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Team-based portfolio entrepreneurship and resource orchestration

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Abstract

Entrepreneurship involves exploring and exploiting business opportunities in environments filled with uncertainty. Whereas the firms' resources are vital elements to sustainability, it is an inadequate observation for enduring entrepreneurship. The strategic entrepreneurship perspective highlights the managerial importance to reach strategic objectives, and some continuously rejuvenate their businesses through time and changing markets by exploring and exploiting opportunities. Portfolio entrepreneurship is a brilliant example, as it has been recognized as a viable model that continuously deal with the trade-off between exploration and exploitation. However, the theory is still far underdeveloped and lacks empirical data on managerial processes. This study expands our knowledge by examining team-based portfolio entrepreneurs who focus on early-stage startups, through the research questions; (1) What triggers resource orchestration across firms in the portfolio context?; (2) How do team-based portfolio entrepreneurs operate and differ from single portfolio entrepreneurs? What effects does this imply in the portfolio context?; (3) How is early-stage entrepreneurship conducted and what effects does this imply in the portfolio context with team-based entrepreneurs?

Through a single-case study, eight subprocesses are identified among the entrepreneurs at top managerial-level. First, *centralizing* and *facilitating* was found to be the vital elements to enable resource orchestration across firms. Second, the entrepreneurs engaged in *collaboration*, *exchanging network*, *adapting roles*, and *reallocating capacity*. By using collective strengths accordingly to startup needs, they enhance individual responsibilities at the operational level. Third, through actively *incubating* opportunities and *decoupling* startups at scaling stage they renew the portfolio, by being cautious in the process they assist further growth and enable a focus on early-stage startups. These subprocesses were grouped into the aggregated theoretical constructs of *fostering conditions*, *sharing*, *harmonizing*, and *rejuvenating*.

This contributes to portfolio entrepreneurship and resource orchestration by providing insights on enabling factors for resource orchestration across firms, and the managerial processes used for exploration, exploitation, and ultimately enduring entrepreneurship. Furthermore, findings illustrate that the optimal scope of a portfolio is not finite, and depends on the amount of responsibility and capacity. Entrepreneurs can obtain insights for strengthening team effects by studying the eight subprocesses. Lastly, this provides policymakers with new insights on the value from portfolio setups and contributes to the discussion if portfolio entrepreneurs whom co-founds could address the lack of commercialization skills better than business incubators.

Sammendrag

Entreprenørskap innebærer å utforske og utnytte forretningsmuligheter i markeder fylt med usikkerhet. Mens bedriftens ressurser er viktige elementer for bærekraft, er det en utilstrekkelig måleenhet for varig entreprenørskap. Det strategiske entreprenørskapsperspektivet fremhever betydningen av ledelse for å nå strategiske mål, og noen fornyer kontinuerlig sine virksomheter gjennom tid og markeder ved å utforske og utnytte forretningsmuligheter. Portefølje-entreprenørskap fremstår som et glimrende eksempel, da det har blitt anerkjent som en levedyktig modell som kontinuerlig håndterer kompromisset mellom utforskning og utnyttelse. Teorien er imidlertid fortsatt svært underutviklet og mangler empiriske data på ledelsesprosesser. Denne studien utvider litteraturen ved å undersøke teambaserte porteføljeentreprenører som fokuserer på tidlig-fase oppstarter gjennom forskningsspørsmålene; (1) Hva utløser ressursorkestrering på tvers av bedrifter i en portefølje?; (2) Hvordan opererer teambaserte porteføljeentreprenører og skiller seg fra enkelt-porteføljeentreprenører? Hvilke effekter fører dette til i porteføljekonteksten?; (3) Hvordan praktiseres tidlig-fase entreprenørskap, og hvilke ringvirkninger innebærer dette for teambaserte entreprenører?

Gjennom et enkelt casestudie identifiseres åtte delprosesser blant entreprenørene på toppledelsesnivå. For det første ble *sentralisering* og *tilrettelegging* identifisert som kritiske elementer for å muliggjøre ressursorkestrering på tvers av firmaer. For det andre samarbeider entreprenørene gjennom *samspill*, *utveksling av nettverk*, *tilpasning av roller* og *reallokering av kapasitet*. Ved å bruke hverandres styrker i samsvar med oppstartsbehov forbedrer de individuelle oppgaver på operativt nivå. For det tredje, *dyrker* de muligheter og *avkobler* oppstarter i skaleringsfasen for å fornye porteføljen. Ved å være påpasselig i prosessen sikrer de videre vekst og muliggjør et fokus på tidlig fase oppstarter. Delprosessene ble aggregert til fire teoretiske konstruksjoner – *tilrettelegging av forhold*, *deling*, *harmonisering* og *fornyelse*.

Dette bidrar til teorien på porteføljeentreprenørskap og ressursorkestrering ved å gi innsikt om triggere for ressursorkestrering på tvers av bedrifter, samt ledelsesprosessene som brukes til utforskning, utnyttelse, og helhetlig varig entreprenørskap. Videre illustrerer studiet at det optimale porteføljeomfanget ikke er en endelig sum, men avhenger av mengden ansvar og individuell kapasitet. Entreprenører kan få innsikt til å styrke teameffekter ved å studere de åtte delprosessene. Til slutt gir dette myndigheter ny innsikt om verdien til porteføljeoppsett, og bidrar derfor til diskusjonen om porteføljeentreprenører som medgründer kan adressere mangelen på kommersialiseringsferdigheter bedre enn forretningsinkubatorer.

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Table of contents

List of figures

List of tables

1 Introduction

Entrepreneurship revolves around exploring and exploiting opportunities in environments filled with uncertainty (Shane and Venkataraman, 2000). The perspective of strategic entrepreneurship emphasizes the need for firms to engage in both activities for long-term sustainability (Hitt et al., 2001, Hitt et al., 2011). As to some firms who showcase great degree of entrepreneurial activity, and continuously rejuvenate their business model to endure through time and dynamic markets. Theory on resource orchestration argues this strong and enduring performance can be linked to the combination of resources, capabilities, and managerial exploitation (Chadwick, Super and Kwon, 2015, Helfat et al., 2009, Sirmon, Hitt and Ireland, 2007, Sirmon et al., 2010). Portfolio entrepreneurship portraits an excellent example on this matter, as they are associated with having a more extensive resource base, and has been recognized as a viable model (Carter and Ram, 2003, Lechner and Leyronas, 2009). Portfolio entrepreneurs subsequently own shares in two or more firms, which they have founded, bought or inherited (Westhead and Wright, 1998). Whereas the individual entrepreneur traits, personalities and their motives to continuously engage in business development has been research to a great extent (Iacobucci, 2002, Iacobucci and Rosa, 2010, Ucbasaran et al., 2008, Ucbasaran, Westhead and Wright, 2009). The theory on managerial actions used to conduct such business development over time, has predominantly been overlooked (Priem and Butler, 2001). In the last decade, theory on resource orchestration has started to expand our understanding of processes used within firms, and across a portfolio of firms (Sirmon et al., 2010, Baert et al., 2016). This gives us concepts to understand how these entrepreneurs consistently engage in enduring entrepreneurship. However, as the empirical data is scarce the boundaries to which extent this theory reaches, remains unknown.

In this study, I aim to expand our understanding by moving from the perspective of one portfolio entrepreneur to a team of portfolio entrepreneurs. Being a team enables them to collaborate and discuss their individual responsibilities in the portfolio. Questions that arises is what is the motivation behind such collaboration, how is the collaboration conducted and how does this affect the portfolio? Moreover, this team focuses solely on the earliest stages of the startup life cycle and maintains a high turnover of startups. This implies an ability to focus and seemingly honing of expertise, but should accordingly create requirements for the inflow and outflow of opportunities. The study is threefold. First, I aim to expand our understanding of resource orchestration across firms by examining the driving factors that foster such dynamics. Second, I examine which dynamics and effects that can be derived from a collaborating team, and how this can extend our understanding from a single portfolio entrepreneur. Third, I aim to study how early-stage focused entrepreneurship functions and which effects that can be derived in the portfolio context. I build on prior work from resource orchestration and address the following research questions:

(1) What triggers resource orchestration across firms in the portfolio context?
(2) How do team-based portfolio entrepreneurs operate and differ from single portfolio entrepreneurs? What effects does this imply in the portfolio context?
(3) How is early-stage entrepreneurship conducted and what effects does this imply in the portfolio context with team-based entrepreneurs?

For this matter, I apply a single interpretive case study approach. Through an iterative process of interviewing key persons as well as examining secondary data on the portfolio, I propose eight subprocesses (*collaborating*, *exchanging*, *adapting*, *reallocating*, *incubating*, *decoupling*, *centralizing*, and *facilitating*) used between a team at the top-managerial level to enhance their individual responsibilities in the portfolio. This indicates that the effects from team-based portfolio entrepreneurship could increase the success rate of startups, and thus could serve as a suitable model to develop startups. In this study, I discuss the intertwined relationship of these subprocesses and summarize them in aggregated theoretical constructs (*sharing*, *harmonizing*, *rejuvenating*, and *facilitating conditions*). I contribute to the theory of processes used in team-based portfolio entrepreneurship and extends our understanding of the value from portfolio entrepreneurship and resource orchestration. Furthermore, I provide findings that illuminates the vital importance of *centralizing* and *facilitating* to foster resource orchestration across firms in a portfolio context. Thus extending previous work on resource orchestration activities (Baert et al., 2016, Sirmon et al., 2010). The findings also serve as guidelines for portfolio entrepreneurs interested in obtaining resource orchestration effects. For policymakers, I showcase the viability of portfolio entrepreneurship in terms of addressing lack of commercialization skills among research environments in Norway. Thus contributing to the discussion whether portfolio entrepreneurs could be more suited than business incubators to commercialize technology, even though it is less scalable when an actor is involved operationally rather than advisory. Because the findings indicate that experienced business developers can make the crucial early-stage more feasible.

The thesis proceeds as follows. Chapter 2, creates a frame of reference with relevant theory to clarify entrepreneurial definitions, and resource orchestration in the portfolio context which will be used to conceptualize a framework. Chapter 3, presents the applied methodology alongside a general introduction to the case, and methodological limitations. Chapter 4, describes the historical development of the case study. Chapter 5, builds upon the historical development and proceeds by analyzing central aspects of their approach to team-based portfolio entrepreneurship. Chapter 6, gathers the findings in concluding remarks along with implications, limitations, and suggestions for further research.

2 Frame of reference

2.1 Entrepreneurial and managerial definitions

Literature categories entrepreneurs into six different types; latent-, nascent-, novice-, one-time-, habitual-, serial- and portfolio entrepreneur. Latent entrepreneurs describe those in the process of considering different options but not trying, as one sitting on the fence. Nascent entrepreneurs are those experimenting and trying to build a venture. When the direction becomes more permanent, the term overlaps into the term novice entrepreneur. Novice entrepreneurs have little to no experience and work with developing a startup. As this venture becomes established and sustainable one has a firm. Depending on which path the entrepreneur chooses to follow the literature distinguishes between three options. By continuing in the same firm, the founder is referred to as a one-time entrepreneur. If the founder decides to grow new ventures the literature describes habitual entrepreneurs, which are those with previous startup experience (Westhead and Wright, 1998). However, this term splits into two terms depending on chosen path. By closing and starting a new firm, one describes the founder as a serial entrepreneur. If the founder were to continue with the previous firm and simultaneously start a company the literature defines the founder as a portfolio entrepreneur (Alsos and Kolvereid, 1998, Westhead and Wright, 1998). Notably, there is the possibility where serial entrepreneurs at a later stage decide to start a new venture alongside previous firms. Then they are described as portfolio entrepreneurs. These terms are illustrated below in Figure 1.

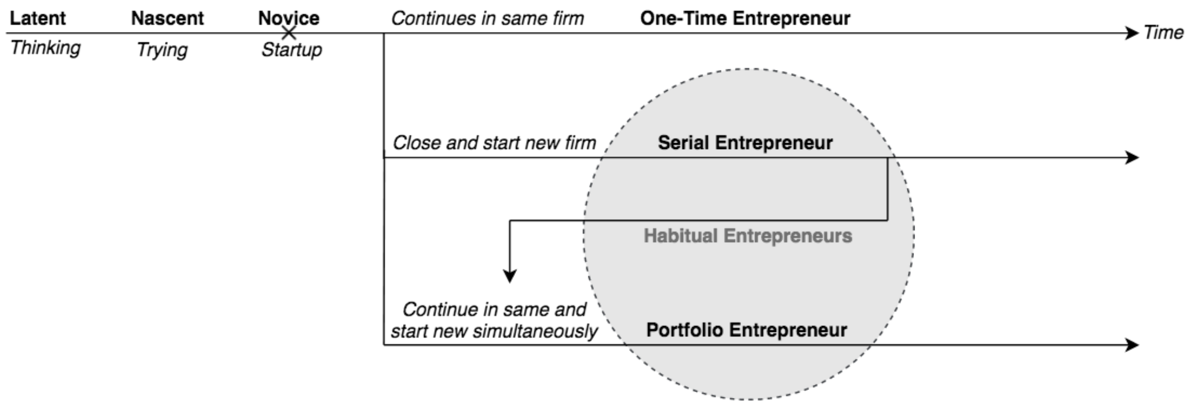

Figure 1: Entrepreneurial definitions

Furthermore, literature distinguishes between entrepreneurs and founders. The founders are responsible for initiating on the birth of a new venture, while the term entrepreneurs are broader. Entrepreneurs include founders and those who acquire a firm through a process, e.g., purchase or inheritance (Westhead and Wright, 1998). Closely related, but yet different is the term founding angels, defining individuals who exclusively develop external ideas. Typically they find high-tech startups and joins on the operational side with a long-term view as well as optionally investing money (Festel and De Cleyn, 2013). In this case, we study a team of portfolio entrepreneurs who build internal and external ideas (further presented under chapter 3).

