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How large organizations execute internal startups?

A Cynefin based multiple case study on development processes.

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ABSTRACT

Context

Innovation is essential for large companies' survivability. By setting up internal startups as exploratory vehicles, large companies can create new products and businesses, and compete with the high rate of new software startups in emerging markets.

Objective

The research aims at exploring the development processes within internal startups. The main objective of the research is to create a deeper understanding of how internal startups can succeed, by exploring how process methodologies as lean startup can be applied in a large organization context.

Method

A research model was developed based on the Cynefin framework, lean startup, multidimensional view of venture performance, process theories for development and change. The model was explored and validated by a literature review and a multiple case study. The multiple case study was composed of three cases, vipp from DNB and two internal startups from Tieto. All prominent examples of internal startups in the field of software engineering. The data was analyzed using thematic synthesis and various strategies for analyzing process data.

Results

The origin of the idea was found to heavily influence the development processes of the internal startups. As well as the connection between the parent organization and the internal startup, linking to strategic relatedness and autonomy. The internal startups which was initialized as team first startups and strategically unrelated, utilized lean startup patterns in a greater extent, due to the increased level of uncertainty.

Conclusion

Considering the scarce collection of previous literature in the internal startups field, this research contributes to defining internal startups and connecting it to preceding observations. The use of Cynefin framework as a research tool, is comparatively new, hence it has a theoretical contribution linking process theories and lean startup to the framework. Additionally, there are multiple practical implications on how to drive internal startups for future success. Thus, this research contributes to future research, by constructing a foundation for understanding how to successfully implement internal startups in larger organizations.

Keywords: Internal startup, Lean startup, Cynefin, Software Engineering, Process, Internal Corporate Ventures

SAMMENDRAG

Kontekst

Store bedrifter og organisasjoner er ofte sett på som rigide strukturer og mindre agile enn startups. Innovasjon og endring er likevel essensielt for bedriftens konkurransevne i dagens marked. Internal startups er initiativ for å fasilitere ny forretnings- og produktutvikling. Dette gjøres ved å separere innovasjonsaktiviteter fra den operasjonelle virksomheten.

Objektiv

Denne studien utforsker internal startups innen programvareutvikling. Hovedmålet er å gi innsikt i hvordan internal startups kan lykkes i å skape nye bedrifter og produkter, ved å se på implementasjon av prosessmetodikker med spesielt fokus på lean startup.

Metode

Et teoretisk rammeverk og forskningsmodell basert på Cynefin rammeverket, lean startup, flerdimensjonalt modell av venture prestasjoner, samt prosess teorier for utvikling, ble konstruert ved hjelp av en omfattende litteraturstudie og en flersaksstudie. Saksstudiene var vipps fra DNB, kjent som en av de større innovasjonene innenfor mobilapplikasjoner i Norge de seneste år, samt to lovende internal startups fra Tieto Finland. Forskningsdataene ble hentet ved hjelp av utforskende intervju, dokumentasjon og observasjoner, og analysert med av tematisk syntese og strategier for analyse av prosessdata.

Resultat

Resultatene viser at ideens opprinnelse og synergier mellom foreldreorganisasjonen og internal startups, via strategisk korrespondanse og autonomi, har stor innflytelse på prosessutviklingsprosessene. Startupsene som settes sammen av et team eller ansvarlige personer innen et området og har en lavere grad av strategisk koherens, utnytter mønstre og metodikker fra lean startup i større grad.

Konklusjon

Denne studien bidrar til å definere internal startups, samt å sette fenomenet i perspektiv mot tidligere litteratur. Bruken av Cynefin-rammeverket som et forskningsverktøy, er relativt nytt, og har derfor et teoretisk bidrag som forbinder prosessteorier og lean oppstart til rammeverket. I tillegg inneholder studien flere praktiske implikasjoner, ment til å støtte utviklingen av internal startups. Studien bidrar derfor til et fundament for videre forskning i feltet, som er av stor betydning for innovasjonsaktiviteter i større organisasjoner.

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ABBREVIATIONS

BML	build-measure-learn
CE	corporate entrepreneurship
ICV	internal corporate venture
MVP	minimum viable product
NVD	new venture department
PEC	primary empirical conclusion

1 INTRODUCTION

The introduction consists of six subsections explaining the fundamentals for this thesis. First, presenting the motivation and purpose for the research. Thereafter, describing the research questions, scope, process and objectives. At last providing an outline for the structure of the thesis.

1.1 MOTIVATION

Methodologies as lean startup have been widely implemented in product innovation processes. Yet, there is scarce empirical research supporting the implementation and use of these exploratory patterns (Steinert et al., 2016). This also applies to software product innovations processes within large companies.

As large companies struggle to create radical innovations (Bessant et al., 2014), internal startups have been a possible solution to support these types of innovation. By separating the innovation activity from the operational management, large companies can implement lean startup methodology to explore new opportunities (Edison, 2015).

Therefore, internal startups enforce ambidexterity in large organizations, by procuring the ability to both innovate incrementally, and to create major breakthroughs (Farjoun, 2010; Probst et al., 2005). Internal startups are entrepreneurial initiatives, responsible for the development of an innovation within product and/or market area, creating new businesses for their parent organization.

Due to the newness of the topic, most literature regarding internal startups is composed by literature regarding internal corporate venturing. Although, there is a rich body of literature written about the social structure of internal venturing, the matter seems to be poorly understood (Covin et al., 2015). There have been many examples of successfully implemented internal corporate ventures, as 3M (Minnesota Mining and Manufacturing Company) venturing program, which has been a pioneer in internal venturing since the 1950s (E. B. Roberts, 1980; Edward B. Roberts et al., 1972). Still, failures are more common than successes, both for internal and external ventures (Campbell et al., 2004; Ginsberg et al., 1994).

In the recent decades, where the extreme technological revolution and development keeps accelerating, it is a clear motivation for large companies to understand how to successfully develop internal startups. Thus, providing motivation for exploring the topic further.

1.2 RESEARCH QUESTIONS

The research objective is to discover a deeper insight of the drivers of internal startups, how they develop over time and how they may successfully create new software products and businesses. Considering the newness of this topic, the research will contribute to defining internal startup and connecting it to previous findings to build a foundation for future research.

The application of the Cynefin framework is relatively new as a research tool (McLeod, 2013). Thus, the application of the framework and addition of process theories and lean startup will provide a theoretical contribution. In addition, practical implications on how to setup and work in internal startups is provided to practitioners. This thesis will therefore contribute to discover the mystery of creating successfully internal startups, supporting large companies in the hunt for new innovations.

Considering the newness and importance of the topic of applying internal startups in large companies, the main research question of the thesis is:

RQ: How do internal startups successfully develop?

This thesis wants to explore this topic in addition to understanding the role of lean startup as a beneficial methodology to create new businesses. To explore this questions, there are multiple factors to take into consideration. One of these, is the main difference between external and internal startups, which is essentially the connection between the internal startup and its parent organization. Which leads to the first research question:

RQ1: How does the connection between the parent organization and the internal startup influence the development process of internal startups?

The second research question, relates to the tools in form of lean startup pattern and process theories from Van de Ven et al. (1995). Explaining the development and change, contributes to the understanding and theoretical foundation of process development in internal startups. The tools alignment is compared to the Cynefin framework (Kurtz et al., 2003; D. Snowden, 2002; D. J. Snowden et al., 2007), which supports understanding the causalities and sense-making of the development processes. The question then applies to how well the tools utilized by the internal startup are aligned to the framework, formulated as:

RQ2: How well are the tools used in the internal startups in alignment with the Cynefin framework domains?

The last question, identifies the overall progress of the internal startup by time and space. The aim is to discover how internal startups change over time, and how this connects to the possible success factors of the software product and business creations. By exploring the causalities, there is possibilities to see how the development processes and the domains of the internal startup change during the sequence of events.

RQ3: How do the development process of the internal startups change over time?

1.3 RESEARCH SCOPE

The existing literature in the field of internal corporate ventures is fragmented and cross sectional (Narayanan et al., 2009). Hence, it is purposeful to only focus on product innovations in the software engineering field. The research is based on a multiple case-study, where the unit of analysis is the internal startup teams within large companies. The cases were picked by several requirements. They are all

internal startups having responsibility for a software product and business innovation.

Initially there were four cases of interest, however one was not applied considering the scope of the research. The three remaining cases, vipps, Intelligent Building and Delta were studied in an explorative approach. By collecting data from in-depth interviews, observations and documentation, implementing triangulation to strengthen the validity of the research.

1.4 RESEARCH PROCESS

Due to the newness of the topic, it was chosen to follow an exploratory and qualitative research approach. The research model was built in an iterative manner by searching continuously through the previous literature and the empirical research. Multiple frameworks and theoretical bases were considered. The final theoretical foundation was built based on the Cynefin framework, Van de Ven et al. (1995) process theories, lean startup patterns and the multidimensional view of venture performance (Tukiainen, 2004).

The research model and theoretical proposition was compared to the results from the analysis of empirical data. The data analysis included a thematic synthesis (Cruzes et al., 2011) and strategies for analyzes of process data (Langley, 1999). The results were further discussed with the existing findings in previous literature, thus implying both theoretical contributions and practical implications for the development processes of internal startups.

1.5 OUTLINE OF THE THESIS

The thesis is divided into seven section. The second section, contains the results from the literature review, describing internal startups as innovation activities within large firms and the theoretical foundation for the study. The third section, combines the theoretical foundation with previous literature and the objective of the study. By presenting the research model and theoretical propositions, creates the research tools to apply in the empirical collection and analysis. The fourth section, explains the research design and methodology, and the decision behind the chosen approach. Thereafter, the fifth section presents the result from the multiple-case study, which are further discussed and compared to previous observations in the sixth section. The discussion section also includes practical implications, theoretical contributions. At last limitations of the research and direction for future research are discussed, and the thesis is concluded with a synopsis of the research and outcomes of the study.

2 LITERATURE REVIEW

The literature review builds the theoretical foundation and framework for this thesis. First, by exploring the topic of innovation in large corporation, by addressing corporate entrepreneurship and entrepreneurial initiatives as internal corporate ventures. Secondly, studying how software startups implemented as internal corporate ventures constructs internal startups. Thereafter, investigating the Cynefin framework and development processes in internal startups, providing the theoretical lenses and foundation for the thesis.

2.1 INNOVATION IN LARGE COMPANIES

Exploring the origins of internal startups, three main elements will be deliberated. First, explaining innovation, giving motivation for separated entrepreneurial activities within large companies. Following, how entrepreneurial efforts can be implemented by corporate entrepreneurship, as well as leading to the construction of internal corporate ventures.

