrepreneurship and Innovation*, 9 (1), 21–31.
- Oviatt, B. M., and P. P. McDougall. (2005). Defining international entrepreneurship and modelling the speed of internationalization. *Entrepreneurship Theory and Practice*, 29 (5): 537–54.
- Porter, M.E., 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press, New York.
- Prajogo, D. and McDermott, C. M. (2014), Antecedents of Service Innovation in SMEs: Comparing the Effects of External and Internal Factors. *Journal of Small Business Management*, 52, 521–540.
- Preacher, K.J. & Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments and Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40 (3): 879-891.
- Reymen, I., Andries, P., Berends, H., Mauer, R., Stephan, U., and Van Burgh, E. (2015). Understanding dynamics of strategic decision making in venture creation: A process study of effectuation and causation, *Strategic Entrepreneurship Journal*, 9, 351–379.
- Roach, D., Ryman, J., and Makani, J. (2016). Effectuation, innovation, and performance in SMEs: an empirical study, *European Journal of Innovation Management*, 19 (2), 214–238.
- Roberts, N. and Stockport, G.J. (2009). Defining strategic flexibility. *Global Journal of Flexible Systems Management*, 10, 27–32.

Rosenbusch, N., Brinckmann, J. and Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26, 441–457.

Saleh, J.H., Mark, G. and Jordan, N.C. (2009). Flexibility: a multi-disciplinary literature review and a research agenda for designing flexible engineering systems. *Journal of Engineering Design*, 20, 307–323.

Sanchez, R. (1995). Strategic flexibility in product competition. *Strategic Management Journal*, 6, 35–159.

Santos-Vijande, M. L., and Álvarez-González, L. I. (2007). Innovativeness and organizational innovation in total quality oriented firms: The moderating role of market turbulence. *Technovation*, 27 (9), 514–532.

Sarasvathy, S. (2001). Causation and effectuation: towards a theoretical shift from economic inevitability to entrepreneurial contingency, *Academy of Management Review*, 26, 243–263.

Sarasvathy, S. (2008). *Effectuation: Elements of Entrepreneurial Expertise*, Edward Elgar Cheltenham, UK.

Schumpeter, A. (1934). *The Theory of Economic Development*. Harvard University Press, Cambridge, MA.

Schumpeter, J.A. (1982). *The Theory of Economic Development: an Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Transaction Publishers, Piscataway, NJ.

Scozzi, B., Garavelli, C., and Crowston, K. (2005). Methods for modelling and supporting innovation processes in SMEs. *European Journal of Innovation Management*, 8 (1), 120–37.

Shane, S. (2009). Why Encouraging More People to Become Entrepreneurs is Bad Public Policy. *Small Business Economics* 33, 2, 141-149.

Shane, S., Venkatamaran, S. (2000). The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, 25 (1), 217-226.

Shepherd, D., and Wiklund, J. (2009). Are we comparing apples with apples or apples with oranges? Appropriateness of knowledge accumulation across growth studies. *Entrepreneurship: Theory and Practice*, 33 (1), 105–123.

- Singh, D., Oberoi, J.S. and Ahuja, I.S. (2013). An empirical examination of barriers to strategic flexibility in Indian manufacturing industries using analytical hierarchy process. *International Journal of Technology, Policy and Management*, 13, 313–327.
- Smallbone, D. and Massey, C. (2012). Targeting for growth: a critical examination. *The International Journal of Entrepreneurship and Innovation*, 13 (1), 45-55.
- Steiger, J., and Lind, J. (1980). *Statistically based tests for the number of common factors*. Paper presented at the Annual Meeting of the Psychometric Society.
- Su, Z., Xie, E., Li, Y. (2009). Organizational slack and firm performance during institutional transitions. *Asia Pacific Journal of Management*, 26, 75–91.
- Svensrud, E., and Åsvoll, H. (2012). Innovation in large corporations: A development of the rudimentary theory of effectuation. *Academy of Strategic Management Journal*, 11 (1), 59–89.
- Tall, J. (2014). Yrityskauppa ja strateginen uudistuminen, *Acta Wasaensia* 305, Dissertation.
- TenDam, H.W. (1987). Managerial flexibility: a strategic asset. *Leadership and Organization Development Journal*, 8, 11–16.
- Trochim, W. M., and Donnelly, J. P. (2006). *The research methods knowledge base* (3rd ed.). Cincinnati, OH: Atomic Dog.
- Tucker, L. R., and Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38(1), 1–10.
- Ussman, A., Almeida, A., Ferreira, J. and Mendes, L. (2001). SMES and innovation Perceive barriers and behavioural patterns. *The International Journal of Entrepreneurship and Innovation*, 2 (2), 111-118.
- Van de Ven, A.H., Polley, D.E., Garud, R., and Venkataraman, S. (1999), *The Innovation Journey*. New York: Oxford University Press.
- Van de Vrande, V., De Jong, J.P., Vanhaverbeke, W., and De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges, *Technovation*, 29 (6), 423–437.
- Varamäki, E., Saarakkala, M. & Tornikoski, E. (2007). Kasvuyrittäjyyden olemus ja pk-yritysten kasvustrategiat Etelä-Pohjanmaalla. Seinäjoen ammattikorkeakoulun julkaisusarja A, Tutkimuksia 5.

- Velu, C., and Jacob, A., (2016). Business model innovation and owner–managers: the moderating role of competition, *R&D Management*, 46 (3), pp 451–463.
- Weinzimmer, L. G., Nystrom, P. C., and Freeman, S. J. (1998). Measuring organizational growth: Issues, consequences and guidelines. *Journal of Management*, 24 (2), 235–262.
- Westhead P. & Storey, D. (1996). Management Training and Small Firm Performance: Why is the Link So Weak? *International Small Business Journal: Researching entrepreneurship*, 14(4), 13-24.
- Wheaton, B., Muthén, B., Alwin, D. F., and Summers, G. F. (1977). Assessing reliability and stability in panel models. In D. R. Heise (Ed.), *Sociological methodology* (pp. 84–136). San Francisco: Jossey-Bass.
- Wiltbank, R., Dew, N., Read, S., and Sarasvathy, S. (2006). What to do next? The case for non-predictive strategy, *Strategic Management Journal*, 27, 981–998.
- Zhang, J. (2009). The Performance of University Spin-offs: An Exploratory Analysis Using Venture Capita Data. *Journal of Technology Transfer* 34, 255-285.
- Zhao, F. (2005). Entrepreneurship and innovation in e-business, an integrative perspective. *The International Journal of Entrepreneurship and Innovation*, 6 (1), 53-60.
- Zhou, K. Z., and F. Wu. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31 (5): 547–561.