The literature on managerial levels typically focuses on top, middle and operational level (Ireland et al., 1987, Floyd and Lane, 2000). Where Floyd and Lane (2000) argues the significant difference comes from variance in behaviors and the amount and type of information each manager holds. Operational managers focus on day-to-day activities of specific groups within a firm, while top-level managers are more focused on the firm as a whole. Wooldridge, Schmid and Floyd (2008) argue, middle managers are often broadly understood as managers below the top managers and above first level. This general categorization describes a typically established firm with a hierarchal system. In the context of resource orchestration empirical work are likewise limited, to entrepreneurs in a single managerial level (Sirmon, Hitt and Ireland, 2007) or recently portfolio entrepreneurs in alone at the top managerial level (Baert et al., 2016). Therefore, it is vital to gather empirical data to extend our understanding further. This study addresses the perspective of team-based portfolio entrepreneurs working in the early-stage of startups. Startups that might have between one and eight people in total, where each person makes substantive contributions. As the entrepreneurs have no board to report to or others above them the team of portfolio entrepreneurs engages in the whole managerial spectrum when dealing with startups. In this context where the purpose is to study how a team of portfolio entrepreneurs operate between each other's and how this is used towards each firm, the study proceeds in the perspective of top-level management. Thus, a study of how top managerial-level operates between each other to enhance their responsibilities at the operational level.

2.2 Theoretical background

The perspective of strategic entrepreneurship highlights the importance of resource orchestration activities for exploration and exploitation in order to endure over time. Implying that only looking at which resources a firm owns, is an inadequate observation if one are to understand what causes enhanced performance (Morrow et al., 2007, Sirmon, Gove and Hitt, 2008). The theory on resource orchestration focuses on the managerial actions to explain how strategic objectives is reached (Hansen, Perry and Reese, 2004, Sirmon et al., 2010) and is seen as a vital support function to develop, and exploit capabilities (Rindova and Kotha, 2001, Wales et al., 2013). Within a single firm, theory suggests the managers engage in the processes of structuring the portfolio of resources (i.e., acquiring, accumulating, and divesting), bundling resources to form capabilities (i.e., stabilizing, enriching, and pioneering), and leveraging capabilities in the market (i.e., mobilizing, coordinating, and deploying) to create value (Sirmon, Hitt and Ireland, 2007). Whereas, resource orchestration across a portfolio of firms include the processes of sharing resources (i.e., accessing, multiplying, and redeploying), transforming resources from disadvantageous to favorable opportunity pursuits (i.e., incubating and decoupling), and harmonizing the portfolio (i.e., aligning, complementing, and pruning) to create value (Baert et al., 2016). An overview of processes, subprocess and their definitions can be found in Table 1.

Table 1: Definitions of resource orchestration processes within single-firms and across firms

Resource orchestration activities			
Within a single-firm (Sirmon et al., 2010)		Across a portfolio of firms (Baert et al., 2016)	
(Sub)processes	Description	(Sub)processes	Description
STRUCTURING	Refers to the management of the resource and capability portfolio within a single firm	SHARING	Refers to sharing resources and capabilities across the portfolio
Acquiring	The process of purchasing resources from strategic factor markets	Accessing	The process of making resources and capabilities available across the portfolio
Accumulating	The process of developing resources internally within a single firm	Multiplying	The process of creating fungible resources and capabilities
Divesting	The process of shedding firm-controlled resources to the strategic factor markets	Redeploying	The process of reallocating a specific resource or capability from one firm to another in the portfolio
BUNDLING	Refers to combining resources and capabilities to construct or alter capabilities within a single firm	TRANSFORMING	Refers to nurturing and converting self-sufficient resource and capability configurations into independent firms
Stabilizing	The process of making minor	Incubating	The process of supporting and testing heterogeneous

	incremental improvements to existing capabilities		resources and capabilities from across the portfolio to explore opportunities in the market
Enriching	The process of extending current capabilities, thereby moving beyond keeping skills up-to-date	Decoupling	The process of decoupling self- sufficient resource and capability configurations into independent firms
Pioneering	The process of creating new capabilities with which to address a firm’s competitive context	HARMONIZING	Refers to balancing specific resource and capability configurations across the portfolio
LEVERAGING	Refers to the application of resources and capabilities within a single firm to create value for customers and wealth for owners	Aligning	The process of gradually adjusting capability and resource configurations to nurture new venture growth based on resources and capabilities from across the portfolio at that stage of development
Mobilizing	The process of identifying the capabilities needed to support a capability configuration necessary to exploit an opportunity in the market	Complementing	The process of developing value-creating synergies across the portfolio using complementary capability configurations
Coordinating	The process of integrating identified capabilities into an effective yet efficient capability configuration	Pruning	The process of disentangling poorly fitting resource and capability configurations, thereby recovering resources and capabilities across the portfolio
Deploying	The process of physically using a capability configuration to support a chosen leveraging strategy		

Resource orchestration activities results in managers continuously choosing to explore new opportunities or focus on exploiting existing activities, thus it creates a position where one must reallocated already constrained resources, across firms. March (1991), depict the process of exploration with searching, experimenting, innovating, playfulness and flexibility. Whereas exploitation is characterized by efficiency, selection, implementation, and execution. To separate the views academia has focused on their outcomes, relating exploration to radical innovation, whereas exploitation has been associated with incremental innovation (Ireland and Webb, 2009). Furthermore, Ireland and Webb (2009) acknowledge that as managers engage in exploration or exploitation, they use different process to obtain different objectives. This means successful exploration is associated with efficiently managing an array of resources when searching for new opportunities, and controlling the uncertainty concerning the effectiveness of such resource utilization. In contrast, successful exploitation is seen as the ability to incrementally innovate existing sources of competitive advantage. This entails a focus on efficiently using the resources which such competitive advantage is built upon. In the overall perspective this means resource orchestration creates some particular challenges for the managers (Benner and Tushman, 2003, Sirmon et al., 2010). First, they need to orchestrate resources and support nascent firms in uncertain conditions. Second, when conducting exploration one typically use experimental resource formations to identify potentially valuable and rare configurations that can embody a competitive advantage. Third, when the exploration turns towards growing and exploitation the managers must shift their focus towards structuring the firm, implementing procedures, and such that facilitate exploitation (Daily and Dalton, 1992). The theory on processes used by the managers to engage in such activities over time has been for the majority neglected (Priem and Butler, 2001).

Portfolio entrepreneurship represents an exceptional context to examine these issues across a collection of loosely connected firms. By developing firms with individually legal autonomy, portfolio entrepreneurs are able to do exploration activities, and at the same time ensure strategic and operational autonomy for their new firms (Iacobucci, 2002, Lechner and Leyronas, 2009). Whereas the literature on how managers conduct exploration and exploitation is scarce. The mechanisms used to exert resource orchestration in a portfolio context has received little attention compared to actions in a single-firm context. However, this neglected perspective is vital to understand how portfolio entrepreneurs simultaneously conduct exploration and exploitation, and thus engage in enduring entrepreneurship. Portfolio entrepreneurs have the opportunity to use knowledge and capabilities from the whole portfolio of firms when exploiting new opportunities, which could be leveraged for efficient development in dynamic marketplaces. On the matter of understanding mechanisms used in the portfolio context Baert et al. (2016) did a study of one portfolio entrepreneur in charge of a broad portfolio of firms. Using the findings to conceptualize processes used for resource orchestration across firms in the portfolio. However, it is limited to the perspective of one sole portfolio entrepreneur at the top managerial level. This gives us concepts to understand the managerial actions used, but it does not portray the whole spectrum of possibilities. By moving the perspective from one, to a team of portfolio entrepreneurs, it is possible to extend our understanding of resource orchestration.

Resource orchestration for the early-stage of firms' life cycle

While managerial actions are essential to utilize resources, these actions are somewhat dependent on the stage of the firms' life cycle. In the startup stage, Miller and Friesen (1984) argue entrepreneurs must identify, accumulate and acquire resources that enables the firm to gain legitimacy. Legitimacy, in turn, helps early-stage startups handle stakeholders for financing, recruiting, marketing, partnerships, sales, and operations more efficiently (Webb et al., 2009, Rutherford, Buller and McMullen, 2003, Jawahar and McLaughlin, 2001, Miller and Friesen, 1984). Structuring resources to establish legitimacy also involves creating flexible resources, that allows adaption after changing market environments (Cainarca, Colombo and Mariotti, 1992). Thus, entrepreneurs in this early-stage need to focus on structuring a viable business model that will operate and can grow in the following stage. However, growth does not follow a viable business model necessarily. Gilbert, McDougall and Audretsch (2006) find that firms that improperly manage their resources during growth often fails. Implying entrepreneurs needs to use their skills to further facilitate the viable business model, and structure their firm to transition from a more fragile stage to a more established one.

Resources and capabilities

As to understand what goes into resource orchestration and how this contributes to the portfolio, I look to Wernerfelt (1984) which defines a resource as anything that could be thought of as a strength or weakness of a given firm. Barney (1999, p. 3) expands this definition by noting that a firm's resources "include all assets, capabilities, organizational processes, firm attributes, information, knowledge, and such controlled by a firm that enables the firm to conceive of and implement strategies that improve its efficiency and effectiveness." Usually, the resources are categorized as either tangible or intangible. Tangible include the assets of a physical form (i.e., buildings, equipment, and money) and can typically be given a specific value (Schriber and

Löwstedt, 2015, Reed, 2005). However, it is often intangible resources which are noted as sources to competitive advantages as they are typically more difficult to imitate (Dierickx and Cool, 1989, Barney, 1991, Schriber and Löwstedt, 2015). Intangible resources can be classified as assets or competencies (Hall, 1993), where assets include the intellectual property rights of patents, trademarks, copyright and registered designs, as well as contracts, trade secrets, and databases. Competencies include the know-how of employees, suppliers, advisers and distributors, and the collective attributes which add up each firm's and the whole portfolio's organizational culture (ibid). However, it is important to note that the value from a resource is only apparent if it is used to do something with a positive effect (Barney, 1991). To foster resources creating positive effects one element within the portfolio context is an internal cluster. Clusters have been studied for over a century and have been acknowledged to foster knowledge transfer (Rumelt, 1982), given the firms additionally have technological similarities (Goto and Suzuki, 1989, Verspagen, 1997, Olivera and Argote, 1999, Alsos and Carter, 2006). Particularly in a portfolio context, one could expect similar effects if the portfolio entrepreneur concentrates the activities within close proximities and ensures that the firms are to less or greater degree linked through technological similarities (Ketchen, Ireland and Snow, 2007, Boschma and Ter Wal, 2007, Li, de Zubielqui and O'Connor, 2015, Yang and Steensma, 2014). With firms having relations to each other it becomes likely for knowledge transfer to occur, even if one the knowledge is not necessarily divided equally among the parties, it functions as a win-win situation (Lundvall, 2002). Furthermore, on the know-how which develops among the entrepreneurs, it is given that habitual entrepreneurship develops the experience and network. However, portfolio entrepreneurs have been associated with more diverse experiences and cognitive mindsets (Westhead, Ucbasaran and Wright, 2003, Westhead, 2005), which in turn have been seen to improve pattern and opportunity recognition (Baron and Ensley, 2006). This results in the plausible notion that portfolio entrepreneurs have an enhanced ability for exploration and exploitation as better opportunity recognition could result in opportunities which are more favorable for exploitation (Sandberg and Hofer, 1987, McGrath, 1996, Shane and Venkataraman, 2000, Parker, 2014). Ultimately, this adds up to seemingly favorable conditions for portfolio entrepreneurs with broad resource bases. However, to reap benefits one cannot just possess or own them, one must use them (Hansen, Perry and Reese, 2004). On this notion, the literature is scarce (Priem and Butler, 2001), and this study aims to extend our understanding of 'how' a team of portfolio entrepreneurs can exploit resources to create value at the managerial top-level.

2.3 Conceptual framework

The literature provides concepts that help us understand research orchestration in the single-firm and across-firms in the portfolio context. However, the conceptualized processes used across firms proposed by Baert et al. (2016) are framed in the perspective of one single portfolio entrepreneur. While this gives us an idea of how portfolio entrepreneurs can use their resources to deal with the constant trade-off between exploration and exploitation, it is a far underdeveloped element (Kraaijenbrink, Spender and Groen, 2010, Sirmon et al., 2010, Baert et al., 2016). This study builds upon this literature stream and aims to extend theory by examining the team-perspective in a portfolio context. Figure 2 illustrates a conceptual model which illuminates the relationship of having a collaborating team at managerial level. The aim is to identify which processes that are used between the entrepreneurial team and how this affects the single-firms and the portfolio as a whole.

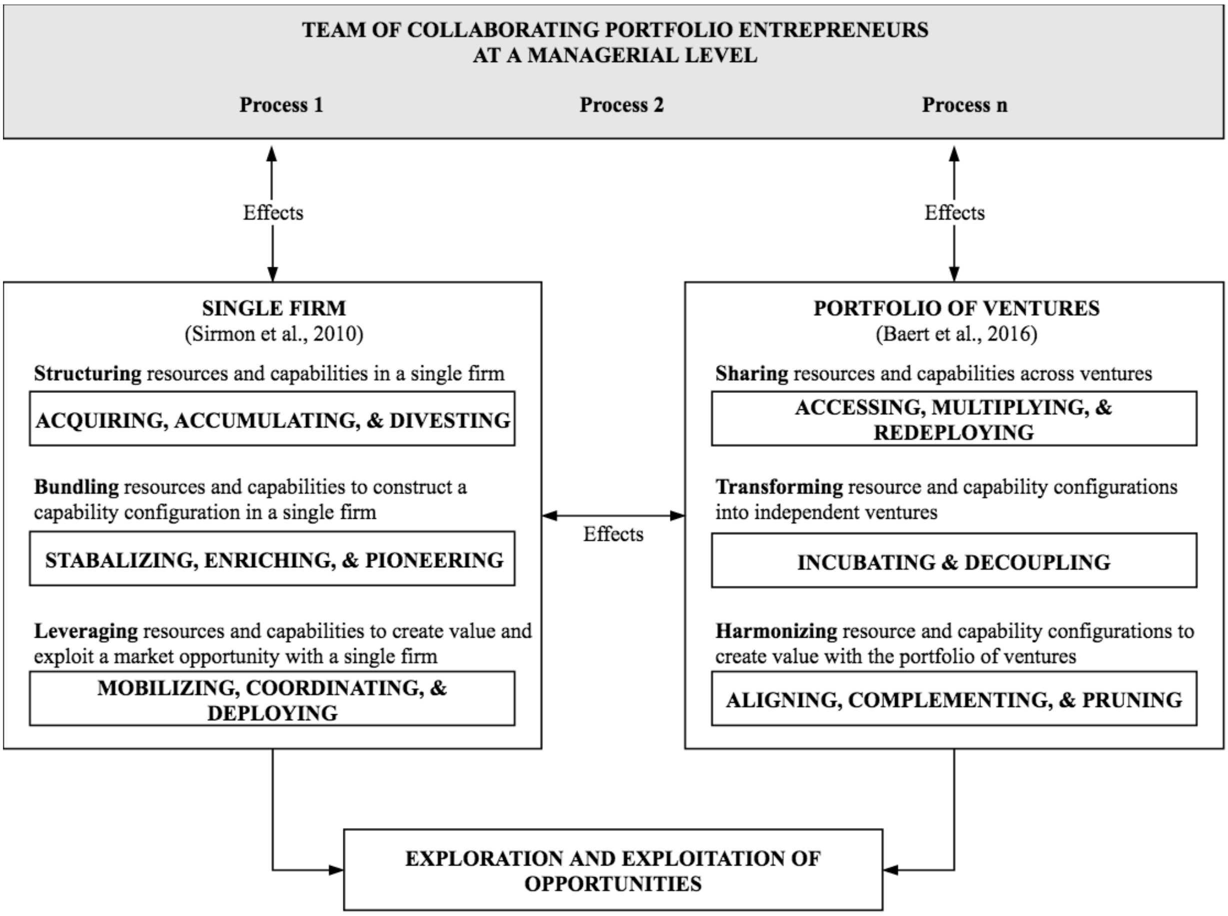

Figure 2: Conceptual model of processes used between team-based portfolio entrepreneurs