2.1.1 Innovation

Innovation can be defined as a new or significant change in an organization, product, market or process (OECD, 2005). The term is frequently divided into two concepts, incremental and radical innovation. Whereas, radical innovations refers to major breakthroughs, incremental innovations are inferior changes which extends firm's existing capabilities (Zirger et al., 1996).

McDermott et al. (2002) defines radical product innovation to involve “the development of application of significantly new technologies or ideas into markets that are either nonexistent or require dramatic behavior changes to existing markets”. Radical innovation often push unfamiliar processes and skillsets. This distinguishes it from incremental innovation which tend to base on prerequisite knowledge. There are a number of terms pointed out in the literature to describe radical innovation, such as disruptive innovation (Christensen et al., 2006; Lettice et al., 2008), discontinuous innovation (Lynn et al., 1996), really new products (Füller et al., 2007), breakthrough innovation (Cooper et al., 2013) and major innovation (Bessant et al., 2014; Tauber, 1974).

Although, it is important for a company to have the ability to explore technology and enter new markets through radical innovations, it is important to tackle both exploitation and exploration of existing and new capabilities (S. A. Hill et al., 2014). This can be referred to as ambidexterity, which is the business ability to balance both their current business and their ability to tackle rapid marked changes (Gibson et al., 2004). A company with ambidexterity, is equipped to tackle future opportunities, while continuing exploiting their existing capabilities and market position. Still, in an established organization the rigid structure can threaten the advance of innovation. Separating entrepreneurship activities, facilitating corporate entrepreneurship (CE) as internal corporate venture (ICV) have therefore been a preferred option and a approach to ensure ambidexterity (Kuratko et al., 2009).

2.1.2 Corporate entrepreneurship

Ireland et al. (2009) defines corporate entrepreneurship (CE) strategy to be “a vision-directed, organization-wide reliance on entrepreneurial behavior that purposefully and continuously rejuvenates the organization and shapes the scope of its operations through the recognition and exploitation of entrepreneurial opportunity”. Such strategy, which continuously contours its operation by exploring, is claimed enhance the ability of creating radical innovations.

Morris et al. (2010) have classified CE in to two categories; corporate venturing and strategic entrepreneurship, see figure 1. Corporate venturing, then involves the birth of new businesses within existing organizations, while stratgic entrepreneurship, revitalization of the firm in question (Guth et al., 1990).

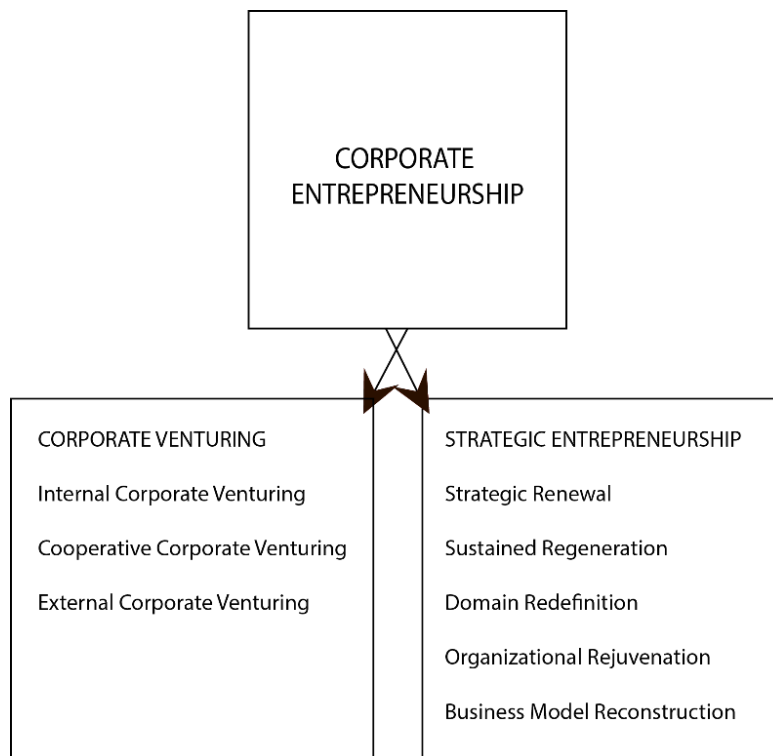


Figure 1 Corporate entrepreneurship (Morris et al., 2010)

Corporate venturing incorporates internal, cooperative and external venturing. There external venturing refers to activities as acquisitions and corporate venture capital (CVC) outside the company. Whereas, internal ventures are based on using resources and human capital from within the established companies. A typology of corporate ventures were proposed by Miles et al. (2002), were divide between two dimensions, direct and indirect, external and internal, see table 1. This thesis focuses on the internal dimension directing us to the concept of Internal corporate ventures.

Table 1 Defining Four Forms of Corporate Venturing (M. P. Miles & Covin, 2002)

Form of Venturing	Defining Characteristics
Direct-Internal	New venture funded directly through operating or strategic budget, developed within the domain of the corporation by employees.
Direct-External	Venture fund to acquire full or parts (equity) of external ventures.
Indirect-Internal	The corporation invest in a venture capital fund to encourage employees to develop internal ventures.
Indirect-External	The corporation invest in a venture capital fund that targets external ventures in specific industries or technology sectors.

2.1.3 Internal corporate ventures

Internal corporate venture (ICV), is “an entrepreneurial initiative that originated within the corporate structure (or within an existing business of the corporation) and was intended from its inception as a new business for the corporation”. ICVs originates in established corporations, and are explained as an individual or group of people which is responsible for bringing developing and market new product or service innovations, and manage all elements considering this task (Bart, 1988; R. M. Hill et al., 1972; von Hippel, 1977). As shown in figure 1, ICV is a way of achieving corporate entrepreneurship, creating innovation in established organizations (Phan et al., 2009).

Tukiainen (2004) identified three major waves of internal corporate venturing. The first wave was during the 1960’s, then 1980’s and later half of 1990’s. Thus, literature concerning ICV, can be traced back the 1960’s (Adams, 1969; Hanan, 1969a, 1969b; Peterson, 1967). However, as Adams (1969) mentions, the term is perhaps not as new as many expected even in the 1960’s. Adam argues that it could be traced all the way back to our nomadic ancestors. The past then tells us that the concept of new ventures within an existing structure, is occasionally reborned with new vocabulary. Similar concepts in previous literature are internal Start-ups (Festel, 2013, 2015; Venkataraman et al., 1994) and Internal Startups (H. Edison et al., 2015; Leppänen et al., 2015). Hence, it is purposeful to link the terms together and build the definition on established definitions. The internal startups are defined based on the ICV definition, in the section 2.2.1.

Venture strategist Roberts (1980), defines ICVs as the strategy with the highest degree of corporate involvement. ICVs are fully owned by their parent company (Maine, 2008). Yet, they are defined as separate entities with their own corporate culture and organization (Maine, 2008; Narayanan et al., 2009; Peterson, 1967; Roberts, 1980). A tool, supporting the characterizations of ICVs, in relations to their parent organizations, is Morris et al. (2010) framework defining new businesses. The two dimensions, market and product focus of the venture, gives a tool to explain the strategic relatedness between the two entities. However, the definition is quite broad, as there are several types of new businesses, figure 2.

MARKET FOCUS OF THE VENTURE	Market creation (New to "World")	new business	new business	new business	new business
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	new business	new business
	Current Market of the Corp.	market penetration	minor product development	major product development	new business
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
				PRODUCT FOCUS OF THE VENTURE	

Figure 2 Definition of newness of a business (Kuratko et al., 2009; Morris et al., 2010)

Motivation for internal corporate venturing

ICVs can be used explorative vehicles, to gain new knowledge and learn more about trends, technologies and markets. This may turn out to boost the parent companies competitive advantage and existing knowledge base (Covin et al., 2015; Keil et al., 2009). Thus, ICVs might be a trigger for the company to change their current business models and lead to strategic renewal (Burgelman, 1983; Narayanan et al., 2009).

ICVs have long been seen upon as drivers to enter new markets or produce new products and services (Block et al., 1993; R. M. Hill et al., 1972; Hlavacek, 1974; Thornhill et al., 2001), thus foster growth and diversification of the parent organization. By setting up an ICV, it is possible for the parent company to leverage their existing resources. Hence, retrieving higher rewards than other venture activities such as external ventures, which present less risk for the company (Maine, 2008).

The ICVs often represents small business entities with more flexibility and cross-functional teams than their parent company, which can serve as a learning platform to enhance innovativeness, existing capabilities and competence. A summary of the advantages is summarized in *Table 2*.

Table 2 Advantages of ICVs (Garrett, 2010), updates from literature

Advantages of ICVs	Literature
Foster growth	Roberts (1980); Sorrentino et al. (1995); Tidd et al. (1999); Thornhill et al. (2001); Narayanan et al. (2009)
Diversification	Sorrentino et al. (1995); Tidd et al. (1999)
Improve financial performance	Day (1994);
Building capabilities and competence	McGrath (2001); McGrath et al. (2006); Birkinshaw (1997)
Enhance innovativeness	Birkinshaw (1997)

Multidimensional view of ICV performance

To understand how ICV can contribute positively to their parent corporations, it is necessary to combine the multiple factors which influences the ICV performance. The multidimensional view of venture performance is a research model constructed and applied by Tukiainen (2004), figure 3. The research model captures key construct, which leads to the outcome of the venture. The research consisted of a longitudinal study of 37 corporate ventures within the venture program at Nokia. The research model was built on an extensive literature review within the ICV fields of research, resource dependency theory, slack search and ecology and topic reasoning.