3 Method

3.1 Single-case study design

I aimed to elaborate on the relationship inside the team of portfolio entrepreneurs and their relationship with the portfolio of firms. This represents a phenomenon with complexity to some degree. In a context where the boundaries are somewhat unclear and with limited empirical data it was purposeful to adopt a qualitative single-case study based on the narrative of a team-based portfolio entrepreneur (Hjorth and Steyaert, 2004, Neergaard and Ulhøi, 2007). This is favorable as it is suitable for exploring ‘how’ and ‘why’ the portfolio was developed and the associated effects (Eisenhardt and Graebner, 2007). Whereas the scope of this thesis puts constraints upon the available methodologies, it is necessary to ensure relevant, completeness and enough amount of information (J. Kuzel, 1999). I adopted the single-case study approach to permit detailed exploration of ‘how’ and ‘why’ within the methodological constraints. Whereas I were offered detailed access to a portfolio, the data is triangulated with complementary data to increase the precision, validity, and stability of the findings. A question that arises is the adequacy of chosen sample size. When taking the purpose of this study into consideration, one in-depth study of a case is preferable to multiple cases with less depth, as this allows richer exploration of a little-researched phenomenon (Neergaard and Ulhøi, 2007). Thus, I engage in theory building through a grounded theory-based approach (ibid). The inductive process involves multiple cycles between data and theory. Through iterations, I was able to conceptualize processes used among the team-based portfolio entrepreneurs by applying the three-stage coding approach described by Strauss, Corbin and Corbin (1998) as means to bring ‘qualitative rigor’ to the results (Gioia, Corley and Hamilton, 2012).

3.2 Empirical setting

The search focused on Norwegian portfolio entrepreneurs in a context where exploration and exploitation are knowledge-driven. To select a suitable portfolio case, it had fulfill following requirements:

- Located in Norway.
- Technology-based ideas.
- Relatively new establishment to eliminate established corporates with departments and so on. But at the same time a track record of creating value in terms of turnover, jobs, and establishment of viable firms.
- Engage in entrepreneurial activities such as founding, co-founding and working operationally in multiple firms simultaneously.

Throughout the sampling process multiple portfolio setups were identified from structured searches and using the personal network of the author. The selected case comes from the author being a nascent entrepreneur within ocean technology, and through the university alumni one of the case entrepreneurs was contacted to discuss an opportunity. During this meeting, the author was introduced to their business model and portfolio, which after evaluation was deemed as a suitable case for this study. After the first cycle of interviews, it became apparent that the case is a brilliant example of how a portfolio can rapidly grow into a sophisticated setup, and would serve as a revelatory case that could extend our knowledge about portfolio entrepreneurship (Neergaard and Ulhøi, 2007).

NewHorizon Management (a pseudonym) was founded in 2010 by two experienced business developers. Up to 2018, the entrepreneurial team has grown to five, with four equity partners and one business developer. Throughout eight years the portfolio has been involved in 26 independent firms, of which 21 ceased to exist. On the top level, there are four administrative firms. One being an operational firm which the team can operate through. One is a holding firm for the initial three equity partners, and later another holding firm was established together with the fourth partner, which supports their interest of each firm within the portfolio. The fourth firm shares a housing contract with an external actor. Their business model revolves around finding tech opportunities internal or external from a third party, within the industries of ocean, medical, IT or oil and gas. The opportunity is scheduled to be developed from scratch to ready for venture capitalists, where their degree of involvement will gradually be outsourced through recruiting to ensure a dedicated and specialized team for the specific niche. Thus, this team focuses on the earliest stages of a startup, incubating and fostering the opportunity up to a case ready for venture capitalists. While the degree of involvement is limited onwards, their ownership typically continues until a sale or IPO of the firm.

Upon founding NewHorizon shortly attracted their third partner (an overview of the portfolio team can be found in Appendix A) and found external opportunities through their network. By successfully developing these firms the team established trust within the Norwegian market. Over time, they gradually attracted other opportunities by leveraging their score record. Simultaneously their industry knowledge would accumulate, which has been used to find opportunities internally. Appendix B provides an overview of the different business activities in the portfolio team. The source of the ideas is added as this is key to understand their rapid growth in selected industries and continuously maintaining a certain number of startups in the portfolio loop. The role is another important aspect of their business model. As their external cases have varying needs, their role varies accordingly. This also lets them spread focus on multiple startups without huge workloads. The viability of the activities is based on an assessment of the economic sustainability from market acceptance, revenue, team, and investors.

The development and evolution of the portfolio of firms can be contextualized at the intersection of strong research areas in Norway and a lacking organ for commercializing the technology. The research setting appeared attractive to study the process of developing a sophisticated portfolio, as the first conversation shed light upon activities outlined in the framework from Baert et al. (2016). The entrepreneurial team is highly motivated by the process of developing startups at the earliest stages and seeks efficient solutions to improve their success ratio. Success is essential for multiple reasons; their development illustrates how a track record and trust has helped them rapidly grow in terms of firms, entrepreneurial team, and media coverage. The success has put them in a delicate position where resource orchestration becomes apparent with a snowballing effect. Through this position, they develop external opportunities and find their own to develop internally.

3.3 Data collection

Data collection took place between March and May,2018. I collected data on the background for the NewHorizon idea, their process of developing NewHorizon from 2010 up to 2018 and all firms in this period, as well as how they over time created more efficient processes. The primary data source is interviews, supplemented with secondary data sources to gain contextual information, corroborate information and reduce the likelihood of misinterpretation (Yin, 1984, Neergaard and Ulhøi, 2007). An overview of the data sources can be found in Table 2.

Table 2: Overview of sources used for data collection

Data type	Description	Application
Conversation	Initial introduction to the portfolio (March) with the fourth partner (n=1).	Used for sampling as well as familiarizing with the portfolio.
Archival data	Company-related documents: firm websites (n=25), other public websites covering firms (n=1).	Supports the chronological reconstruction of the growth of the portfolio and firms.
	Entrepreneur-related documents: LinkedIn-profiles (n=6), interviews in media (n=1).	Supports the chronological reconstruction of the timeline and understanding the entrepreneurs experience and field of domain knowledge

Interviews	Interview round 1 (March-April) with a founder and the third partner of NewHorizon (n=2), and one entrepreneur of two firms in the portfolio (n=1) to discuss their history, motives, the development of the portfolio and firms, benefits and challenges of a portfolio model.	Create full understanding of portfolio development, motives, and processes developed and used to orchestrate resources, with corresponding challenges. Used to develop the chronological timeline and gain insight into central elements of their development for further analysis.
	Interview round 2 (May) with a founder of NewHorizon (n=1) to discuss and confirm, or debunk current understanding of the timeline of the portfolio and firms.	Verify chronological reconstruction of the portfolio timeline and complements the study with details around important elements of their development.

As noted in the empirical setting, the sampled case was obtained from author's personal. The author is exploring opportunities within the ocean technology, and a meeting with the fourth founder was set to discuss one opportunity in his domain. Ulrik was found as a relevant discussion partner through the student alumni as he had documented his engagement with Ocean Safety (a firm in the portfolio). Our initial conversation (approximately 90 minutes) in March includes a semi-structured company presentation of NewHorizon. This was the first familiarization with the portfolio and gave some insight into their model and history. Subsequently, this was supplemented with archival data from their portfolio website and Proff.no (public financial records for Norwegian companies) to gain some understanding, which was used to evaluate the case as suitable for the study.

The primary data collection method involves semi-structured interviews with the three entrepreneurs and CEO of IT Motion in the portfolio. All interviews ranging from 60 to 90 minutes are conducted solely by the author, recorded and subsequently transcribed verbatim. Conducting the interviews alone presents a two-sided challenge of engaging in the semi-structured interview and developing it creatively in a proper manner, and simultaneously capturing underlying messages through observation (Eisenhardt and Graebner, 2007, Neergaard and Ulhøi, 2007). Whereas there are limited solutions to this problem, the process remained consistent throughout the interviewing rounds and entailed multiple perspectives on the same scope of research. Furthermore, all interviews were conducted in a trusted atmosphere with good chemistry were the interviewees engaged actively and gladly talked about their company in an enriched manner. Thus, helping the study to gain a rich set of data (ibid).

In the first interview round (March-April) I conducted three subsequent interviews with first the partner. Through a semi-structured interview, I asked for factual information, such as the portfolio composition, their business model, and the development and history of NewHorizon. Furthermore, I asked for activities, and examples of the portfolio creating synergy effects, and delved into their challenges and questioned their working methods within the entrepreneurial team and across firms to research the degree of knowledge transfer. The interview guide which has been used for the whole first round can be seen in Appendix C. The second interview with founder and partner Sigmund took place one week later based on the same interview guide. I asked him for a different perspective on the same matter, as well as a detailed explanation of a successful firm (Upside Oil) from scratch to sale. The third interview was with CEO Bjarne from IT Motion. I asked him about his perspectives on the development of NewHorizon, the development of IT Motion, and his previous firm TwoWay IT which took place before NewHorizon. This interview round was complemented with secondary data from company websites for the portfolio and all firms, as well as Proff.no on all firms. I triangulated the interviews with secondary data to create a broad understanding and drafted a preliminary timeline showing the development and activities fostering flows across firms.

In the second interview round (May) I interviewed the founder and partner, Håkon. I presented and used the preliminary timeline to conduct a semi-structured interview. Together we completed the timeline with minor adjustments and supplemented some parts (e.g., the startups Silk IT and Gas Destiny which had failed). Based on this it was possible to create a full understanding of their timeline and a well-developed understanding of resource orchestrating activities. This was used to create the chronological timeline (presented in chapter 4 – case study) and a well-developed understanding of resource orchestrating activities. This understanding supports the three-stage analysis by giving an overview and keywords which transcriptions can be organized and coded after.

3.4 Data analysis

Data analysis was supported with NVivo and conducted in a combination of creating a structured timeline of relevant events and a three-stage coding approach accordingly to descriptions by Strauss, Corbin and Corbin (1998) as means to bring ‘qualitative rigor’ to the results (Gioia, Corley and Hamilton, 2012). The inductive process involves multiple cycles between data and theory, through iterations I was able to engage in theory building based on the grounded theory-based approach (Neergaard and Ulhøi, 2007).

Step 1: creating a timeline and first-order codes

Throughout the transcriptions, I identified statements regarding resource and capability development, and resource orchestration activities across the portfolio of firms. The process starts by categorizing relevant statements and events, which were used to conduct preliminary open coding (Locke, 2001). I was careful not to establish the first-order codes as the findings occur over a more extended period of years. To cope with the broad set of data, an overview was gained by structuring up a complete timeline of their development at an empirical level (Miles and Huberman, 1994). The timeline helped me find relationships between findings and thereby adjust the preliminary codes in multiple cycles and finally create first-order codes which are precise and representative for the case.

Step 2: combining first-order codes and creating second-order constructs

In this step, I conducted axial coding to integrate the first-order codes into fewer, theoretically relevant second-order constructs (Strauss, Corbin and Corbin, 1998). I focused on depicting distinctively different subprocesses that have been used throughout their portfolio development. Similarly, I started with preliminary axial coding and through multiple cycles between first-order codes and the timeline I were able to create relevant second-order constructs. To avoid errors from confirmatory biases, and other interpretation biases (Strauss, Corbin and Corbin, 1998) the supervisor acted as a critical reviewer of my findings.

Step 3: building a grounded theoretical timeline

Once the second-order constructs had been reviewed, I searched for generic theoretical terms which could crystalize our thinking about the insights and fit together into a coherent framework with previous literature. Similarly, the process went through multiple iterations, and the supervisor acted as a critical reviewer for the aggregated theoretical constructs to increase the reliability of my interpretation. Based on these insights and aggregated codes I engage in elaborating the details to crystalize my interpretation and understanding (Neergaard and Ulhøi, 2007). This three-step analysis forms the foundation for the discussion and understanding of how the study of a team-based portfolio entrepreneur can extend previous work on resource orchestration in the portfolio context.

3.5 Assessment of the methodological quality

To assess the quality of this qualitative research, I look to Lincoln and Guba (1985) which propose the four criteria credibility, transferability, dependability, and confirmability. Supplemented with extended credibility criteria according to the three elements described by

Patton (2002); rigorous methods, credibility of the researchers, and reflection of the value from chosen qualitative method.

First, the credibility starts with the sampling which is based on a systematic approach with criteria and evaluation prior to starting a case study, to ensure a suitable case. Whereas the case is found through personal network of the author, there is no existing relationship to the any individuals in the portfolio which could influence the data collection. The initial contact derives from identifying one of the founders existence through the university alumni when the person was found as relevant to discuss an ocean technology idea. Through the initial conversation, introduction to the portfolio, and post-evaluation it was found to be a suitable case for this study. Furthermore, the case study builds upon one conversation and four semi-structured interviews that are supplemented with multiple websites for the portfolio entrepreneurs, key persons in portfolio firms and portfolio firm websites. Whereas data has been collected in a short time-span of three months, the interviewees are being interviewed about the firms' history which stretches back to 2009 for the founders. Historical events represent a reconstruction challenge as the interviewees are unlikely to remember everything in detail. However, all data collection focus on the same topic of describing how the portfolio has emerged from beginning to this date. This enables triangulation of different data sources and multiple rounds which helped with understanding the case and reconstructing a representative case study. As to analyze the data NVivo were used to organize the data and codify the transcriptions according to the guidelines from Strauss, Corbin and Corbin (1998) as means to bring qualitative rigor to the study (Gioia, Corley and Hamilton, 2012). Regarding evaluation of the findings, there is a weakness to being a sole inexperienced researcher. However, the study has been supervised in varying degree by two professors and one associate professor from the field of entrepreneurship. This helps to increase the credibility of the findings by having multiple review the findings. Concerning extension of the theory, the lack of research experience is questionable. However, this thesis builds upon a literature review from a previous term-paper and has been continuously developed throughout the master thesis to ensure documentation and understanding of the relevant theories. When reflecting upon the intrinsic value of chosen qualitative method. A single-case study approach is found suitable as the revelatory case has multiple elements which through detailed study could provide researchers, practitioners, and policy makers with important insights on portfolio entrepreneurship. Furthermore, the study is based upon interviews with trust, good chemistry and detailed elaborations about their portfolio development. Which ultimately has been positive for the study and all factors considered has created fertile grounds to create a representative reconstruction and detailed analysis of their development.

Second, when discussing transferability, I look to the entrepreneurial definitions (chapter 2.1.) which describe a portfolio entrepreneur as one founding and engaging in multiple firms or ventures in parallel. In this case, we follow a team of portfolio entrepreneurs who focus on developing both internal and external cases, from the early-stage to a scaling stage. Furthermore, they have established a track record of creating viable firms (overview can be found in Appendix B). Ultimately, the sample serves as a captivating case of team-based portfolio entrepreneurship that is fruitful for researchers, practitioners and policymakers to learn from.

Third, when referring to the issue with ensuring dependability. The interview guide has been included and can be found in Appendix C. The data collection from the conversation, interviews and secondary sources have been triangulated and is what the case study (chapter 4) builds upon. As to having multiple sources and elaborating on the development of the case, it should be likely that this is a representative reconstruction. Regarding the analysis it builds upon relevant topics from the case study and the three-step analysis according to the guidelines by Strauss, Corbin and Corbin (1998) are documented in tables for each particular finding. Thus, making it possible to trace interpretations back to the empirical data.

The fourth criteria of confirmability are closely tied with this process. Whereas each analytical step includes interpretation from the researcher, this process is based on multiple inductive cycles and also creates a tabular overview that is easy to assess throughout the process. Combining this with the supervision from the supervisor the data and interpretations it increases the likelihood that the interpretations are logical and realistic.

4 Case study

The following sections present the case study of NewHorizon by presenting a chronological timeline of relevant events, at the level of empirical data. The timeline supports this study by introducing the contextual details of their portfolio development. Thus, the goal is not to present a reconstruction of every small detail, but give the study an overview and basis for extracting relevant findings and to accordingly support the analysis. An overview of the significant events from founding to this year can be found in Table 3. Followed by the elaborated timeline of relevant events.

Table 3: Chronological timeline of significant events during the portfolio development

Year	Event
2010	NewHorizon Management was founded by Sigmund and Håkon.
	NewHorizon Holding established.
	Upside Oil included in the portfolio with Sigmund as CEO and board member.
	Revelation IT is founded but put to sleep for maturing.
2011	Tor, former colleague at Pathway Consulting gets recruited as partner to the NewHorizon-team.
	NewHorizon-team moved to Sørgård with Revelation IT, other firms are spread in local town.
	Co-Founded Oil Pillar, Tor as CEO.
	Co-Founded Ocean Explorer, Tor as business developer.
	Silk IT with Håkon as CEO.
	React Ocean, Håkon stops as hired CEO and case is out of portfolio until further.
2012	Buys React Ocean from Skyway Intelligence Group and engages the Ocean Safety founders as business developer, based on initiative from NewHorizon-Team. Former CEO continues, with Håkon as head of the board.
	Co-Founded Ocean Safety, Håkon as head of the board.
	Co-Founded IT Motion, Håkon board member and a business developer.
	Co-Founded Syntax IT Håkon CEO.
	Co-Founded Imprint IT, Tor as CEO, and Håkon as board member.
	IT Motion and Syntax IT moved into the office at Sørgård where the NewHorizon-team sits.
	Silk IT acknowledged as a not promising venture anymore, Håkon quits as CEO.
2013	Syntax IT, Tor joins as head of the board.
	Gas Destiny, some consultancy service with intentions for more.
2014	Syntax IT buys Syntax Hardware from family heritage and together with the NewHorizon-team restructures it for revitalization.
	Co-Founded Ocean Vitality with Håkon as CEO.

	Ocean Explorer fails, Tor stops as business developer.
	React Ocean sold, and Håkon withdraws from being head of the board.
2015	Ulrik redeployed as a new business developer in NewHorizon after Ocean Safety shut down. The CTO from Ocean Safety continues in Ocean Vitality.
	Ocean Vitality, Håkon quits CEO as a new appointed by recruited firm.
	FirstChoice Oil moves into office at Sørgård.
	Founded Cyber Ocean with Ulrik as CEO.
	Co-Founded FirstChoice Oil with Ulrik as CEO.
	Gas Destiny shut down due to poor technology-market fit.
2016	NewHorizon Holding II (holding) established, preperatory to the promotion of Ulrik.
	Revelation IT is taken out of sleep with Håkon as CEO.
	Co-Founded Blackwell IT with Sigmund as head of the board and Tor as CEO.
	Ocean Vitality, Sigmund joins as a business developer.
	Upside Oil, Sigmund quits CEO and new recruited within the firm.
	Co-Founded Medical Maze with Sigmund as CEO.
2017	Ulrik promoted to partner, and Hanne is recruited from University of Norway TTO to be a new business developer in NewHorizon.
	Enter NewHorizon is established together with angel investors. Shares a housing contract at one large shared office.
	Starship IT, some consultancy service with no intentions for more collaboration, due to no agreements.
	Invested in Onward Ocean with Ulrik as an advisor for the startup.
	Need IT with Ulrik as CEO.
	Companion Accounting is founded. Prioritizes internal accounting for the portfolio firms, and then external actors.
	Co-Founded RedZone Medical with Hanne as CEO, Håkon as head of the board
	Syntax IT, Tor withdraws from being head of the board.
	Imprint IT, Tor withdraws from CEO role, new through recruiting firm
	FirstChoice Oil, Ulrik quits as CEO and board member, and a new CEO is recruited through own search by NewHorizon-team.
2018	Upside Oil sold.
	IT Motion sold.
	Syntax IT, Håkon quits as CEO and new through recruiting firm.
	Blackwell IT, Tor quits as CEO and new appointed by VC firm.
	Ocean Vitality, Sigmund withdraws as board member.

4.1 Kickstarting their business model by using existing network (2009-2013)

Håkon tells me the ideation started in 2009, where he discussed it with colleague Sigmund who was also a business consultant at the same firm. They were starting to become tiresome of only giving advice. In parallel, they saw the need for commercialization expertise for high-tech startups from their local environment. By combining these elements, they gradually developed the idea of getting some dirt under their fingers and build internal and external cases venture ready. Focusing solely on the earliest phases of a startup, as this is what they preferred and had the most experience with. While they chose the city where they already lived, it was argued by one founder as a region that is particularly good aquaculture environment.

The initial and still used model is built on the same core principles. Sigmund elaborated "If one is to succeed we cannot place all eggs in one basket. We must spread the risk, and that's why we have a portfolio mindset. So, we have 15-20 companies and if we succeed with two, three, four, five this becomes very good." Throughout their timeline (Table 4), one sees multiple engagements and having a high turnover rate follows a strategy to participate in early-stage companies. Where the NewHorizon-team shares expertise and network, and help the case responsible team-entrepreneur develop the startup(s) efficiently. Thus, the model revolves around business expertise exploited in the early stages and ensuring mechanisms to decouple more established startups to free capacity for new startups. I asked him to elaborate on what it means to be good at taking firms from A to B, Sigmund commented:

> "It's clear that when you're young one is very occupied by what's important? When you have experience, you focus possibly more on the really important things and understanding what's good enough. The thing is that the battle is not at the office, thinking out smart things, it's to be out and talk with the customers, and then there is the part of asking the customers the right questions, and getting the answers you seek, that's also a bit about the experience. When you are a bit inexperienced, you might not catch what you should catch in a conversation with a customer. That you ask more intelligent questions and possibly get a bit better answers because you show that you are a bit more senior. You open some doors easier when you have experience than when you were a bit more junior."

Throughout their careers, they had built up an extensive network of R&D organizations, universities, large companies and independent founders, which became apparent the earliest years upon founding NewHorizon. The two founders quickly had one high-tech case each within the first year. Sigmund started with Upside Oil which came from an individual founder in their network, and Håkon started with Revelation IT but was shortly put to sleep for development maturity. In parallel, he continued working as hired CEO in React Ocean (later acquired by NewHorizon) an engagement following his previous job. From their time in consultancy they had gotten to know colleague Tor well, and while Håkon tells me they had a plan to involve him from the beginning, but it was first materialized in 2011, when he joined them as the third founder. The entrepreneurial team moved into a larger office at Sørgård and throughout the year got engaged in three cases; Oil Pillar from an individual founder in their network, Ocean Explorer an ocean startup from the University of Norway TTO and Silk IT an IT-startup from Skyway Intelligence Group. Tor co-founded Oil Pillar as CEO and joined Ocean Explorer as a business developer. As the CEO contract with React Ocean ended, Håkon redeployed as CEO for Silk IT. To co-found and become a shareholder, the NewHorizon-team invests, even though they were a young firm they had some private capital and some capital from consultancy services as hired CEO to Upside Oil, Revelation IT and React Ocean.

In 2012 Silk IT was acknowledged as not a promising venture anymore, Håkon opts out of this engagement and throughout the year engages as co-founder and head of board in Ocean Safety, an ocean startup from the University of Norway with novice student entrepreneurs. Håkon also engages as co-founder and business developer in IT Motion, an IT-firm from an individual founder in their network. With the same individual, Håkon joins as co-founder and CEO of Syntax IT, an IT software-startup. Both IT Motion and Syntax IT moves to their offices at Sørgård. At this stage, partner Håkon has multiple different roles and comments

> "Yes, we typically have one as a CEO being operative, and in some cases, it might just be CEO in one firm if it is a lot. And there are others who are CEOs for 2-3 firms, where it is not so much work on each case. (...) It's where we are good and work. Building teams, helping them up and going. We try to be very honest, and it is important that we don't force ourselves into a case."

Whereas he has multiple roles with responsibilities, he is backed up by the NewHorizon-team. By sharing an office and having weekly meetings they discuss uncertainty in their cases and potential new cases to keep the business model efficient. The partners tell me early-stage companies shares mostly 'generic' tasks and that experience makes the tasks familiar. I asked Tor how this affects their working capacity, he comments: "The goal is not to work as much as possible, it's about creating results." Also, as startups get traction and build up more responsibilities to the CEO, the NewHorizon-team aims to replace themselves operationally with an experienced industry leader and continue as shareholders until exit says Sigmund. This period both IT Motion and Syntax IT moved into their offices at Sørgård, which simplifies the workday, and additionally facilitates resource orchestration among them. While IT Motion and

Syntax IT focuses on different products and customers the ideator states that “Syntax Hardware and IT Motion has much of the same technology and collaborates across. (…) We try to reuse technology, no point in developing the same core technology.” While the companies are independently run and do not share any financials, the ideator finishes with “... as long as Syntax IT gets something back.”

Throughout 2013 Ocean Safety was showing signs of technological weaknesses and in one way to diversify this risk and utilize the founders behind, NewHorizon bought React Ocean from Skyway Intelligence Group and used the Ocean Safety founders as business developers to breathe new life into React Ocean, with Håkon as head of the board. The NewHorizon-team took some consultancy work for Gas Destiny, but never pursued more collaboration due to disagreements. Which reflects their model of rarely doing anything for free says Håkon “With external firms, it typically starts with consultancy contracts where they evaluate the case and whether or not to pursue further collaborations.”

4.2 First cycle with sales and failures (2014-2016)

Four years after starting NewHorizon, the track record of sales started. React Ocean was sold, and Håkon disengaged accordingly. While Sigmund was supposed to withdraw from Upside Oil, he was requested by the venture capitalist to stretch it a bit longer than their typical model as it was not easy to find a new CEO, Håkon agreed and commented it as crucial to get some successes. Furthermore, stating that the worst one can do is bad recruiting, both for the startup perspective and for NewHorizon as they are shareholders expecting a return on investment.

Ocean Explorer failed due to technology costs extending the initial value offer, and Tor stops as a business developer. Simultaneously, Syntax IT was in need of hardware to embed their software and through the Syntax IT firm, Syntax Hardware is bought. Syntax Hardware is an older family company focusing on hardware components which has had rough times due to little engagement from the widows who were owners. Together with the NewHorizon-team, they restructured Syntax Hardware and throughout the following years made it profitable again. In this case, the founder and CEO of IT Motion take the role as CEO in Syntax Hardware and comments the situation as doable as the firms’ have different focuses and because he has many people to play on.

As the team of portfolio entrepreneurs has opted out of several cases this period, new are sought through their network. Sigmund says that “Two times a year we meet BlackBox Research Institute, and there’s a lot ad-hoc where founders contact them. We get contacted by founders, and then we have a shared meeting with everyone.” Later this year Håkon co-founded and started as CEO in Ocean Vitality, an ocean startup from BlackBox Research Institute. Intrigued by their high rate of engagements, Tor commented: “We do not have a board, so we the partners take decisions. It can take two minutes to decide if we want to involve us in a company or not.” Furthermore, adding to the effects of being in control:

> “It does make it so that we sit on the money bag; we have daily control on prioritizations in terms of what to use the money on and what not to use the money on in terms of having most return on investment, for the early-phase investments we have done. Additionally, as we have done things before, and we argue that we take shorter paths to the goal, we don't have to make all the errors which one traditionally does if one has not done it before.”

In 2015 the technological struggles in Ocean Safety became too large, so they shut it down. While the three founders of Ocean Safety took new jobs, two of them were within the portfolio. One joined Ocean Vitality as CTO and Ulrik joined the NewHorizon-team as a business developer. Whereas reabsorbing resources from failures are naturally, Partner Sigmund stated that they are carefully growing the team size for control.

> “No, we don’t have a need for expanding NewHorizon very much, but we do want an apparatus around us with good people. (…) It could become more cases like that. We also see that we work very well with young, dynamic men or women, who can take the lead where we bring our experience and competency. (…) It is somewhat a danger that we think we might become too large and grasp too much, that I think is life-threatening.”