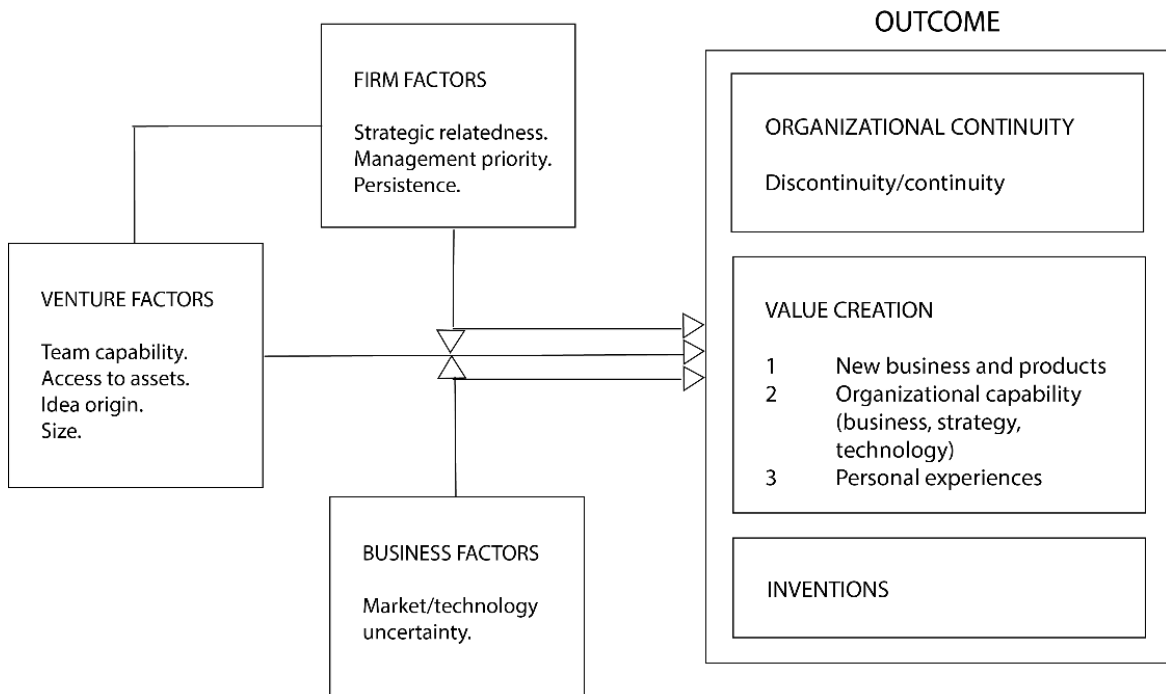


Figure 3 Multidimensional view of venture performance

Tukiainen (2004) divides the key constructs into external, internal and venture environment which influences the outcome of the venture. The external environment in the context of business factors as market and technology

uncertainty. The internal environment, applied to firm factors in the context of parent organizations. This includes strategic relatedness, which is the degree of how related the market and product is to the core business of the parent organization. In addition to management priority and their persistence to support the venture. The last environment to consider, is the venture environment, in our case the internal startup. This construct involves the team capability, access to assets, idea origin and size.

The research model is built on solid foundation from the ICV literature, however there is no evidence of replication of the study, expect research using the empirical data (Keil et al., 2009). Considering the factors being applied for quantitative measurements, only the key constructs will be added to this research model. As the framework provides insights of the multiple dimensions influencing an internal startup.

Outcomes of internal corporate venturing

As is displayed in figure 3, Tukiainen (2004) describes the outcomes of a venture by a multidimensional model, including organizational continuity, value creations and inventions, figure 4. The view presents capabilities created by ICVs, even though the ICV is discontinued or not. One of the evident results of a is the product and business developed by the new business. Less evident creations, are perhaps the skills developed by the team or key personnel. For technological ventures this can be technical skills, in addition to soft skills and vital managerial skills for venture managers and team members. As being a part of a fast pace and highly innovate team can influence motivation among employees, creating organizational capabilities. However, the value of the creation of these capabilities highly depend upon the organization ability to transform and apply the knowledge to the rest of the organization.

Keil et al. (2009) defines that the venture could either continue, be discontinued, integrated in the parent corporation so called spin-in, sold or spun into a separate company spin-off or launched in a new division. Despite, a venture being discontinued, there are possible benefits which could be transferred to the parent organization. McGrath et al. (2006) found in their in-depth investigation of the venturing process at Nokia and review of experienced insiders, that 25 % of the ICVs had been invaluable for adding to the core competencies and knowledge base of the company, in defiance of the apparently high failure rate of the venturing program.

There is still not consensus on how to achieve the desired goals and outcomes of ICV initiatives (Covin et al., 2015). Therefore, there is a need to understand the connection between internal corporate ventures, internal startups and their outcomes. The focus in this thesis will be on the value outcome in form of a new business and product development. Hence, focusing on distinct outcome, to grasp the opportunities underlying the entrepreneurial initiative of internal startups.

2.2 INTERNAL STARTUPS

Due to lack of a definition of internal startups, a definition is provided built on internal corporate venture and startup literature. Then, the differences between external and internal startups are described contributing to understanding which success factors are applicable for internal startups. Consequently, the development processes from previous literature of internal startup are presented. Finally, a review of limitations and lack of research in the internal startup literature will be presented.

2.2.1 Defining internal startups

There are no consensus on the startup definition (Paternoster et al., 2014), but a popular description applied by many, are Steve Blank's definition of a startup as "a temporary organization designed to search for a repeatable and scalable business model" (Steve Blank, 2013b) p. Taking the term further to the specific software industry, software startups are defined as a temporary organization with the goal of deliver a new software product or service. Giardino et al. (2016) defines software startups as "those organizations focused on the creation of high-tech and innovative products, with little or no operating history, aiming to aggressively grow their business in highly scalable markets." (Giardino et al., 2016) p. 585. Thus, adding the notion of scalability and agility to the term.

With technological advancements, software startups are launched in a high rate, and there is a need for large companies to keep up with the evolution. Still, large companies are often perceived as less flexible and reluctant to change than startups, but by adding the ICVs initiative context to the software startups, large companies can implement internal startups defined as:

Entrepreneurial initiatives, which is formed as an organization within a corporate structure. Searching for a repeatable and scalable business model intended as a new business for the corporation.

With applying software startup in form of an internal startup, the entrepreneurial activity is formed separately to create new innovations. Thus, there is room for flexibility which is needed to create high-tech products aimed for highly scalable markets (Paternoster et al., 2014). The characteristics of ICV and software startups from previous literature, then applies for internal startups in the software industry.

2.2.2 Internal vs. external startups

Startups are facing extreme uncertainty (Ries, 2011), however internal startups may endure other uncertainties and obstacles than the external startups. External startups, referring to startups outside established organizations.

Shrader et al. (1997) defined some characteristics of internal and external ventures which applies to internal and external startups, table 3. The main difference between the two types of ventures are the relationship between the parent company and the internal venture. This includes the capital and resources given by the startups, and the motivations for key personnel and the degree of control. Internal startups, surrounded by an established organization, have access to various of resources, assets, facilities and personnel which is not necessarily

available for external ventures. Hence, this might apply that internal startups are better set off than external startups.

Table 3 Differences between internal vs. external startups (Shrader et al., 1997)

	Internal Startups	External Startups
Capital	Access to more capital, both internally and external Receive funding through budget processes	Supported from venture capitalist, may receive longer commitment to funds
Controls - Autonomy	Multiple levels of review Short-term quantitative goals or milestones	Large part of autonomy Less bureaucracy Less complicated and centralized structure
Managerial motivations	Venture assignments are not often welcomed CV manager must manage the politics to the established organization Evaluated on how close they are to the plan	Oriented towards the end performance Must make a success to survive the business Clear and defined objectives
Personnel and functional orientation	Easier access to executives from diverse arenas Emphasize the marketing function	Top management dominated by person with technological backgrounds Greater access to entrepreneurial managers
Resources(as sets) provided by existing corporation (parent)	Benefits from using parents brand and position Existing facilities More control over input suppliers Able to access the underutilized capacity of parents	

However, internal startups could face other challenges with managing the entrepreneurial initiative in the corporate context. In the heat of operational efficiency and focus on core activities, it might be complicated for the top management and managers to have focus on innovation. A popular choice has been to organize ventures in an own division, referred to as new venture division (NVD) (Burgelman, 1985; Fast, 1979). The NVD design provides basis for less bureaucracy and new corporate structures. There were found various ways of implementing NVDs, but important aspect of this was the autonomy, to separate it from the parent company. McGrath et al. (2006) found this to be of importance of the Nokia venturing program. After establishing a Venture Board in 1997, Nokia decided to organize its venture activities into *Nokia Venture Organization*, which managed the new venture activity. Because of this separation, the ventures could look beyond the existing markets and technologies of the parent firms. The new ventures impacted the core competencies of the firm, with new capabilities and were valuable to the long-term objectives.

Even though they have a safe working environment, the lack of uncertainty and ownership of equity, may stagnate the growth of the startup. As failures are more

common than successes, both for internal and external startups (Campbell et al., 2004; Ginsberg et al., 1994), there is a desire to discover the road to success. There are a few success factors promoted in previous literature, which will be further explained in the next section.

2.2.3 Success factors of internal startups

There are some factors which reappears and are frequently discussed in previous literature relevant to the success factors of internal startups. Deliberation of the most prominent ones for internal startups, such as strategic relatedness, corporate support and autonomy, follows.

Strategic relatedness

Strategic relatedness between the ventures and the parent firm is claimed to be influential towards the final outcome of ventures. Tukiainen (2004) defines strategic relatedness as: “The degree of relatedness of the venture to the corporate strategy refers to the degree of newness of the venture to the organization or strategy.” (Tukiainen, 2004) p. 35. In her longitudinal research of the corporate venturing program at Nokia, she found that “the degree of strategic relatedness or fit between the venture and corporate strategy did affect the outcomes of the venture. The more strategically related a venture was, the higher priority management placed upon it and the more persistent venture managers were likely to be.” (Tukiainen, 2004, p. 135). This correlates with previous findings where the prior experiences and knowledge of the firm within R&D development and industry is leading the venture to a favorable outcome (Day, 1994; MacMillan et al., 1987; von Hippel, 1977; Zahra, 1996).

Correlated to these results, is the frequently discussed topic of market familiarity. Since, strategic relatedness connects how familiar the parent organizations are with the market or technology targeted by the internal startups. Several researchers in the field of venturing, propose the fact that an internal startup is better off entering familiar markets (Thornhill et al., 2001; von Hippel, 1977). This is even claimed to be the general assumption (Covin et al., 2015). The higher market familiarity, the higher probability for the venture to succeed. Which makes sense, as internal startups entering markets more familiar to their parent corporation have a higher possibility to exploit corporate resources, thus decrease development time and costs. However, this might increase dependency between the internal startup and the parent company, creating a constricted vision with less willing to learn and resistance against explorative and disruptive innovation (Covin et al., 2015; Garrett Jr et al., 2013).

Corporate support

As Tukiainen (2004) found, there were more corporate support for the ventures strategically related to the parent organization, than those that were far fetch from the core business. Obviously, there is need for a support from the parent organization for the internal startups survivability. When top management is evaluating the ICVs, there have been a clear need to balance the decisions counting factors as long-term strategic priorities and objectives, not only focusing on short-term profits but also construction of capabilities and learning outcomes (Narayanan et al., 2009). Since, the strategic relatedness might have influenced

the corporate support, both factors should be treated with caution when considering their importance for success of internal startups.