Ulrik started by co-founding FirstChoice Oil as CEO, an oil and gas startup from The University of Norway TTO as well as founding Cyber Ocean as CEO. I was told Ulrik was the driving force for the idea, but the network towards Oracle Industries technology that might be reused in another vertical came from another partner. Sigmund said:

> “No, but it is a company which he has been operating in 10-20 years, but as sort-of a research company. He is a technologist and not a salesman, but what he does is really world class, it is fantastic. So, he could probably scale a lot, there's a lot of business potential in that technology he has. Cyber Ocean is one example of building a successful vertical, where you take the technology from Oracle Industries in a specific niche.”

FirstChoice Oil was moved into their office at Sørgård, and Håkon stepped down from CEO in Ocean Vitality in favor of a new internally recruited. Håkon starts as CEO in Revelation IT in 2016, as it is taken out of sleep, and Tor co-founds Blackwell IT as CEO, an IT-firm from an individual founder in their network. At this time, they have found a suitable CEO for Upside Oil and Sigmund withdraws. Sigmund continues by co-founding Medical Maze as CEO, a medical tech startup from BlackBox Research Institute and also joins Ocean Vitality as a business developer and Blackwell IT as head of the board. At the end of 2016, they establish NewHorizon Holding II as preparatory to Ulriks promotion.

4.3 Centralizing the majority of the portfolio at one office (2017-2018)

Early 2017 Ulrik joins as a partner in the new holding firm, and Hanne is recruited as a senior business developer. A woman Tor knew well from previous engagement as an advisor during the establishment of the University of Norway TTO in 2003. Stating that when he got to know her, he realized she knew everyone at their office and if they were going to have one more, it should be a woman and Hanne was found to be an excellent candidate to join and with right timing as the portfolio was growing large. Håkon comments that “Hanne is not yet a partner, but if she does well there is a mechanism that gives her some of the profits.” And adds to this “(…) it is a very important principle that there is collective success when we work together, we wish each other’s the best and do what we can to make each other good.” Together with a group of angel investors, they establish Enter NewHorizon which shares a housing contract at a much larger office space. This enables NewHorizon to gather the majority of startups in the portfolio and is seen as an important milestone as this enables them to remove traveling time, gather similar firms in offices and facilitate a positive environment. Sigmund commented: “People with different backgrounds, different competencies and experience sit together in an environment, eat lunch together, drink coffee together, and then something happens.”

Ulrik steps out of FirstChoice Oil as a dedicated CEO is recruited for a new scaling. He continues by engaging as CEO in Need IT an IT-startup from an individual founder in their network. While the NewHorizon-team engaged as an advisor for Onward Ocean, an ocean startup from the University of Norway TTO. Håkon was only present as advisor for a short period and commented “I used to be active in Onward Ocean, but now Ulrik took over and I'm more of a coach or discussion partner, it fits the case better.” And that “we are advisors, but even then, we spent a lot of time to bring the case forward. We're flexible and adjust ourselves.”

Alongside hiring a dedicated CEO for Imprint IT and founding multiple new startups. The NewHorizon-team says they have not entirely been satisfied with their accountants, and decided to start Companion Accounting together with an investor in the same building, and from their network, one experienced founder from a traditional accounting firm. Håkon tells me the founder is also a shareholder of the consultant firm Pathway Consulting, so they knew each other from the past. Companion Accounting is an accounting firm that focuses on tech startups. Whereas the firm handles the portfolio, it also takes external firms if available capacity. In 2018 more startups are getting closer to scaling with a dedicated CEO and Upside Oil and IT Motion are sold. While Upside Oil is going out of their portfolio after eight years. Sigmund said that while it goes out of the portfolio, they have obtained relations with many large actors such as Virtue Energy Group and Goldmine Engineering Group, which they can capitalize later. In parallel, they withdraw operationally from Blackwell IT, Syntax IT and Ocean Vitality.

A half year after moving into the large shared office with startups and investors, many cross activities has been present both through formal and informal events. Every second week one company holds a presentation with challenges and the others opts in for a discussion. Sigmund comments "Blackwell IT who sit here now (…) we connected up towards Cyber Ocean, so they are involved with developing some algorithms in Cyber Ocean." Founder of IT Motion says "there's that Russian, which made some software for Revelation IT which we will use in IT Motion, some similar framework and such. (...) Rather than having everyone sitting at their place making the same, we can rather reuse it across." While such collaborations should be possible to form through partnerships outside the portfolio, the founder of IT Motion states:

> "That would be very hard if we were to do it with a totally unknown firm which we don't have a relation to, I think that would be totally impossible. Because firstly the firms would not have known each other, and they don't have any there with knowledge about the internal firm needs. Like, there is no one on the inside in both firms, so you never get the connection."

In the office there is also a group of private investors, when asked what they contribute to the portfolio, Håkon says they use the other investors to discuss ideas, share network and while several of those investors have invested it is limited by choice. As Sigmund says "getting the right investor is very important, we don't necessarily want the capital (...) if we are in their domain, we talk with them." Håkon later commented "The thought is to be in the same boat as the founder, not the investor. We have had the opportunity to take the model of Scandinavian Capital and manage other people's money, but we put that away." Concerning network, it grows with every year to the extensiveness that the founders' state they will be working towards systemizing their network to more efficiently leverage it. Håkon commented:

> "Customers and key personnel and other key pieces, you can say over time we will link together, and that will become more links between different people, and we will reuse more people, more investors, more pilot customers and such." Håkon gave some examples "Virtue Energy Group have partnerships with both Oil Pillar and FirstChoice Oil as the pilot customer (…) In Medical Maze and RedZone Medical, the CTO have in practical been reused until further."

5 Findings and analysis

When exploring the empirical data in the perspective of resource orchestration, I identified resource orchestration subprocesses across firms, similar to the findings from Baert et al. (2016) which will be mentioned in subchapter 5.1. Thus I focus on the new theoretical contributions (Whetten, 1989) in the respective order of the research questions and address following; (1) what triggers resource orchestration across firms in the portfolio context; (2) resource orchestration processes used at the top managerial-level between a team of portfolio entrepreneurs, and the effects on their individual responsibilities; (3) how early-stage entrepreneurship can be executed and how this facilitates utilization of expertise.

5.1 Enabling factors for resource orchestration across firms in the portfolio

As I explored the rapid development of this portfolio, it becomes apparent which factors that were essential to spur resource orchestration across firms in the portfolio. The empirical data shows that the subprocesses of *centralizing* and *facilitating* were enabling factors, for resource orchestration to occur between firms in this case study. In addition to the enabling factors I observed and confirmed three out of eight subprocesses across firms according to the theory of Baert et al. (2016). First, I found multiplying activities such as establishing a shared accounting firm. Second, I identified redeployment of network and IT-solutions across similar firms as well as employees working across firms on varying contracts. Third, pruning was found by reabsorbing employees from failed cases and reusing them in other parts of the portfolio. Whereas other subprocesses might be present, limited data on this matter hinders confirmation. As such, I concentrate the following sections on the three-step analysis for the main contribution. Table 4 illustrates how I used empirical data to create first-order codes, and second-order constructs.

Table 4: Triggers for resource orchestration across firms in portfolio contexts (representative quotes, first-order codes, and second-order constructs)

Representative quotes	First-order codes	Second-order constructs
"That [centralization at this hub] we are very proud of, because it has been very good. (...) before we moved in here, we had all the firms spread across the whole city and we used a lot time traveling between the firms, and sitting out there. (...) it was an important milestone for us."	Gathering four industry types in same environment	Centralizing
"We have for example a room here with 2-3 firms working towards hardware, towards oil and gas. Which is in the same industry and have some knowledge transferring on things, which is positive, both for the environment and the development"		
"In the time we sat down at Slingshot Incubator (...) No, there was much like lobster and canary (...) At that time there was not enough firms of the same time to fill it, then it became very much different, so you did not get that effect then. But here, it's many firms doing overlapping technologies which makes it much easier."		
"It is the case when you sit in a network and environment as this then it happens informally, that's the point. People with different background, different competencies and experience sit together in an environment, eat lunch together, drink coffee together, and then something happens."		
"Like if we see that, if we connect the competency from that person in firm X with that person in firm Y, then we can create something very exciting. So, in one way it's working with it in a cross section, across persons and teams."	Facilitating formal knowledge transfer	
"We try to have frequent firm presentations, where one firm presents themselves and some of the technical challenges one face and then we get discussion and inputs from the other firms (...) and then one have some beers, so it's a bit informal, and we do it here on the kitchen (...) No, we do it every 14. day."		
"Yes, that's because the firms know each other's very well and it's the some of the same people in both firms, then it becomes very easy to agree how things should be done. It does not become long negotiations, it's just to sit down and then we do it like this and that, we just agree instantly. That would be very hard if we were to do it with a totally unknown firm which we don't have a relation to, I think that would be totally impossible. Because, firstly the firms would not have known each other, and they don't have any there with knowledge about the internal firm needs. Like, there are		

no one on the inside in both firms, so you never get the connection.”		
“It's more who work in Syntax Hardware, and then you clearly have more people to play on and delegate tasks to. While in IT Motion I have two developers and Tuva on part-time business development. So, we are fewer people to play on, but Syntax Hardware is in a very commercial phase selling equipment and there's the focus on growth. Syntax Hardware is on a total different level, then what IT Motion is.”	Collaborating across firms	Facilitating
“We have to firms called Syntax Hardware and IT Motion, and there he who is CEO in IT Motion is CTO in Syntax Hardware, or he is in as an advisor in Syntax Hardware. There's a lot shared technology so one collaborates across those firms”		
“But then i say, no but as a long as Syntax IT gets something back. We don't bother calculating the costs which the firms should bill each other’s. We don’t. We take it a bit on the feeling really.”		
“There’s that Russian, which made some software for Revelation IT which we will use in IT Motion, some similar framework and such. (...) Rather than having everyone sitting at their place making the same, we can rather reuse it across.”		
“No, they are in Blackwell IT, and Cyber Ocean has put out a project to Blackwell IT about trying to solve some of the technical challenges Cyber Ocean has.”		
“Own yes, which handles the portfolio and our own financials. But should be able to deliver towards other firms. Because it has really been a large need to streamline budgeting, accounting and reporting.”	Creating umbrella services	
“Now we have taken accounting (...) we are in one way very economy oriented, we who sit here, and have a portion of competency on this, but we actually saw a need to build something more professional than what one has today. Beyond that, we don't have big ambitions, but we take it step by step, and if new opportunities appear we look at it.”		
“Now we have two MedTech cases, and we see that we could do a bit more on building a small support system to handle that type of case. Because there are many cases coming from both the University of Norway and BlackBox Research Institute, and a lot of it ends up in Fredriksand because one doesn’t have an apparatus for it here to handle those cases. (...) Because there is a lot generic competency attached to a quality system and in terms of regulatory competency to get C-stamp and approval in FTA for example which one could reuse across the firms.”		

I aimed to find the factors which trigger resource orchestration activities across firms and throughout my analysis I find that the subprocesses *centralizing* and *facilitating* are key enabling factors in this case study, and group them to the aggregated theoretical construct of *fostering conditions* as shown in Table 5.

Table 5: Triggers for resource orchestration across firms in portfolio contexts (aggregated theoretical construct, second-order constructs, and descriptions)

Aggregated theoretical construct and axial-coding	Description
FOSTERING CONDITIONS	Refers to centralizing the portfolio of firms and facilitating for resource orchestration across firms.
Facilitating	The process of establishing connections across firms, formally or informally.
Centralizing	The process of gathering firms in the portfolio at one geographical location.

Throughout the interviews, I identified zero collaborations between the firms who sat at different geographical locations, even though all where in the same city I argue this is not sufficient proximity. The collaboration which took before establishing the Enter NewHorizon in 2017 were from the three IT-firms gathered at Sørgård since 2012. Since the portfolio entrepreneurs moved the portfolio into shared office spaces in late 2017, I observed a significant increase in resource orchestration across firms. One founder had previously been in an incubator with multiple firms and did not observe the same effects arguing the new place has more firms with overlapping technologies that make it easier. Moreover, I argue facilitation is needed to trigger resource orchestration across firms through, e.g., informal meetings and formal presentations and discussions. The portfolio entrepreneurs state they have grouped firms depending on their area of interests, and this has been observed as positive for the environment and development through multiple collaborations. One founder commented:

> “Yes, that's because the firms know each other’s very well and it's the some of the same people in both firms, then it becomes very easy to agree how things should be done. It does not become long negotiations, it's just to sit down, and then we do it like this and that, we just agree instantly.

Additionally, to making firms more interwoven, I identified the creation of an accounting firm as streamlining the need from each firm. While they did not have any other services, it was not far-fetched to be open for new opportunities that might further help the portfolio. Lastly, I found centralization to greatly improve the entrepreneurs’ contribution towards each firm as traveling time between firms were removed. Holistically, the arguments build on one single-case study and must be seen as preliminary, but I argue it as logical that creating an interwoven environment where people talk across firms with technological proximity are fundamental for collaborations to occur. Hence, I see this as expanding our previous understanding of resource orchestration across firms in the portfolio context (Baert et al., 2016). The relationship with previous literature is illustrated in Figure 3.

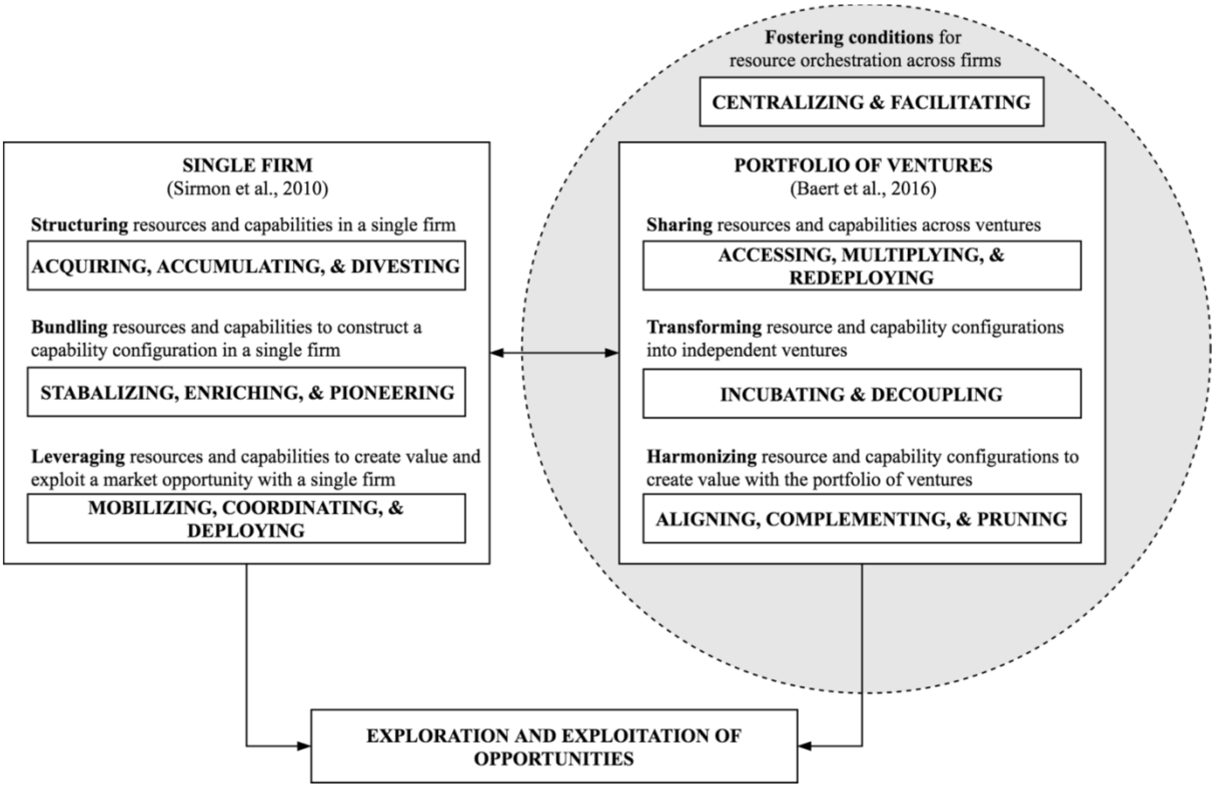

Figure 3: Theoretical model of enabling factors for resource orchestration across firms

5.2 Resource orchestration processes at top managerial-level between a team

The analysis finds that resource orchestration also occurs at a top managerial-level between a team of portfolio entrepreneurs. They engage directly in their firms through varying roles and use their collective experience and network to enhance their business development skills in multiple startups. They are sharing responsibilities, maintain control and conduct swift decision making due to having no board of directors. They wish each other’s the best and the end they share the economic dividend when exiting startups as a collective entrepreneurial team. Following Table 6 illustrates how I created first-order codes, and second-order constructs. Then I will describe my interpretation of the results and how this can expand previous work from Baert et al. (2016), Sirmon et al. (2010) with resource orchestration at the top managerial-level between a team of entrepreneurs.

Table 6: Resource orchestration processes used between team-based portfolio entrepreneurs to enhance individual responsibilities (representative quotes, first-order codes, and second-order constructs)

Representative quotes	First-order codes	Second-order constructs
"It is the founders who wanted to be CEO, and continues until further. Then the case might enter another phase where one might say ok here we might need a new CEO or new persons. But it has worked that way so far, but we have used a lot time on the case even if we are not CEO. We always try to adjust ourselves."	Adopting roles after case need	Adopting roles for each firm
"I was very active there in the beginning, and then it was Ulrik who actually took over following up the case, but I was a bit engaged as a discussion partner or coach."		
"It's important for us not to force ourselves into where it might not be demand for our competency. So, there are many cases where we have a few meetings and we might not have much to supply the case with, maybe there already is a really good CEO there. And if someone just comes to us for financing, we say it's not our model to invest a hunch of money without being active in each case. So, the typical case for us are commonly technology founders who comes to us and need a good partner with some capital and commercial experience. It's were we are good and work. Building teams, helping them up and going. We try to be very honest and it is important that we don't force ourselves into a case."		
"I'm the CEO in Need IT, and here Ulrik will take over the role gradually now."	Adopting roles after internal motivation, available capacity, startup chemistry etc.	
"But it sort of depends on who we think can fit, and wants to, has time and chemistry, there are many factors here. But often we try to work two people in each case. Where one takes a leader role and the other can be more of a follower of a coach."		
"Well, you notice it, but not it's not something you notice very well, no. It becomes apparent if he's away a couple of days to attend something, but it's like that with everyone here. (...) When being a flexible and dynamic group no one really needs one right here and now, it does not happen. Well, it can happen, but not that I remember this has been an issue."	Engaging in multiple roles to multiply impact	Reallocating workhours across firms
"Yes, we typically have one as a CEO being operative and, in some cases, it might just		

be CEO in one firm if it is a lot. And there are others who are CEOs for 2-3 firms, where it is not so much work on each case. (...) We are not necessarily the one who plays the ball in the goal, but we want to help build up the game, so it's the work with recruiting new CEOs and heritors to our positions.”		
“We raise capital abroad also, it depends on what phase the firm is in. (...) We use our network to finance [firms] with private equity, maybe some funds and Nordic Innovation Council. Also, we have a model where we don't have to spend that much on expenses, because we can work very flexible. (...) We try to keep the costs down until we have shown our technology.”	Keeping costs down through flexible roles and thereby maximizing financial utilization in firms	
“Yes, yes, it really means that lifting new cases towards Virtue Energy Group and the customers who we have worked with, as we have network. We also have some other partners. We have been involved with Goldmine Engineering Group and other large service firms, not just oil companies. So, then we have established a network which we can capitalize later.”	Exchanging customers	Exchanging network
“Customers and key personnel and other key pieces, you can say over time we will link together, and that will become more links between different people and we will reuse more people, more investors, more pilot customers and such.”		
“For Ocean Safety, React Ocean and Cyber Ocean, BlueFin has been reused as a pilot customer, that was network towards BlueFin.”		
“The second part is that we build network which we can capitalize on, which we share of course. This means that when we are sitting and discussing new oil and gas cases, I think about what I can bring to the table.”	Exchanging financial network e.g. investors and funds	
“About capital raising, we do it very efficient, also when governmental financing. We have a quite good overview and good network towards different funding’s. We know people, so it does not take us long time to position an application towards Nordic Research Council or Nordic Innovation Council. Also, about gathering capital and investors, we know very many environments. That's also one thing in terms of hiring and finding people, that's processes which can take long time if one does not have network and experience.”		

“For those who don't have network they use a lot time gathering capital to their firm or project. On one side you need a presentation and build a story for someone to believe. And we see that in many cases we don't have to do much really. We don't sell a series of 30 slides (...) We sell [the case] because we believe in it and endorse it. So, here we same a lot time.”	Leveraging established trust for fund raising	
“Network to identify the environments is one thing, but what's important is to get the right type of investor. (...) Because it's not necessarily just the capital which we want, we want experience and competency also.” “When we have such cases, we talk to them [angel investors at same office]. We talk with them, test ideas with them to get feedback before we start talking about investing, so we get a screening of opportunities”	Efficiently choosing the right investor to each case through broad network	
“No, but we have the benefit of having many firms, we have many good [CEO] candidates in circulation now. And that is something we are systemizing now.” “For example, now I'm planning to withdraw from Medical Maze, and there we want a new CEO, and we have one very promising candidate which have been involved in one of the other firms where we have also recruited a new CEO.” “We try to systemize it more now, because in this environment with all the firms, we have a quite large network of good people. We want to see if we can coordinate that in a better way.” “Customers and key personnel and other key pieces, you can say over time we will link together, and that will become more links between different people and we will reuse more people, more investors, more pilot customers and such.”	Efficiently recruiting CEOs and employees through network	
“It's clearly that when you're young one is very occupied by what's important? When you have experience you focus possibly more on the really important things and understanding what's good enough. The thing is that the battle is not at the office, thinking out smart things, it's to be out and talk with the customers, and then there is the part of asking the customers the right questions, and getting the answers you seek, that's also a bit about experience. When you are a bit unexperienced you might not	Leveraging experience for better prioritization of tasks and balancing the wishes from each shareholder	Working as a collective single-unit

catch what you should catch in a conversation with a customer. That you ask more intelligent questions, and possibly get a bit better answers because you show that you are a bit more senior. You open some doors easier when you have experience, than when you were a bit more junior.”	
“It's not just the capital which we want, we want experience and competencies as well. (...) Then we want a fair model which gives the investors a upside. (...) We are in a system where we can't just burn some bridges, we just can't. We work with very many different cases and go to investors with many different firms, so we need to appear as a trustworthy environment. And doing things which feels fair and right for all parts, for us, the founders, and investors. So, it means a lot of this is experience, it's a balancing art really.”	
“It's good for everyone and a very important principle. It means that we are in the same boat, and we spent a lot time together sparring and working together. When NewHorizon enters a firm there's a CEO who might have the responsibility, but behind there's a whole team. (...) Therefore it is a very important principal that there is collective success when we work together, we wish each other’s the best and do what we can to make each other good.”	Ensuring collective success rather than individual
“There are periods where one does not have much energy, and gain energy from others and inspiration from their successes, so that's in one way the dynamics which an environment and setup as ours give, for us.”	
“Hanne was hired in the summer and if you want to become a partner in NewHorizon you must get through and have some results. (...) We have a solution to incentivize her without being a shareholder beyond salary. It means that if the firms she’s involved in does a good exit, we have a mechanism where she gets a small share of it without being a partner.”	
“You talk with many customers, coordinate employees, have short and long-term goals and milestones, so it's not simple to bring a person inn. It's more in terms of discussing concrete problems where one is unsure how to attack it. If it's about investors and customers we of course discuss that, but not on any operational basis no.”	Collective problem-solving for each case as needed

“Yes, we have that every Tuesday, then it's really two things. We take a round on the cases we are involved in, if there are specific challenges we discuss that and if there are other things we discuss that. And then we use a bit time on new cases which we look at together and discuss (...) we use two hours every Tuesday.”
“There are very many pitfalls, so even if the job is with different types of firms and different markets, a lot are similar in one way. All firms need to raise capital, there are some requirements to what should be presented and how. (...) We know how things should be in order to get that type of financing in terms of a demanding customers. We know how to negotiate such things and how much to give and take, so there's many experience-based things.”

I aimed to identify whether or not resource orchestration is being used between the team of portfolio entrepreneurs, at the top managerial level, and what implications this implied for the portfolio of firms. My analysis finds that they engage in the subprocesses of *collaborating*, *exchanging*, *adopting*, and *reallocating* at top managerial-level, to enhance their individual responsibilities in the portfolio. I grouped the subprocesses into two aggregated theoretical constructs – *sharing* and *harmonizing*. Similar to the terms used to define processes across firms by Baert et al. (2016) as they were suitable, but defined differently at the managerial level as shown in Table 7.

Table 7: Resource orchestration processes used between team-based portfolio entrepreneurs to enhance individual responsibilities (aggregated theoretical constructs, second-order constructs, and descriptions)

Aggregated theoretical construct and second-order constructs	Description
SHARING	Refers to the team of portfolio entrepreneurs collaborating by discussions individual responsibilities, exchanging of network, and sharing economic gains.
Exchanging network	The process of exchanging business network, e.g., customers, investors, potential employees, suppliers.
Working as a collective single-unit	The process of collectively solving uncertain situations from firms the entrepreneurs are responsible for, and collectively sharing economic upsides from startups.
HARMONIZING	Refers to adopting entrepreneurial roles accordingly to the startup needs and reallocating workhours across firms for flexibility and maximized utilization.
Adopting roles for each firm	The process of adjusting roles accordingly to the demand from each individual startup.
Reallocating workhours across firms	The process of reallocating workhours across firms to engage in multiple firms and maximize their resource utilization as well as minimizing unnecessary costs for the firms.

Throughout the case study, it becomes apparent that the team of portfolio entrepreneurs have individual responsibilities in the portfolio of firms. What unites them is similar interests, similar tasks in varying contexts, complementary experience and network as all are developing early-stage startups within selected industries. Whereas they do not share operational responsibilities within each firm, they do share the economic upside. The founders comment this as an important principle "it means that we are in the same boat (…) we wish each other's the best and do what we can to make each other good." They use the common grounds for the subprocess of *collaborating* and discuss uncertainties and help the responsible entrepreneur take suitable actions for the firm being discussed. This happens both through informal discussions at a shared office, but also formalized through weekly meetings where they discuss challenges and potential new opportunities to engage in (further elaborated in 5.3). One of the founders commented:

> "We are in a system where we can't just burn some bridges, we just can't. We work with very many different cases and go to investors with many different firms, so we need to appear as a trustworthy environment. And doing things which feels fair and right for all parts, for us, the founders, and investors. So, it means a lot of this is experience, it's a balancing art really."

In addition to discussing uncertain situations, they help each other's through the second subprocess of *exchanging network* of pilot customers, investors, suppliers, employees, CEOs and more (e.g., Ocean Safety, React Ocean and Cyber Ocean, have reused BlueFin as a pilot customer). By having already established trust with actors from previous firms they can make new startups in the same industry move fast forward, even though the responsible entrepreneur might be different the doors are open when they present themselves from the NewHorizon environment. The network and trust become especially apparent when seeking funding, and one founder states that this is a process that often takes time, as one typically wants investors who provide more than capital, for example, relevant network and competency. Thus, they engage with the angel investors at the same office if it is within the same space, if not they seek others to find the right investor for the topical firm. Having established trust with many investors is observed to increase the speed of this funding process, one founder comments the process:

> "For those who don't have the network they use a lot of time gathering capital to their firm or project. On one side you need a presentation and build a story for someone to believe. And we see that in many cases we don't have to do much really. We don't sell a series of 30 slides (...) We sell [the case] because we believe in it and endorse it. So, here we save a lot of time."

Moreover, they try to focus on what they are good at and outsource CEO recruiting to recruiting firms. They also enhance this process by recommending potential candidates from their network to be screened. This replacement mechanism to successfully decouple responsibilities will be further elaborated under 5.3. Thus, the team of portfolio entrepreneurs engage in *collaboration* and *exchanging* to help each other's move firms efficiently forward in a dynamic and changing market environment.

The third subprocess is *adapting* their role to fit varying firms and situations as a means to maximize their expertise utilization. The team engage in early-stage startups with very few employees, whom each make significant contributions towards the startup, and has varying motivation and intentions. They find adapting as a necessary tool to ensure a balanced fit among all actors which in return ensures harmony and fertile conditions for further collaboration. One founder stated that they evaluate which portfolio entrepreneur that can be the best fit based on "internal motivation, available time capacity, startup chemistry and other factors."