Autonomy

Previous literature supports the idea that more autonomy has a positive impact on the performance of internal startups (Birkinshaw et al., 2002; Simon et al., 1999). Yet, there are no consensus on the matter. As Kuratko et al. (2009) found no significant effect on the relationship between autonomy and performance of the venture. Similar was proven by Tidd et al. (1999), as they argued: “Clearly there is no ‘one best way’ to organize and manage internal corporate ventures...” (Tidd and Taurins 1999, p. 126).

Adding complexity to prescribing the impact of autonomy, is the numerous types of autonomy. Gemünden et al. (2005) divides autonomy into four categories, defining the degree of autonomy of a social structure. The types are goal-defining, structural, resource and social autonomy, further explained below:

- Goal-defining autonomy: prioritize and set own goals for the project.
- Structural autonomy: own identity and outer limits to other social systems.
- Resource autonomy: sufficient resources in form of financial, market capital, social etc. to accomplish tasks.
- Social autonomy: culture and independence to self-organize

Gemünden et al. (2005) found interesting insights of the positive impact of co-location, when it comes to location and social autonomy. Co-location is argued to have direct correspondence to higher degrees of self-organization, trust and support between team member, tolerance and broad-mindedness. Hence, being a success factor for profoundly innovative project and social structures as internal startups.

Further, they found that organizational separation had no significant impact on the success of highly innovative project. However, they argued that poor performing organization use organizational separation more frequently the top performers. When detaching from the poor performing organization with higher degree of organizational separation, it gives the possibility to have separate cultures, working as top performers.

Conversely from previous research, Garrett et al. (2015) found from a sample of 145 ICVs from 72 parent firms, that the best performing ventures where does who were unplanned entering unfamiliar markets and closely linked to their parent companies. This connection was basis for mutual learning. Since, the ventures could use the existing resources from the parent company, while they also added value to the parent organization existing knowledge base. Despite, the various findings concerning the importance of autonomy, it is generally seen as a success factor. However, it is still in need of empirical evidence to validate its impact.

2.2.4 Processes of internal startups

Internal startups as new businesses are commonly divided into stages (Churchill et al., 1983; Crowne, 2002). The stage view, as a certain number of milestones which must be accomplished to go to the next stage, is the general assumption of the internal startup development process. An example is the stage model by Crowne (2002), dividing the development process in four stages; startup, stabilization, growth and maturity. The startup stage presents the time from the idea and

product conception to the first sale. Then the stabilization stage takes the startup from the first customer to a new customer. Growth, is when the product is charged without an overhead to the development team, until all aspects with the business is stable. The last stage maturity, is where the business has reach the stage of being a mature business.

There are many variations of the stage model, a recent approach described by ACCELERATE ITEA (2015) and Mohout (2015), consist of the idea stage, problem/solution fit, product/market fit and scaling. The idea stage, is defined by finding the idea through customer and market insight. After finding the idea, the idea is validated by acquiring the first customer, discovering the right problem/solution fit. Further the product/market fit is found by testing the business model, to validate the market and assure customer retention. Subsequently, the growth discovery follows, finding the scalable business model, scaling up both product and business achieving organizational maturity. The model has additional focus of validation through customer contact, containing elements from the lean startup method.

Another important impact of the startups processes is the origin of the idea. Seppänen et al. (2016) divides the startups based on the origin of the idea, either in “idea-first startup” or “team-first startup”. In the “idea-first startup” the idea is found, before setting up a team, whereas in the “team-first startup” the first step is to establish a team and through customer development finding an idea through exploration. In the cases studied by Seppänen et al. (2016), all software startups where in the “idea-first” category, being examples of narrow-shouldered innovation, where a single person dominates the development progress. Considering the novelty of this research, this will be further examined in the empirical research to find the importance of the origin of the idea to the development process of internal startups.

Covin et al. (2015) claims the processes used to develop the products or access the new markets in internal startups are poorly documented in previous literature. Whereas, there are some models used to describe the development processes within internal startups, proof by empirical research is scarce. Hence, there is a motivation for exploring this topic further.

2.2.5 Limitations to internal startup literature

There are several limitations to the literature on the topic of internal startups. First point, is the meager collection of literature of internal startups. Nearly all empirically proved sources is provided by previous ICV literature. Despite, the large collection of ICV literature there are many weaknesses in the theoretical grounding of the ICV research. As Narayanan et al. (2009) points out, they found various definitions within the collection, which made it hard to compare findings. Correspondingly they found the misalignment of prior studies and the weak focus of non-financial effects undermining the validation and forthcoming of the research. Furthermore, they found a need for increased international focus, as a remarkable part of the previous research is based in North America. The last wave of ICVs were also in the early 2000’s, and there is a shortage of linking the previous findings to the current state considering the massive technological revolution the recent decade.

Although, the perceived importance of entrepreneurial efforts as internal startups and ICV, there is surprisingly shortage of knowledge and understanding of what leads to its success (Covin et al., 2015; Garrett Jr et al., 2013; Narayanan et al., 2009). There is a clear need for exploratory research investigating the complex phenomena of internal startups and how they successfully develop.

2.3 THE CYNEFIN FRAMEWORK

Internal startups and their parent organization have profoundly divergent natures. As large organizations are perceived as rigorous, exploiting resource to improve operational activities and procedures. Internal startups are working with new technology and/or markets, needing then new tools and process methods as they are developing. The Cynefin framework supports to describe these differences. It also gives the tools to explain why decisions and actions lead to certain outcomes. Therefore, the framework will be the foundation of the analysis in exploring how internal startups can successfully develop.

2.3.1 Background

The Cynefin framework is a phenomenological framework constructed from knowledge management and complexity science (Kurtz et al., 2003; D. Snowden, 2002; D. J. Snowden et al., 2007). It supports decision makers, informal and formal communities, in making sense of the perceived situations. In context of internal startups, it provides explanations for why patterns, methods and principles applied in internal startups supports the efficiency and success of new product and business development.

Cynefin is based on three assumptions; the assumption of order, underlying relationships between cause and effect, the assumption of rational choice, that human actors will rational their choice based on perceived effect and the assumption of intentional capability, external action are results of intentional behavior (Kurtz et al., 2003). Kurtz et al. (2003) claims the circumstances to influence the validation of these assumptions, to keep in mind that they may vary depending on the situation.

2.3.2 Domains

The Cynefin framework contradicts the predominate notion in management science of only ordered systems, by adding an un-ordered domain. The un-ordered domain should not be confused with ordered or unordered, as it is not equal. In the un-ordered domain, the cause-effect relationships are not evident or even possible to analyze, the whole is not the sum of the parts. However, in an ordered domain, the whole is the sum of the parts, and there are cause-effect relationships which either are evident or can be found by analysis.

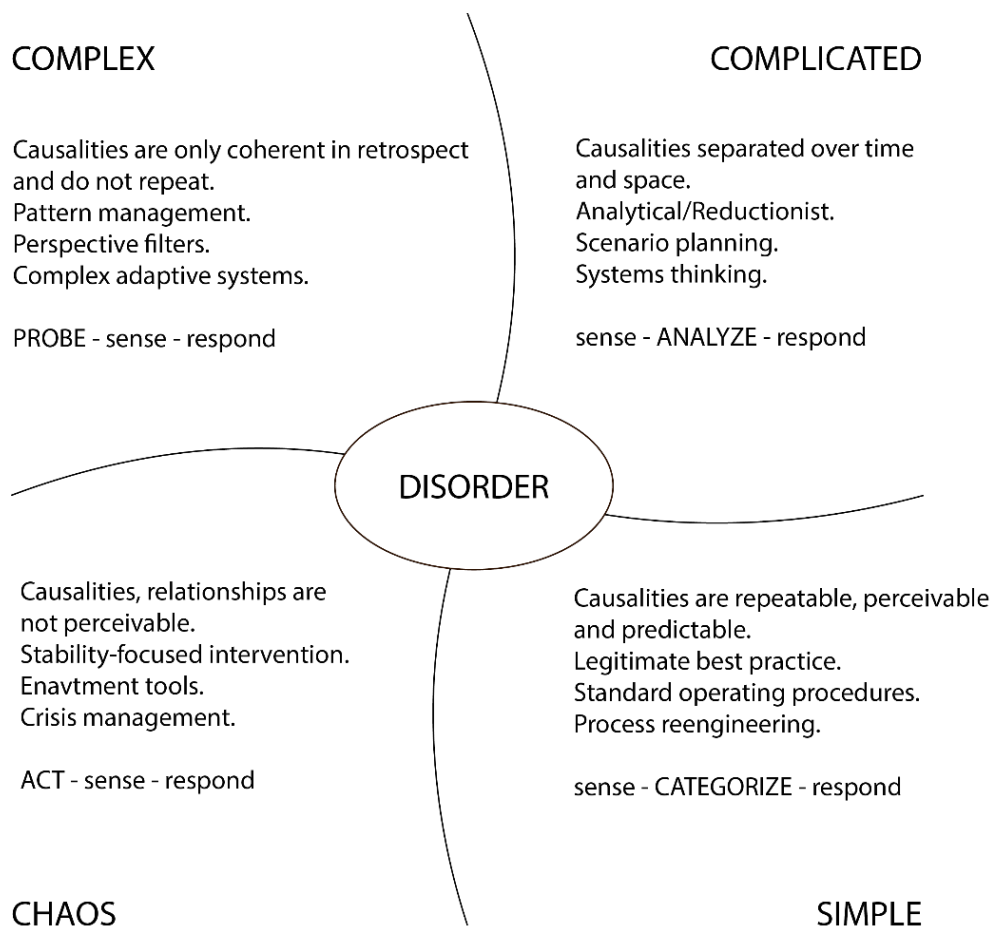


Figure 4 Cynefin framework (Kurtz et al., 2003)

The framework divides the framework into five domains, based on the ordered and un-ordered dimensions, figure 5. Un-ordered domains are complex and chaos, ordered domains are simple/known and complicated/knownable, the last domain being disorder. The domains are further explained below.

Simple/known domain

The simple/known domain is where the cause and effect relationship is visible. Being in this domain you could perceive the context and perform best practices to increase efficiency and consistency. The key actions are sense, categorize and respond. Based on the cause, you would know how to respond for the desired effect. Example of the simple domain is standard operating procedures or process reengineering; you know what should be done and you perform the adequate actions.