The fourth subprocess I found them to engage in is *reallocating* their engagements between multiple firms. This is closely tied with the former subprocess as to more efficiently use their expertise as one firm might not need a full-time CEO, but rather an advisor and thus one portfolio entrepreneur might be CEO for one case and advisor for two others. This is similar to the subprocess of redeploying champions across firms (Baert et al., 2016), but at the managerial level, where the emphasis is on the entrepreneurs wanting to use their full capacity for the sake of the portfolio. With external actors, they are clear upfront about this distinctive model and are honest about reallocating workhours between projects. Whereas this makes them inaccessible at times one founder commented on his collaboration with the portfolio team as problem free and that this collaboration was the perfect fit:

> "When I was in TrueNorth Systems and thought about the solutions for IT Motion I thought that, 'OK, I need to have someone with me on this.' One thing I really hate is writing applications to Nordic Innovation Council and such research funds, money, really soft funding in general. (...) The worst I know about. And Håkon is really good at it, and he finds it's enjoyable I think. That's why I thought it had to be the bullseye, and I also knew he was doing the NewHorizon part, so then I knew it had to be perfect for him. (...) I didn't have any other's in my thoughts than him really."

Furthermore, as startups typically have limited resources, it is typically difficult to hire an experienced CEO. One of the portfolio founders states: "We might invest money, and take a salary as management for hire, but we can also convert sweat for equity." Combining this statement with the fact that they might reallocate hours depending on varying needs, they can meet these constrained situations.

This results in a model where they have different individual responsibilities and through *collaborating*, *exchanging network*, *adopting roles* and *reallocating capacity* they can enhance their contributions towards each firm and move efficiently forward. While the success factors are many, I see this as a critical piece to understand how they have established a long list of viable startups (can be found in Appendix B). Holistically, I group the subprocesses into the aggregated theoretical constructs of *sharing* and *harmonizing* at the top managerial-level in the portfolio context. The theoretical model in Figure 4 illustrates how I integrated these theoretical constructs to intertwine with previous literature on resource orchestration.

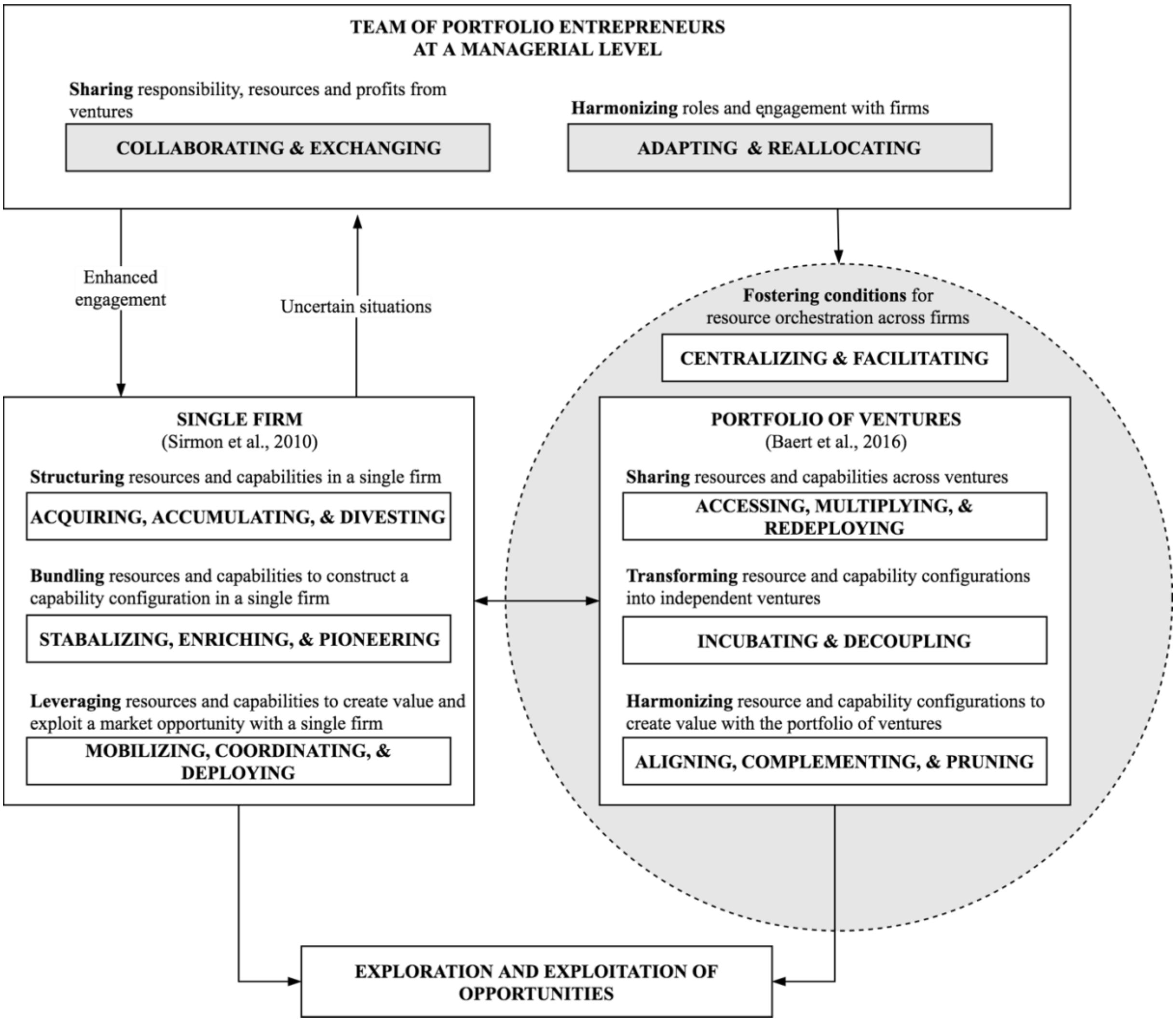

Figure 4: Theoretical model of collaboration processes used between team-based portfolio entrepreneurs to enhance individual responsibilities

5.3 Early-stage entrepreneurship as a niche focus that facilitates expertise

The third aim of this study was to investigate how early-stage portfolio entrepreneurship is conducted which effects this implies in the context with team-based portfolio entrepreneurs. I found them to engage in the subprocesses of *incubating* and *decoupling* which are used to conduct the aggregated theoretical construct – *rejuvenating*. This enables them to focus their expertise and further refine it over time, which in return enhances the other resource orchestration processes used at top managerial-level. The following Tables 8 and 9 shows how I used the empirical data to create first-order codes, second-order constructs, aggregated theoretical construct, and definitions used. Then I will elaborate my analysis, and interpretation of how this can further expand our understanding of resource orchestration.

Table 8: Rejuvenating the portfolio to enable and maintain focus on early-stage startups (representative quotes, first-order codes, and second-order constructs)

Representative quotes	First-order codes	Second-order constructs
"We have our system, our apparatus, we just try to do what we are good at." "We are very good at taking firms from A to B, meaning the early-stage where there's many similar problems in all firms. Gathering funding, building the product, get the first customers, build good teams. Get the right investors, build good boards and get the firm to a new level where a dedicated team can build it further. Because we have done that in many cases, we say that we are in the firms 2-3 years and build them up from scratch really."	Focusing expertise on early-stage	Incubating
"It was the combination of maybe having a bit bad time, and we from the beginning we already had a close relation to both the University of Norway, eventually TTO, BlackBox Research Institute, and other industrial actors as Skyway Intelligence Group etc. So, we quickly had access to multiple cases to start up. When looking at it that way, we have built the portfolio step by step, were we three who started relatively quick had two firms each which we worked operationally with." "Yes, not fixed times, but two times a year we meet BlackBox Research Institute, and there's a lot ad-hoc where they are contacted by founders. We get contacted by founders, and then we have a shared meeting with everyone." "It's everything from BlackBox Research Institute, TTO and the University of Norway, and there are individual founders who have quit a firm in the city which have a good idea." "And then we have been the founders with the idea and started the company. Where we acknowledged a market need, started a firm and acquired a technology which we were familiar with through partnership." "Five people who can run two cases each and we work with each case over two year, so we can continuously have new cases which we withdraw from and then we can supply with new. That's why we can aim to withdraw from about four each year now, and then we can supply with four new."	Maintaining high inflow of opportunities through Internal and external ideas	

"When we started NewHorizon, it was important to get some successes, and then it was the case with Upside Oil that it was not easy to find a new CEO. Because the professor we had very good relation, he asked me if I could stay longer and take the company not just from A to B, but from B to C. (...) It is an experience, but to scale the model we have we can't sit 5-6 years in one company, so we just have to let it go a bit earlier." "At stage B, it's natural that one tries to attract a management team where one might have been working and have 20 years of experience in oil and gas, with good competency on the market side." "When we get there, then it's discussed in the board, Ok, now it's time to get a dedicated resource on fulltime. Then it's specifying what types of people we should have, and then we are active with recruiting a new CEO to take our position." "When we withdraw from a firm, just as it's said, we overlap, so that we are sure to transfer all experience and knowledge to the new CEO. Then we are formally out of it and have done our job and continue as a shareholder. Eventually we might be in the board, but it's not necessarily if we have a small share."	Substituting roles at scaling stage	Decoupling

Table 9: Rejuvenating the portfolio to enable and maintain focus on early-stage startups (aggregated theoretical construct, second-order constructs, and descriptions)

Aggregated theoretical construct and axial-coding	Description
REJUVENATING	Refers to renewing the portfolio of early-stage startups in an equilibrium of decoupling startups at scaling stage, and accordingly integrating new startups for incubation. Thus ensuring a focus of expertise by balancing the number of startups in the portfolio.
Incubating	The process of maintaining a high inflow of early-stage startups and leveraging expertise when incubating startups to a scaling stage.
Decoupling	The process of cautiously decoupling startups at scaling stage to ensure further growth and to minimize risk concerning return on investments. Thus, releasing capacity for new early-stage startups.

Throughout the analysis, I identified a two-edged blade that is crucial to keep in equilibrium to hinder consequences and reap the benefits of focused expertise. The first part derives from the subprocess of *incubating* which refers to the process of taking internal or external ideas and business opportunities at an early stage and develop until scaling stage. Besides the portfolio entrepreneurs having extensive experience that can be used to create good conditions for incubation another factor is their passion. One of the portfolio entrepreneurs stated:

> "Yes, the essential is that we think it's incredibly fun to build firms and create something. That's what is fundamental, it gives a lot of energy to work with enthusiastic founders, that team spirit they have. We find that fun, and we think it's fun to work with that. And that's why we do it because it is a lot of work and effort to lift many cases."

They aim to be in firms for 2-3 years before withdrawing from the operational responsibility. This creates the requirement for a high inflow of opportunities and accordingly, mechanisms which ensure sufficient outflow of startups. In terms of maintaining a high inflow of opportunities which can feed the model, the portfolio entrepreneurs search for ideas internally and externally and have been observed to leverage the local research environment which the portfolio entrepreneurs have noted as having 'lacking commercial forces' and a reason as to why they were able to have a few cases each quickly. Multiple startups are based on such research environments, but also industrial actors or standalone founders have been sources for external business opportunities. Moreover, they have also started firms on their own initiative of acknowledging a market need and then acquired the necessary team to build a firm. Notably, the consistently reusing of external environments can be linked to the team having built up trust and a track record from previous firms. Another observation is that when ensuring satisfaction with the same external actors, they can maintain relationships with environments that create similar technologies. This again helps to ensure a portfolio of firms within their selected industries where they already have established experience and network.

The second related subprocess is *decoupling*, which is the counterweight that enables this model to work without overloading the capacity of the portfolio entrepreneurs. I find maintaining an equilibrium between inflow and outflow as a requirement in their model, which reflects the number of startups increasing alongside the recruitment of new portfolio entrepreneurs to their managerial team. Whereas decoupling is necessary to free capacity for new early-stage startups, the founders have stated that after one gets some traction and makes a firm more suitable for growth, the proper CEO is one with decades of experience and good competency on the relevant market side. Implying that this is not only good for them but the startups also. However, I find the transition to a new CEO as a careful process with two driving motivations. Where they in the first step recommends CEO candidates to screening from recruiting firms, and in the second step ensure that the chosen CEO has an overlapping period to ensure all experience and knowledge is transferred. Not only does this help the startups grow, but it makes the portfolio entrepreneurs more likely to get a return on investment as they only withdraw operationally, and continue as shareholders.

Importantly, this creates a relationship which needs to be balanced to rejuvenate the portfolio of firms successfully and in return enable full resource utilization of the team-based portfolio entrepreneurs, focus of their expertise, and later returns on investments if startups successfully exit at one point. Holistically, I find *rejuvenating* as an optional process at the top managerial-level, with the notion of the possibility that other team-based portfolio entrepreneurs operate differently. However, the effects have been observed in this case. The process of *rejuvenating* enables the portfolio entrepreneurs to maintain a focus on specifically early-stage startups, and over time refine their expertise. Furthermore, it is the stage which these portfolio entrepreneurs find the most interesting and have the most experience and network with, thus fostering their passion. Figure 5 integrates *rejuvenating* into the previously introduced theoretical model. This further expands our understanding of how portfolio entrepreneurship can be conducted and supplements previous work from Baert et al. (2016), Sirmon, Hitt and Ireland (2007), Sirmon et al. (2010).