Knownable/complicated domain

The knowable/complicated domain is where the cause and effect relationship are discoverable but not evident without analysis. There are knowable relations, which when found can move to the simple/known domain. Though, the analysis might require time and resources. The knowable/complicated domain adds complexity to the ordered world, and the assumptions must be examined by going through key actions of sense, analyze and respond. Example of the complicated domain, is

systems thinking, when you only understand the system by analyzing the interconnections between the components.

Complex domain

The complex domain is an un-ordered domain, where cause and effect relationship are only retrospective coherent. This means that the desired action cannot be predicted, but rather in retrospective, finding emerging patterns (Kurtz et al., 2003). Being in this domain, it requires probing, finding patterns or potential pattern, before sensing and then responding. Complex adaptive system are examples of the complex domain. A practical example of this is a new group of individuals, you know them individually, but can only in retrospective how they work together.

Chaos domain

The chaos domain is where there are no perceivable cause and effect relationship. This domain requires action before being able to sense and respond. Time pressure, gives no possibility to probe or analyze. A potential of order is possible, though not visible to many. An example of a process in the chaos domain can be during crisis management, as it requires you to act before sensing.

Disorder domain

The disordered domain is the last domain. This domain consists of not knowing which domain you are in. The perception of domain is divergent and conflicting; it is critical to understand which domain to call for further action. As you don't know where you are, and must find it out before deciding your approach to tackle the future. The Cynefin domains are summarized in table 4.

Table 4 Summary of domains (Kurtz et al., 2003)

	Simple/knowledge	Complicated/knowledge	Complex	Chaos
Domain	Ordered	Ordered	Un-ordered	Un-ordered
Causalities	Visible	Perceivable	Visible in retrospect	Not perceivable
Recommended approach	Sense – categorize – respond	Sense – analyze – respond	Probe – sense – respond	Act – sense – respond
Characteristic	Known knowns	Known unknowns	Unknowns knowns	Unknowns unknowns
Work pattern	Co-ordination	Co-operation	Collaboration	Directive intervention
Example	Standard operating procedures	System thinking, analyzing the parts and connections of the system	Complex adaptive systems, known causalities in retrospective	Crisis, action required

2.3.3 Connections

It is necessary to understand the connection strength between entities in the Cynefin framework, figure 5. In the simple domain, there is a strong central point, which distributes work. There is more focus on coordination than on collaboration, since there are weak distributed connections. Transferring this to a firm it would be different persons working separately with little communication between each other, but strong ties to the manager. Similar the chaos domain has weak connections, but in this domain both central and distributed connections are weak. Meaning less connections between all entities. Oppositely, is the complicated/knowable domain where there are stronger distributed connections. This explains the links to the expertise required to analyze the causalities, linked with the strong connections between all entities. The complex dimension has weak central ties, thus working closely together without a strong central point. In this domain efforts of controlling the causalities would fail, as the necessity of exploration needs independence.

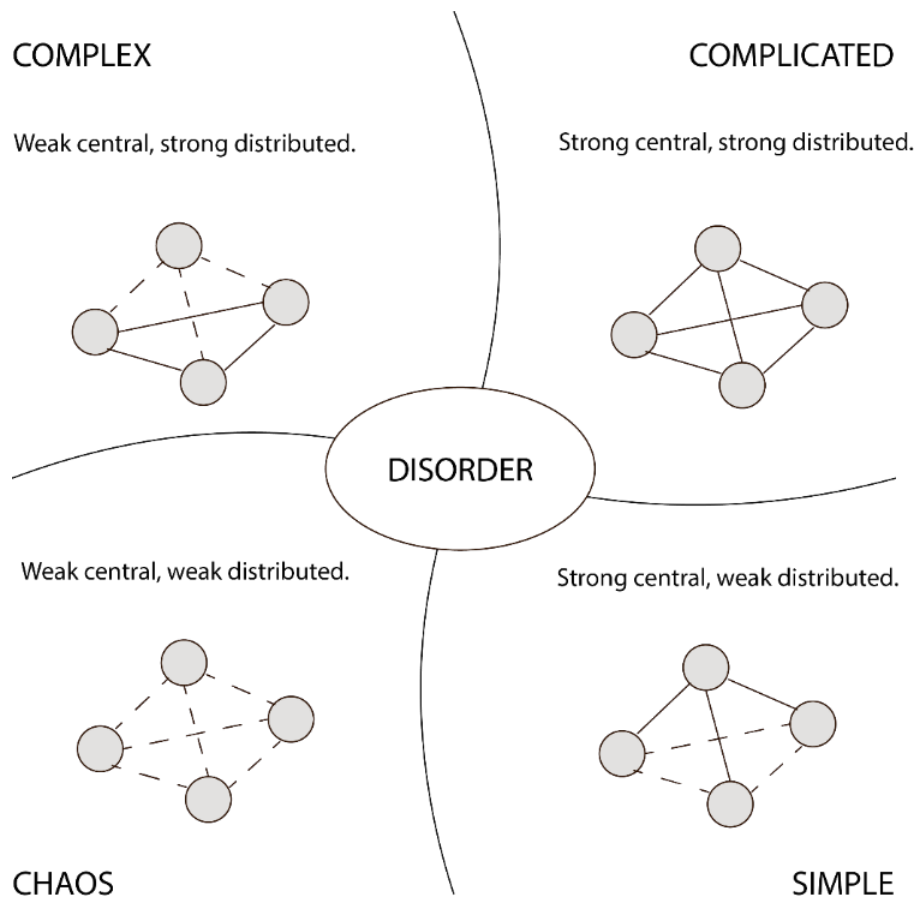


Figure 5 Connections Cynefin (Kurtz et al., 2003)

2.3.4 Moving across domains

As Kurtz et al. (2003) emphasizes the interaction of entities and their domains varies across time and space. It is key to understand the possible dynamics between the five domains, shown in figure 6.

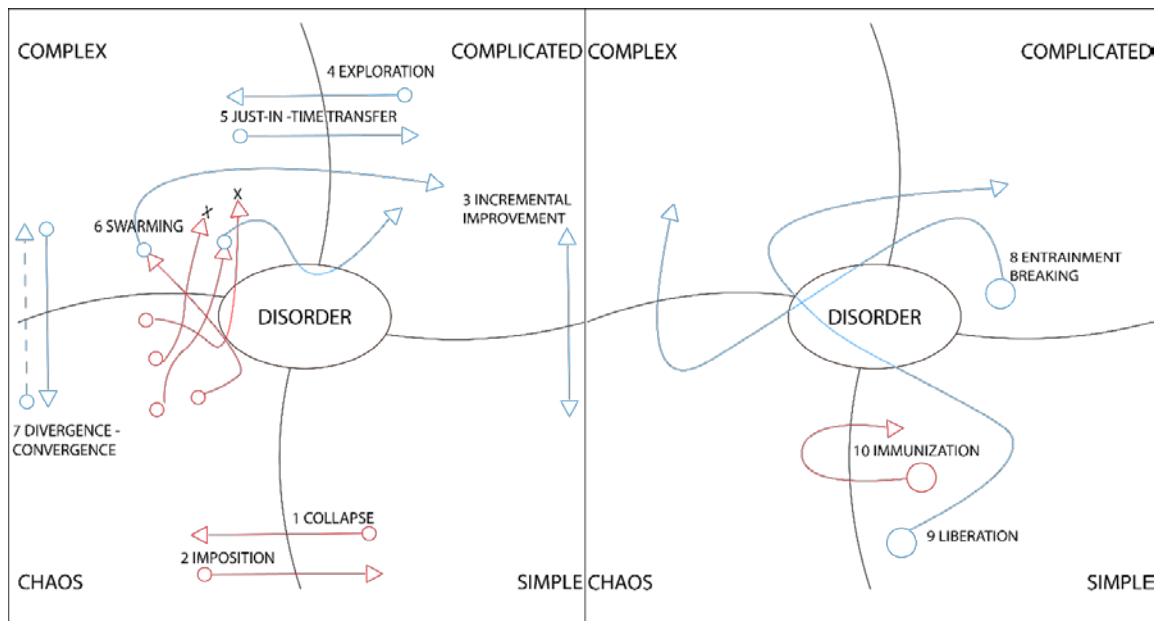


Figure 6 Dynamics of Cynefin (Kurtz et al., 2003)

Considering the scope of the study, only the dynamics found applicable will be elucidated. Those are 4) exploration, 5) just-in-time transfer, 7) divergence-convergence, reasoning behind this follows in the section concerning application of the framework.

Exploration

Exploration is the dynamic moving from complicated to complex dimension. By removing control, it gives a possibility to explore while having control not leading out to chaos. Kurtz et al. (2003) claims trust to be essential in such move, and in previous literature can be framed as exploration versus exploitation.

Just-in-time transfer

Just-in-time transfer is the dynamic moving from complex to complicated dimension. This dynamic exploits the knowledge, and applies it just-in-time. Thus, entering the complicated dimensions.

Divergence-convergence

The divergence and convergence dynamic, moves from complex to chaos dimension. The movement between the two domains are bidirectional and can with less readily move between the two domains. The cause of divergence can for example be time pressure, as convergence can be action resulting in convergence to more known causalities.

2.3.5 Practical applications and implications

The Cynefin framework has been widely adopted and applied in various fields, as it assists perceptions and actions in current situations. An apparent application is decision-making in management science (French, 2013; Gorzeń-Mitka et al., 2014). In information science, the framework has been used as a research tool to improve qualitative research data (McLeod et al., 2013). Other fields are information systems (Hasan et al., 2009), counter-terrorism (Lazaroff et al., 2006), health

promotion (Van Beurden et al., 2013). Cynefin have also been applied to software startups, explaining their evolutionary process (Nguyen-Duc, Seppänen, et al., 2015). Paternoster et al. (2014) claims the framework to be useful when explaining the orientation of startups under uncertain conditions. Hence, fruitful and applicable for the context of internal startups.

The application of the framework as a research tool is relatively new (McLeod et al., 2013). Considering Kurtz et al. (2003) view of the framework as mostly a framework to support decision- and sense-making, having less value for empirical verifications. Limitations has also been evident in the foundation of complexity theory, and its application to real environments (Stacey, 2007). Thus, the Cynefin framework will be combined with other theoretical propositions, to overcome the challenges and support this exploratory research in making sense of the complex phenomena of internal startups.

2.4 DEVELOPMENT PROCESSES

As processes of internal startups are poorly understood (Covin et al., 2015), there is a clear urgency to provide the tools and framework to understand the development processes of internal startups. The chosen theories and methodology to base this research on is the comprehensive framework of process theories for organizational change and development by Van de Ven et al. (1995) and lean startups methodology (S. Blank, 2013; Maurya, 2012; Ries, 2011). While the process theories give the underlying theory to grasp the sequence of events, actions and circumstances occurring, lean startup gives the tools for exploring new innovations and opportunities being a scientific approach towards product innovations.

2.4.1 Process theories for organizational change and development

The framework presented by Van de Ven et al. (1995) introduces four process theories for organizational change and development. The four theories integrate various concepts and principles applied in diverse fields, into distinct and general theories which is applicable to study mechanism which determines eventualities. The broad explanatory view, supports the analysis and explanation of the internal startups processes and outcomes as a complex phenomenon.

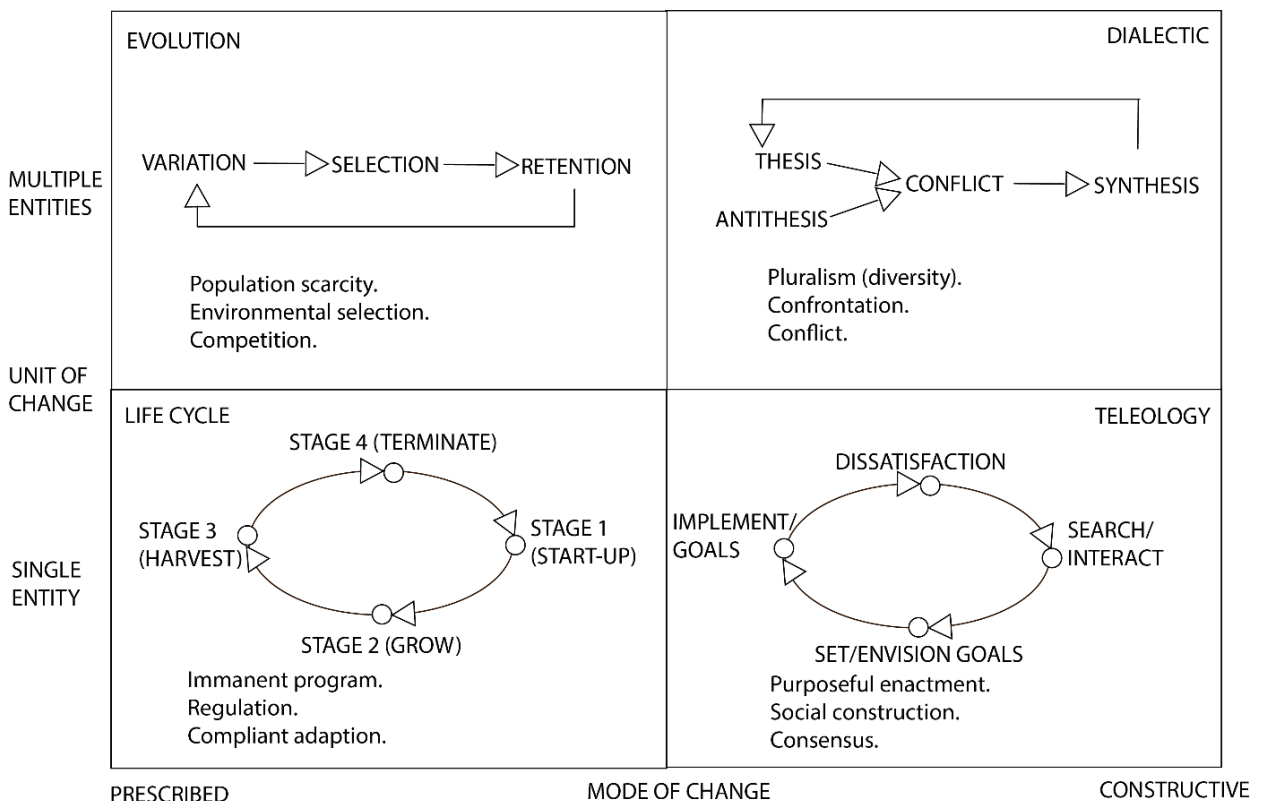


Figure 7 Process theories of Organizational Development and Change Van de Ven et al., (1995)

The process, consist of a sequence of events over time, and represent motors of understanding change and development in organizations. To explain internal processes leading to change and development, Van de Ven et al. (1995) divides the analysis in two. First by providing a view of the process as a cycle of change events, thereafter by finding the generating mechanism and then distinguish depending on two analytic dimensions. The two analytical dimensions, are unit of change and mode of change. Unit of change describes if the process includes a single or

multiple entities, where the entities represent organizations, individuals, communities, all based on the level of conceptualization. The mode of change, represents the prescription or construction of causalities as the chain of events unfolds. The process theories, are then further classified by these two dimensions into four types, life-cycle, evolution, teleology and dialectic, figure 7. The explanation of the four process theories follows.

Life cycle

For the life cycle process theory, the chain of events is prescribed, in a logic or programmed manner. The process follows a complete sequence, where the events in later stages depends on the events in the previous stages, which includes an underlying relation between the stages. The main stages of the life cycle process, are start-up, grow, harvest and terminate, following a linear and irrevocable path. A practical example of this process theory, would be to cook a meal. You *start* by finding the recipe, thereafter you *grow* by cooking the acquired ingredients following the recipe, you then *harvest* by eating the meal and at last *terminate* the process by cleaning up the dishes. The set of events depends on each other but are prescribe, you know what to do at each state, changing the order would not lead to the preferred outcome. The organizational change would then be you which would develop through the course and fulfillment of the meal.

Evolution

The evolutionary process theory, is in the prescribe mode of change, having possibilities to have probabilistic recurring chain of events. It continuously goes through the cycle of variation, selection and retention. Practical example of the evolution process theory is the natural selection process from biology, based on the Darwinian evolution. The unit of change is multiple entities, which can go through the cycle, competing for resources. The theory can be applied to the cycle among multiple organizational entities, to explain further change or development.

Dialectic

The dialectic process includes the thesis and antithesis, which are in opposition having contradicting opinions. The theory requires the thesis and antithesis to be two or more entities which are separated. By conflict and/or confrontation, it produces a synthesis which then is resolved in a new thesis. The new thesis can be based on the current thesis or antithesis, or be a novel creation. A practical example of this is an argument between two persons with different opinions. The argument starts with a conflict, which then is resolved, and leads to a new opinion of the thesis.

Teleology

The teleology process theory is where the end states drives the chain of events. The unit of change is a single entity, which adapts to the circumstances to accomplish the desired goals. Goals can be reconstructed in interaction with other entities or on its own. Yet, there are constraints which can be set by external environments. The single entity goes through events as dissatisfaction, search/interest, set/envision goals, implement goals. Modification of the goals can be done based on

the learnings. The cycle can be repeated, and the process differs from the life cycle process theory, in the way the order of the sequence is not set.

The process theories for organizational change and development are built on an extensive base of theories applied in various fields (Van de Ven et al., 1995). However, it is difficult to find the exact use of the theories in the field other than large amounts of citations, as the theories are applied separately and in various applications. Criticism to theories have been given separately to multiple of the process theories, the life cycle and evolutionary of being too deterministic and teleological incapable of grasping complexity of human emphasis (Kezar, 2001). Yet, by adding Cynefin together with the process theories it increases the dynamic weight of the process development, giving a dynamic foundation to understand development processes in internal startups.

2.4.2 Lean startup patterns

The lean startup method is an acknowledge method, currently increasing in popularity among software startups and their product/service and business development. The method is based on writings by Ries (2011) and Steve Blank (2013a), with inspiration by lean principles from the Japanese company Toyota and their process methods (Womack et al., 1990). Maurya (2012) and Osterwalder et al. (2010), also contributes to the framework by adding lean canvas and the business model canvas which directs the steering of new business and product development process. Even though, there is a lack of empirical results validating the method, it is widely implemented in the software engineering field.

The lean startup method promotes agile software development processes and ideas as iterative development, prototyping, continuously experimentation and customer development. Main patterns and relations, are extracted from previous literature shown in figure 9 below, explanation follows (Bajwa, Wang, Duc, et al., 2016; Bajwa, Wang, Nguyen Duc, et al., 2016; S. Blank, 2013; Bosch et al., 2013; Duc et al., 2016; Henry Edison et al., 2015; Erickson, 2015; Maurya, 2012; Nguyen-Duc, Sepp, et al., 2015; Ries, 2011).

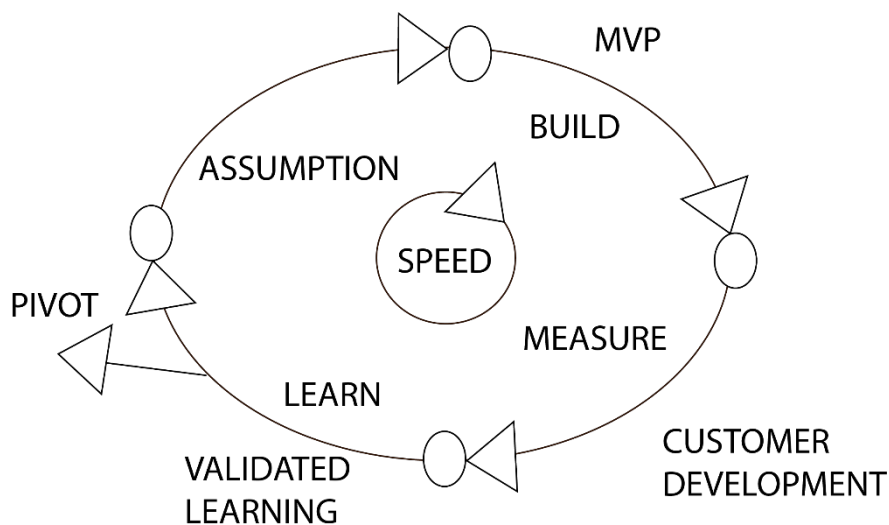


Figure 8 Patterns of lean startup

Build-measure-learn loop

The basis of lean startup, is the life cycle of continuously experimentation. For this, Ries (2011) introduced the build-measure-learn (BML) loop, which facilitates the startup and product evolution. Considering the importance of a scientific grounding and based on use among practitioners, assumptions is added at the start of the loop, to emphasize the importance of testing an assumption as the main activity. Furthermore, the loop is based on rapid iterations through building a minimum viable product (MVP), testing the MVP with real customers and then learn from the outcomes. Depending on the outcome from the test, you should decide if you continue the circle, further developing the MVP, or pivot, change direction of your business or product. The BML loop brings a scientific method to the product and business development. Based on validated learnings by testing assumptions, the iteration through the loop seeks to ensure making a valuable product and business. The explanation of the elements in the BML loop follows. The loop can also be used to test business ideas and other assumptions to validated the business model, finding a repeatable and scalable business model.