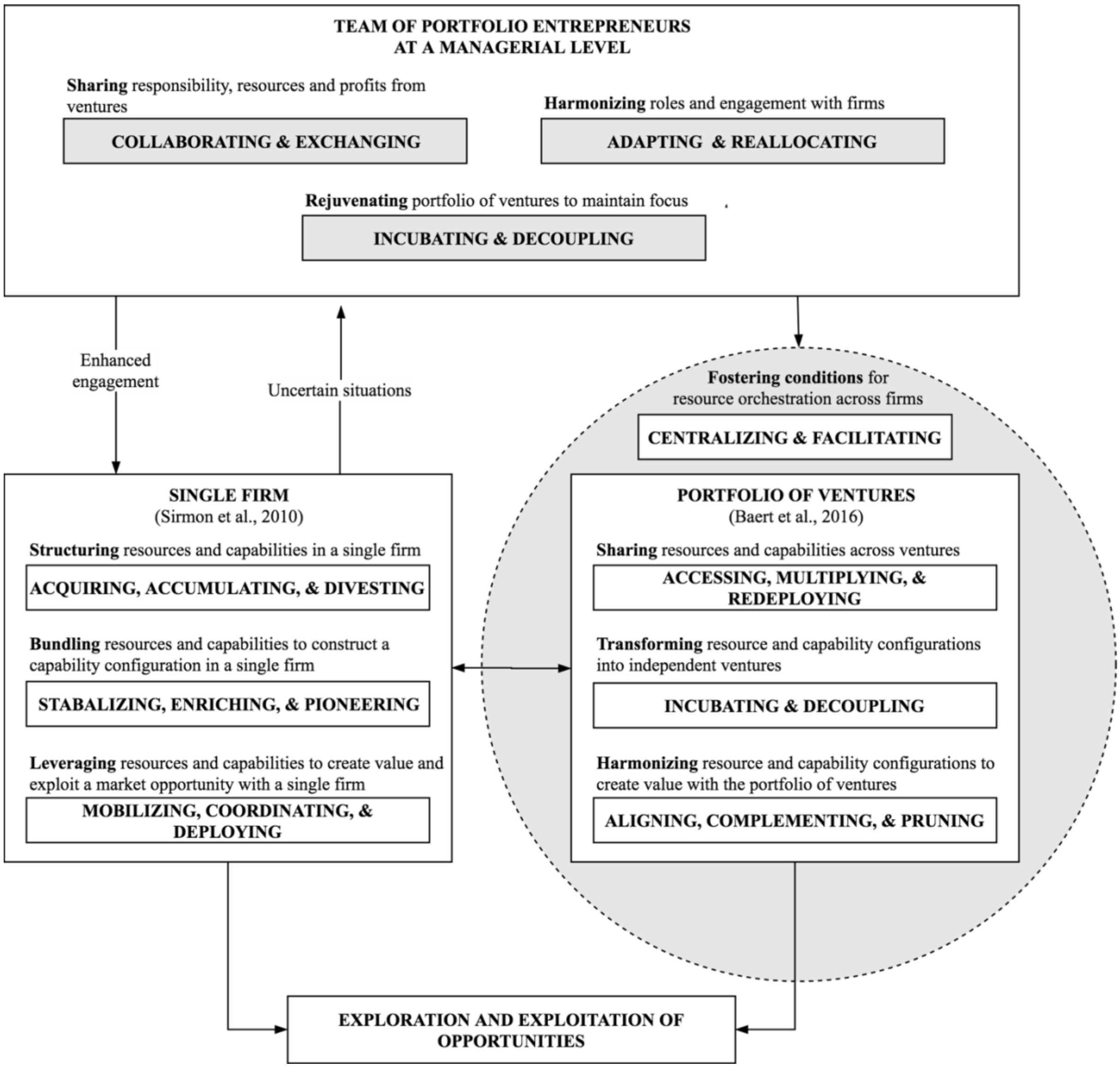

Figure 5: Theoretical model of rejuvenating the portfolio to leverage and hone entrepreneurial expertise

6 Conclusion and implications

I sought to extend previous work on resource orchestration and portfolio entrepreneurship by examining a team-based portfolio entrepreneur focusing on the early-stage of venture creation. To understand more of the underlying dynamics and causes for such dynamics which can be used for exploration and exploitation of opportunities, I explicitly addressed the following research questions:

(1) What triggers resource orchestration across firms in the portfolio context?
(2) How do team-based portfolio entrepreneurs operate and differ from single portfolio entrepreneurs? What effects does this imply in the portfolio context?
(3) How is early-stage entrepreneurship conducted and what effects does this imply in the portfolio context with team-based entrepreneurs?

To do so, I conducted a single-case study based on interviewing four out of five portfolio entrepreneurs and one founder in the portfolio. As to answering my research questions, I found *centralizing* and *facilitating* as vital elements to enable resource orchestration across firms in a portfolio context. When examining the revelatory case of having team-based portfolio entrepreneurs the findings indicate that this model could be valuable to increase the likelihood of successfully establishing viable firms. At the top managerial-level team engages in subprocesses of *collaborating*, *exchanging network*, *adapting roles* and *reallocating capacity*. This helps them to efficiently enhance their individual responsibilities in the portfolio at the operational level. Furthermore, I find them to rejuvenate the portfolio through *incubating* and *decoupling* startups. This continuously rejuvenation of the portfolio enables them to efficiently use their early-stage expertise and ensure a smooth transition when decoupling startups. These eight subprocesses were grouped into four aggregated theoretical constructs at the managerial level – *fostering conditions*, *sharing*, *harmonizing*, and *rejuvenating*.

Implications

My research contributes to theory in three ways. First, by building theory on how team-based portfolio entrepreneurs can collectively operate towards multiple ventures based on a revelatory case. Thus, extending our knowledge about portfolio entrepreneurship and resource orchestration. At the managerial top-level among the team-based portfolio entrepreneurs, the process of *sharing* gives us new insight into how portfolio entrepreneurs can individually have responsibility for one or more ventures, and simultaneously draw upon the experience and network from other portfolio entrepreneurs through *collaborating* and *exchanging*. Second, the research shows that one can exploit the expertise to a greater degree by *harmonizing* the expertise across the portfolio through the subprocess of *adapting* the role accordingly to startup needs and *reallocating* one's capacity accordingly with the uncertain and dynamic development of early-stage startups. It was also interesting to identify the process of *rejuvenating* the portfolio as a resource orchestration enhancing factor at the managerial level. Through continually renewing the portfolio with new startups they can focus solely on early-stage startups, which they found most enjoyable and had most expertise with. However, the research indicates that both the inflow of opportunities needs to be in equilibrium with the outflow of startups, to ensure resource utilization. Third, it is also found that startups must be decoupled with care to assist further growth and the likelihood of obtaining return on investment at a later stage. This also addresses the call from Baert et al. (2016) to identify the optimal size and the optimal scope of a portfolio of ventures. Whereas the answer is not finite, my research shows that it depends on the degree of responsibility in ventures, but one entrepreneur can be responsible for more than one firm. In some cases, one portfolio entrepreneur was only CEO for one case, whereas others might be CEO for two or three cases while sharing some advisory roles, which is explained by varying startup demands and capacity among the entrepreneur. Granted that this answer is in the perspective of early-stage startups.

Second, I contribute to the boundaries of Baert et al. (2016), Sirmon et al. (2010) research by exploring resource orchestration at a managerial level between a team of portfolio entrepreneurs focusing on the early stage of startups. My findings suggest that resource orchestration occurs at the managerial level and with other subprocesses than previously identified with different motives and outcomes. As such, I extend their theoretical framework with a managerial level at a higher hierarchy-level with six subprocesses which I grouped into three new aggregated resource orchestration processes (*sharing*, *harmonizing*, and *rejuvenating*). These processes are important as they give us new insight into strategies which can be applied to exploration and exploitation of opportunities in the early stages.

Third, I contribute to the research from Baert et al. (2016) on resource orchestration across firms, by addressing their call for more research on the drivers of successful orchestrations. I extend their research with two subprocesses which are seen as enabling factors for resource orchestration across firms. I grouped these subprocesses into one aggregated resource orchestration process – *fostering conditions*. My findings represent an intensive case where a portfolio was rapidly developed and thus I was able to identify when and how resource orchestration across firms occurred. This is important to acknowledge in further research and can help guide further development in this literature stream. Moreover, this broadens our understanding of how a sophisticated portfolio setup can emerge and what it builds upon. Hence, creating guidelines for latent portfolio entrepreneurs. Regarding transferability to other contexts, I find it acceptable to assume similar behavior could be found among a team of founding angels as the definition is similar, but delimited to an external startup focus. For other models that focus on helping startups without being operationally active (e.g., investor team, managerial corporation team or venture builders) I find it unlikely that this theory is applicable, as the emphasis is to enhance their operational responsibilities within each firm. However, it remains as areas for further research within resource orchestration.

Further research

My research addresses team-based portfolio entrepreneurship focused on the early-stage of startups life cycle. First, further research could explore how the theoretical framework applies to other contexts as where the portfolio entrepreneurs engage in two or more stages, or different stages of the startup life cycle. In this study I found the entrepreneurs to engage in multiple startups and maintain control by constantly rejuvenating the portfolio, which enabled them to always leverage their expertise. How does this apply to other portfolio setups? What is the optimal size and the optimal scope of a portfolio of ventures in other stage focuses?

Second, further research could examine how the subprocesses at the managerial level of portfolio entrepreneurs apply to other contexts such as a portfolio of venture capitalists or multidivisional firms where one is also likely to find a team with similar knowledge and experience working towards shared interests. Which processes do they engage in for exploration and exploitation of opportunities? How are the constraints in such contexts? Also, how are the performance implications?

Limitations

My study has many limitations that offer opportunities for further research. First, my findings are based on a revelatory case, which means my conclusions must be seen as tentative and might not be generalizable to other settings. However, I have attempted to create knowledge that gives insight and further broadens our understanding of the holistic image of portfolio entrepreneurship. Whereas I have strived to implement 'qualitative rigor' to my analysis, the final theoretical model which I presented capsules my interpretations from raw empirical data to theory. I intended to provide a preliminary insight into how team-based portfolio entrepreneurs can operate, and move theory forward from previous resource orchestration work (Baert et al., 2016, Sirmon, Hitt and Ireland, 2007, Sirmon et al., 2010). Whereas being preliminary these issues provides fertile grounds for further work on the managerial level of portfolio entrepreneurship.

Second, as the majority of the portfolio have been seen as viable, some viable and few failed due to technology reasons. This can indicate that the resource orchestration at the managerial level enhances the startup success rate. However, this can only be seen as plausible causation. Further research could examine a portfolio to greater depth and follow the economic development through a longitudinal study to determine what the outcomes are. Moreover, my findings present several effects which seems favorable for the firms. These effects can also be further researched through benchmarking against serial founders and single-standing founders, with or without support at the managerial level through incubation programs or similar. This can help us understand the alternative costs to resource orchestration.

Finally, my research contributes to the practice by improving entrepreneurs' understanding of the effects which can derive from having a team of equal portfolio entrepreneurs, with varying backgrounds and network, but with overlapping interests. The findings indicate that a collaborating team can efficiently address uncertainty in individual cases they are responsible for. Thus, it is likely to assume a well aligned and balanced team enhances the startup process of exploration and exploitation of business opportunities, and thereby improves the likelihood of establishing viable startups. Regarding governmental interests of policy makers, this study serves as example of the significant value a team can create among themselves and accordingly the positive effects on the firms within the portfolio. Thus, it serves as a case showcasing the promise of portfolio entrepreneurship as a business development model, and contributes to the discussion if portfolio entrepreneurship, although being less scalable, could be better suited than typical business incubators to help early-stage startups. Whereas I acknowledge my inexperience in this literature stream, I hope my contributions can be helpful for further research in this aspect of entrepreneurship.

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Appendix A: Overview of the portfolio entrepreneurs

Since year	Name	Role
2010	Sigmund	Founder and partner
2010	Håkon	Founder and partner
2011	Tor	Founder and partner
2015	Ulrik	Partner
2017	Hanne	Senior Business Developer

Appendix B: Overview of business activities

Year	Business activity	Source of idea	Role	Viability
2010	NewHorizon Management	Sigmund and Håkon		Viable
2010	NewHorizon Holding	Sigmund and Håkon		N/A
2010	Upside Oil	Individual through network	CEO and board member	Viable, sold
2010	Revelation IT	External - BlackBox Research Institute	CEO	Viable
2011	Silk IT	External - Skyway Intelligence Group	CEO	Failed
2011	Oil Pillar	Individual through network	Co-Founder, CEO	Some viable, some too early to tell.
2011	React Ocean	External - Skyway Intelligence Group	CEO and head of board	Viable, sold
2011	Ocean Explorer	External - University of Norway TTO	Business developer	Failed
2012	Ocean Safety	External – University of Norway, Faculty of Entrepreneurship	Co-Founder, HoB	Failed
2012	IT Motion	Individual through network	Co-Founder, Business developer and head of board	Viable, sold
2012	Syntax IT	Own idea in collaboration with private individual	Co-Founder, CEO and head of board	Viable
2012	Imprint IT	External - University of Norway TTO	Co-Founder, CEO and head of board	Some viable, some too early to tell.
2013	Gas Destiny	External - University of Norway TTO	Consultancy	Failed
2014	Ocean Vitality	External - BlackBox Research Institute	Co-Founder, CEO and head of board	Some viable, some too early to tell.
2014	Syntax Hardware	External	Board member	Restructured for viability
2015	Cyber Ocean	NewHorizon-Team	Founder, CEO and board member	Viable
2015	FirstChoice Oil	External - University of	Co-Founder, CEO	Some viable,

		Norway TTO	and head of board	some too early to tell.
2016	Blackwell IT	Individual through network	Co-Founder, CEO and head of board	Some viable, some too early to tell.
2016	Medical Maze	External - BlackBox Research Institute	Co-Founder, CEO	Too early to tell.
2016	NewHorizon Holding II	NewHorizon-Team		N/A
2017	Onward Ocean	External - University of Norway TTO	Invested advisor	Some viable, some too early to tell.
2017	Need IT	Individual through network	CEO	Too early to tell.
2017	Enter NewHorizon	NewHorizon-Team	Co-Founder, CEO and board member	N/A
2017	Companion Accounting	NewHorizon-Team	Founder and head of board	Viable
2017	RedZone Medical	External - BlackBox Research Institute	Co-Founder, CEO and head of board	Too early to tell.
2017	Starship IT	External - BlackBox Research Institute	Consultancy	Failed

Appendix C: Interview guide

1. All names are kept anonymous, and the interview will be recorded and transcribed, is this ok?

Context

2. Tell me about yourself, who are you as a person and which background do you have?
3. Could you introduce the firms within the portfolio and eventual support functions?
4. Which status does each firm have today?
5. What roles and responsibilities do you have and previously had?
6. Could you describe the core team around you, how is the cooperation, what is being discussed?

The portfolio development

7. How has the portfolio emerged?
    a. Could you elaborate on the development/dissolvement of firm 1,2, … n
    b. Could you elaborate on the effects of event X from company Y on the portfolio?
    c. Could you elaborate which resources your firm has contributed to the portfolio?
8. What contact do you have with the firms in the portfolio?
9. What contact do the firms have with each other?
10. Any other examples of how a firm in the portfolio helped other firms in the portfolio?
11. What challenges have you met along the development of the portfolio as a result of shared resources?
12. How has the development been for stakeholders, employees, and customers?
13. Have you had any reflections on the portfolio development? Would you do the same again?

Closure

14. As you might tell, I'm looking for synergy effects in the portfolio context, anything you think I forgot to ask about?