MVP

Ries (2011) defines the minimum viable product as the prototype which is acceptable to test with customers, to retrieve quick customer response. Building a MVP reduces the risk of wasting resources and building a product with no value to the customers. MVP comes in multiple forms and packages, and the view of MVP varies throughout entrepreneurial teams. Duc et al. (2016) categorized the various types of MVPs into 9 categories, based on Ries (2011) and community of practitioners, table 5.

Table 5 Types of MVP (Duc et al., 2016)

Number	Type of MVP	Description
M1	Explaining video	Short video explaining the concept and product.
M2	Landing page	Web page containing the startup concept and retrieve customer feedback, example the customers can sign up to buy or receive information about the product/service. Visitors “land” after clicking a Facebook ad or email.
M3	Wizard of Oz	Manually process, hidden within a user interface as a real working product. Demonstrated the complete workflow of the product.
M4	Concierge MVP	Manual steps portraying the real product.
M5	Piecemeal MVP	Comparable to Wizard of Oz MVP, except the execution is done by existing tools.
M6	Mockup MVP	Paper prototype, representing the product user interface without any functionality.
M7	Public project proposal	Crowdfunding sites, advertise the project and product, raising money for initial orders.
M8	Single feature MVP	A prototype implementing the most important feature of the product.

M9	Rip off MVP	Utilizing an already successful product, pivoting in a different direction.
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Types of MVPs varies from small mockups, to actual products with one feature. The variations of the implementations and utilizations of the MVPs creates a demand for improved classification. Duc et al. (2016) found from empirical research on 5 startups and the boundary spanning theory, different usages of MVPs, which then can be linked to the practical implementations. With three main types of MVP usage, as a design, boundary spanning and reusable artifact. They display the various applications of a MVP, and how it can be used to both develop and communicate the product and business idea, see table 6.

Table 6 Usage of MVP (Duc et al., 2016)

MVP usage	Types of usage	Description
MVP as a design artifact	Visualizing design idea	Rapid prototypes, mockups, paper-based etc. to quickly visualize ideas.
	Reflection on architectural design	Using the MVP to create and revise architectural design of the product.
	Facilitation of creativity	Using rapid prototypes to find the match between realistic and future design.
	Clarifying mismatches on user experience	The MVP gives a clear way of adjusting the problem/solution.
MVP as a boundary spanning artifact	Bridge between business mind vs. technical mind	The MVP is used to communicate between technical and business ideas.
	Bridge between entrepreneur team vs. end user	The MVP communication tool between entrepreneur team and end user.
	Bridge between entrepreneur team vs. investors	The MVP communication tool between entrepreneur team and investors.
MVP as a reusable artifact	Documentation	Document the project progress and technical documents through MVP.
	Growth hacking mechanism	To increase the number of users, requires marketing and software development which MVP can facilitate.
	Bootstrapping tool	Prototyping through MVP, reduces the final product development costs, and can be used to iteratively finalize first product.

Customer development

Customer development and involvement is one of the backbones of lean startups. The customer development approach by Steve Blank (2013a), relates to the idea to involve customers continuously throughout the business creations. Iterating through the BML-loop, you should test if the assumption and the product you are building are of value to the customers. Only when retrieving feedback, you can add certainty to the product development. The usage of the MVP here can be a as a bridge between the entrepreneur team and end users, as well as a design artifact

visualizing design ideas and clarifying mismatches on the user experience. The way of measuring feedback varies from qualitative to quantitative methods, depending on the case.

Validated learning

From the customer development, the value of the assumption and product needs to be measured by metrics to understand its impact for the customers. Based on the results from the measurements validated learning is created. Depending on the outcome of the learnings the stakeholders must decide if they should continue the cycle, or what changes are required. The validated learning, gives a grounding for decision-making.

Pivoting

Pivoting is described as the startups ability to change essential parts of their product, market or business model when required (Maurya, 2012; Osterwalder et al., 2010; Ries, 2011). Creating validated learning, can address problems to the product or business, which requires the startups to redirect.

Redirections have also been supported to increase the probability of continuity and creation of value within ICV (Tukiainen, 2004). The research in both fields of software startups and internal corporate ventures, then displays the importance of pivoting and redirections which supports the value creation when crating business and product innovations.

The definition of pivoting includes a variety of opportunities for change. Bajwa, Wang, Nguyen Duc, et al. (2016) classified pivoting into 10 types with 14 triggering factors, based on a selection of 49 software startups, table 7. They found the most common pivot to be change in customer needs, that a startups pivots to a different customer problem, based on more promising prospective.

Table 7 Types of pivoting (Bajwa, Wang, Nguyen Duc, et al., 2016)

Dimension	Number	Pivot types	Description
Product	A1	Zoom-in	Single feature of a product becomes the whole product.
	A2	Technology	Same solution, different technology.
	A3	Platform	Product becomes a platform, or opposite direction.
	A4	Zoom-out	Whole product becomes one feature of a larger project.
Market	B1	Customer need	Switch to a different customer problem.
	B2	Customer segment	Switch customer segment.
	B3	Channel	Switch channel to reach customers.
	B4	Zoom-in	Focusing on one specific market sector.
Other	C1	Complete	Significant change in product, market, financial dimensions, entrepreneurial team stays the same.
	C2	Side project	A different idea, run parallel to the main project becomes the main project.

Bajwa, Wang, Nguyen Duc, et al. (2016) also presents the triggering factors, causing the redirections of the startup. A well-known example showing the relations between triggers and pivoting is YouTube. As YouTube's first product got negative customer reactions and limited user attraction, they decided to pivot from being an online dating service to a video sharing platform. Based on the triggering factor being negative customer reactions and attention. There are other startups which also evidenced multiple pivots. One example of this is Instagram which pivoted both through A1 (Zoom-in) and A2 (Technology). The pivots for both YouTube and Instagram were vital for the success of the products and services.

Rapid iterations

In the middle of the BML-loop, there is the notion of speed. The lean startup method encourages teams to quickly iterate through the BML loop, to retrieve customer feedback and measure the changes creating validated learning. The speed within the development cycle is essential to retrieve the desired outcome. To create a successful startup, it is necessary to present a well-timed and desired product with the right marked demand. Even if there are resources and time available, the lean startup tries to use the minimum amount of resources for the maximum amount of return which leads to the next pattern, eliminating waste.

Eliminating waste

The last key pattern is elimination of activities without value to the customers.

“Essentially, the lean concept is centered on preserving value with less work.” (Bosch et al., 2013)

There is a focus throughout all lean startup patterns to eliminate non-value activities. This is done through using the minimum available resources and effort on producing artifacts with value for customers. Ries (2011) introduced innovation accounting, which takes real measurement of the innovation activities and carefully analyzes the outcomes, thus decreasing the non-value activities.

Challenges of lean startup patterns

Based on previous literature and empirical research Giardino et al. (2016) came with the theory, that while speeding up the development process in software startups with use of patterns as provided by lean startup method, there is accumulated technical debt, which affects the performance and growth of the startup. To tackle the challenge with technical debt, Giardino et al. (2016) recommends to prioritize a minimum set of functionalities. In addition, they emphasize the use of proper engineering practices, tools, third party services and platforms, as well controlling the debt with a specific backlog (Kruchten et al., 2012). *“As uncertain conditions make long-term planning not viable, startups cannot base their work on assumptions without rapidly validating them by releasing the product to market.” (Giardino et al., 2016) p. 592*

The term technical debt was first introduced by Cunningham (1992), as the debt which increases with interest when code is not properly implemented. Yli-Huumo et al. (2015) refers to technical debt as “any type of debt taken in the process of developing a minimal viable product”. However as Kruchten et al. (2012) points out, the term have been widely implemented across every element of software

development, making it difficult to grasp the real concept. They proposed a new model, where technical debt only consisted of mostly invisible debt or quality issues, see figure 9. The visible issues as new or additional functionality and quality issues with defect or low external quality are then kept outside the term of technical debt, even though they are issues software companies regularly meet when scaling.

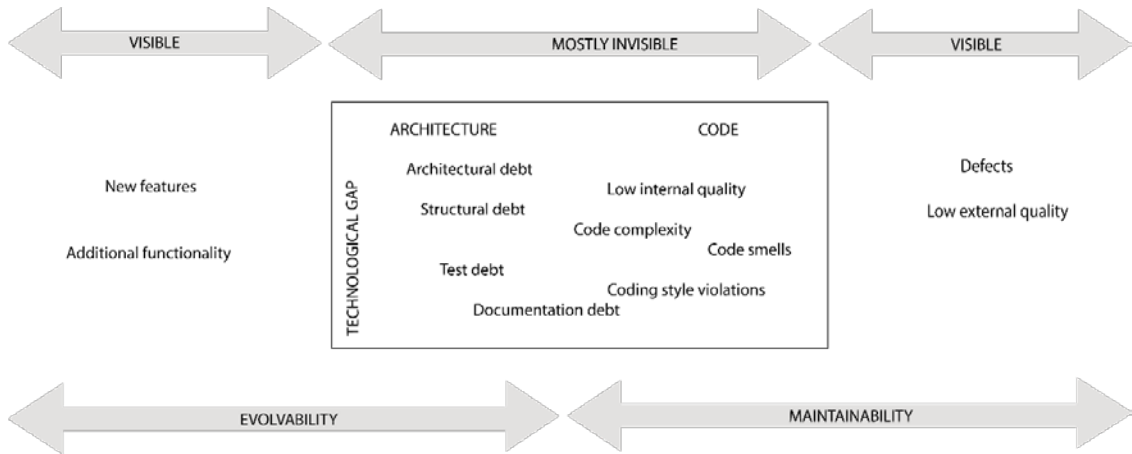


Figure 9 Technical debt (Kruchten et al., 2012)

Technical debt is almost unavoidable when developing software. Often when scaling, unseen issues are revealed and discovered. In many cases, there are problems with keeping the speed and the evolution of the product aligned with the demand of quality. The business model experimentation of software intensive products suffers both from unintentional and intentional technical debts (Yli-Huumo, 2015), providing an apparent linkage to the lean startup patterns and methodology.

2.5 SUMMARY

The literature review provides a theoretical foundation, connecting theory to internal startups and their development processes. First by providing a context to internal startups, with innovation within large companies. Thereafter, investigating internal startups further, by defining them, adding the key success factors, processes and limitations of the previous literature. Then the literature review adds the theoretical building pieces, by explaining the Cynefin framework and development process theories.

As large companies struggle to innovate, ambidexterity was found to be of importance and clear motivation to separate innovation activities in initiatives as internal startup. This was then a part of corporate entrepreneurship (CE) strategy, consisting of various entrepreneurial activities. Internal corporate venturing (ICV) being one of them as a part of the CE strategy, leading the path to internal startups.

ICVs are initiatives within large organization, where the goal is to create new businesses for the organization. The new business relatively to the parent organization was defined by the relations to the core business, looking at the target market and product of the venture. There was found multiple advantages for large companies to setup ICV, such as diversification, improving financial performance, fostering growth, enhancing innovativeness, building capabilities and competences within the firm. However, to get insight to venture performance, it was necessary to observe the ICV from a multidimensional view, being influenced by both internal and external environment. Additionally, the venture outcomes have more dimensions as organizational continuity, new inventions and value creations, the latter being the focus of this thesis.

After investigating the motivation behind internal startups, they were defined based on the ICV and software startup literature, as new businesses within large companies searching for repeatable and scalable business models. Further, internal startups were compared to external startups. Differences between the types was found in connections, control, resources, managerial and personnel motivations. The key difference being the relations between the internal startup and the parent corporation.

Previous observations, gave suggestions of essential key success factors of internal startups, as strategic relatedness, corporate support and autonomy. Autonomy being divided into goal-defining, structural, resource and social autonomy. Yet, there were no consensus on what drives success in entrepreneurial initiatives. Knowledge gaps are also found in the development processes of internal startups. Previous observations and research consists mostly of stage models, not providing the foundation of how internal startups may explore and giving the tools to creating new innovations. Hence, being a catalyst behind understanding the struggle of new product innovations in internal startups further.

To make sense of the development of internal startups, the Cynefin framework gives us tools and vocabular to understand the processes leading to success. Based on complexity science and knowledge management, it challenges the traditional scientific management view by introducing domains where causalities are not perceivable nor present. The framework divides the world into five domains,

simple, complicated, complex, chaos and disorder, where the relations of cause and effect varies. Thus, it supports in seeing how connections and dynamics between the domains affects internal startups and the ambidexterity of their organization.

Still, additional tools are needed describing the actual events, principles and methods applied in internal startups. Therefore, process theories for organizational development and the lean startup patterns were added. The process theories of development and change, is a collection of theories describing sequence of events between single and multiple entities, with divergent modes of change either prescribed or constructive. The four process theories, which is based on a comprehensive review of process theories across multiple discipline, are life cycle, evolution, dialectic and teleology. They then can be applied to various of context, explaining the development of real-life cases.

To extend the process theories with patterns and tools applicable for innovations, lean startup patterns were explored. The lean startup methodology is based on lean principles from the Toyota manufacturing and customer development processes. The patterns from the method, have been widely implemented in product innovations. They include the BML-loop, MVP, customer development, validated learning, pivoting and rapid iterations. The core of the method is to apply experimentation and validation to assumptions taken during innovation activities. Thus, applicable for internal startups.

The literature review covers the fundamentals for describing development processes within internal startups. It also gives a theoretical contribution in the definition of internal startups based on previous descriptions. This section provides the theory to build the theoretical framework, which will be further deliberated in the next section.

3 THEORETICAL FRAMEWORK

The theoretical framework is based on the research model constructed of the multidimensional view of venture performance, Cynefin framework, lean startup, process theories for organizational change and development. The model sets out to understand how internal startups can successfully adapt to their environment applying lean startup patterns to create new businesses and products.

3.1 CONSTRUCTS OF INTERNAL STARTUPS DEVELOPMENT PROCESSES

The constructs of the research model are presented and discussed with justification of the chosen elements. First the theoretical layers, where the scope is narrowed to the development process of the internal startups. Thereafter, connecting the process theories and lean startup to each other and the Cynefin framework, composing the research model.

3.1.1 Theoretical layers

Built on Tukiainen (2004), the internal startups performance outcome is constructed by three dimensions, figure 10. The external environments, the parent organization environment referred to as internal environment and the environment within the internal startup. The development process dimension is added to understand the causalities of internal startups, being the scope of the thesis. Instead of having the key constructs separately, it is chosen to view them multidimensional. This with the assumption that all dimensions affect the internal startup development process.

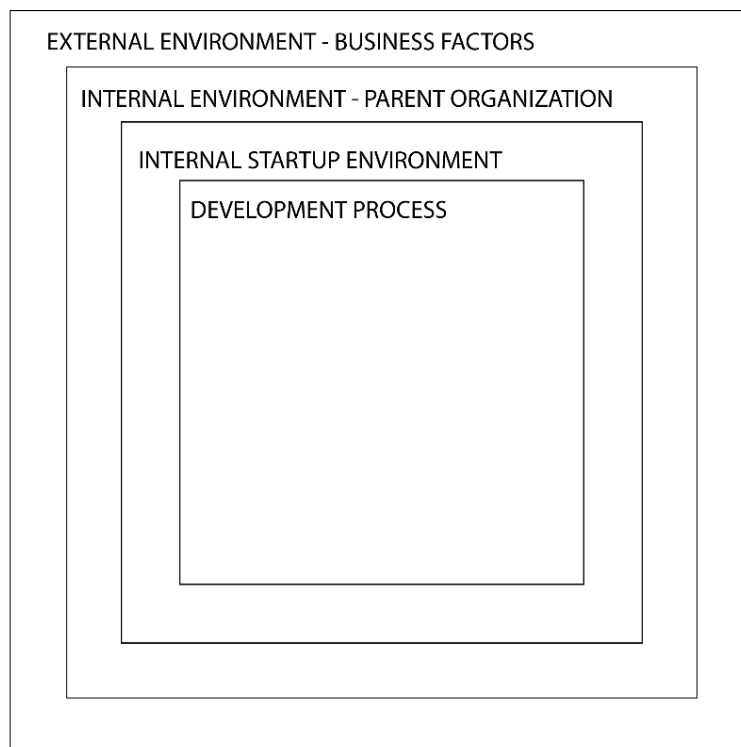


Figure 10 Theoretical layers

The development process of the creations by the internal startup, is a dynamic construct, while the others remain as-is constructs as the extent of the research. The development process, is unknown until empirical research is conducted. Yet, there are theories for processes and patterns, which serves as a tool for explaining the outcome and processes of internal startups. To make sense out of the development processes and attached causalities, the Cynefin framework is applied. Justification for the decisions follows.

3.1.2 Process theories in context of Cynefin

The unit of analysis is the internal startup as a single entity. Therefore, the applicable process theories as presented by Van de Ven et al. (1995) are life cycle and teleology. Connecting Cynefin to the life cycle process, where the sequences are prescribed and there are relations between the events, it clearly relates to the ordered domain. First assumption, could be that the life cycle process theory, would only relate to the simple domain, to its prescribed nature. However, it could be argued that the life cycle process would also be present in the complicated domain, where causalities are knowable, but require analysis. The reasoning behind this, is that the knowledge available for the sequence of events being progressively realized on the cause of events. They need to follow the ordered sequence, but to get to the new event it requires an analysis, which may lead the process into the complicated domain. External factors, time and space could influence the causalities and then add complexity to the prescribed description. The key actions for the life cycle process would then be to sense – analyze/categorize – respond, through the events, placing it in the complicated and simple domain.

In the teleology process theory, the key metaphor is purposeful cooperation. The process theory explains a process of discontinues sequence leading towards an adaptable goal, has a different nature than the life cycle process. The goal of a teleology process is not prescribed nor the causalities are not known in advance, which places the theory in the complex domain. The discontinuous cycle of dissatisfaction, search, set/envision and implement goals, is repetitive and adaptable. This connects to the actions recommended for the domain. Where searching associates to probing, finding patterns or potential patterns, set/envision goals links to sensing and at last implement goals connects to the last action respond. Yet, it could be claimed that the teleology process to be also partly in the complicated domain. The complicated domain allows for experimentation and analysis, thus the causalities in a teleology process could be knowable without being complex. Kurtz et al. (2003) advices against claiming the complexity, and emphasizes the interaction and the interrelations between the order and un-order domain. Mechanisms for internal startup following a life cycle or teleology process vary their domains throughout time and space. What process they follow and the events occurring is yet to be explored.

3.1.3 Lean startup in context of Cynefin

Lean startup gives a second tool in analyzing the process in the context of the Cynefin framework. Previous literature has placed software startups implementing lean startup as a method within the chaotic and complex domain (Nguyen-Duc, Sepp, et al., 2015; Paternoster et al., 2014). By the origin of the BML-loop, this makes sense relating to the act – sense – respond and probe – sense – respond activities. Example of the variations of the two domains could be represented with

time and resource constraints, which enforces the startup to act instead of probing, forcing the startup into the chaotic domain. The respond could either be to continue, or to pivot in a divergent direction. Thus, pivoting connects to the divergence – convergence dynamics between the chaotic and complex dimension.

It could be argued that internal startups, would also be connected to the complicated domain. An example, is the just-in-time dynamic connecting the complicated and complex domain. The just-in-time is a dynamic which eliminates waste and non-value activities. Also, the dynamic in the opposite direction relates to the exploration done by the internal environment (parent organization), who setup up internal startups to explore for new ideas. Kurtz et al. (2003) defines exploration as” an *opening up of possibilities by reducing or removing central control without a total disruption of connections. In organizations, exploration takes many forms, but trust is key in this movement.*” (Kurtz et al., 2003) pg. 477. This links to the establish notion of internal startups as exploratory vehicles. (Covin et al., 2015), where there are time and resources to execute search, probing for desired goals as new business and product creation. Still, applying lean startups patterns to the wrong context could provide undesired outcomes as creation of technical debts which may infer with the growth of the startup. By exploring the context of where lean startup is applied and the domains applicable it gives an opportunity to apply it to the right contexts.

3.1.4 Process theories and lean startup

Lean startup gives a new tool in explaining processes in organizations as internal startups. Connecting both the process theories and the lean startup to the Cynefin framework there are some intersections. The teleology process theory and the lean startup process are both connected to the complex and complicated dimension. There are similarities to the two, how they use exploration and adapts the end goal, product or business to what they sense in the surroundings. Both processes have an iterative nature which forms the adaptability of the end state. Thus, they are linked to each other, meaning adoption of lean startup patterns could imply the teleology process. Yet, the teleology process theory does not apply to all the dimensions as the lean startup pattern does. Therefore, they should be considered separately in addition to together.

3.1.5 Research model

Based on the literature review, the key constructs and the dynamic view of development processes, the research model was built, illustrated in figure 11. The model is established built on the argumentation given in section 3.1.1-3.1.4.

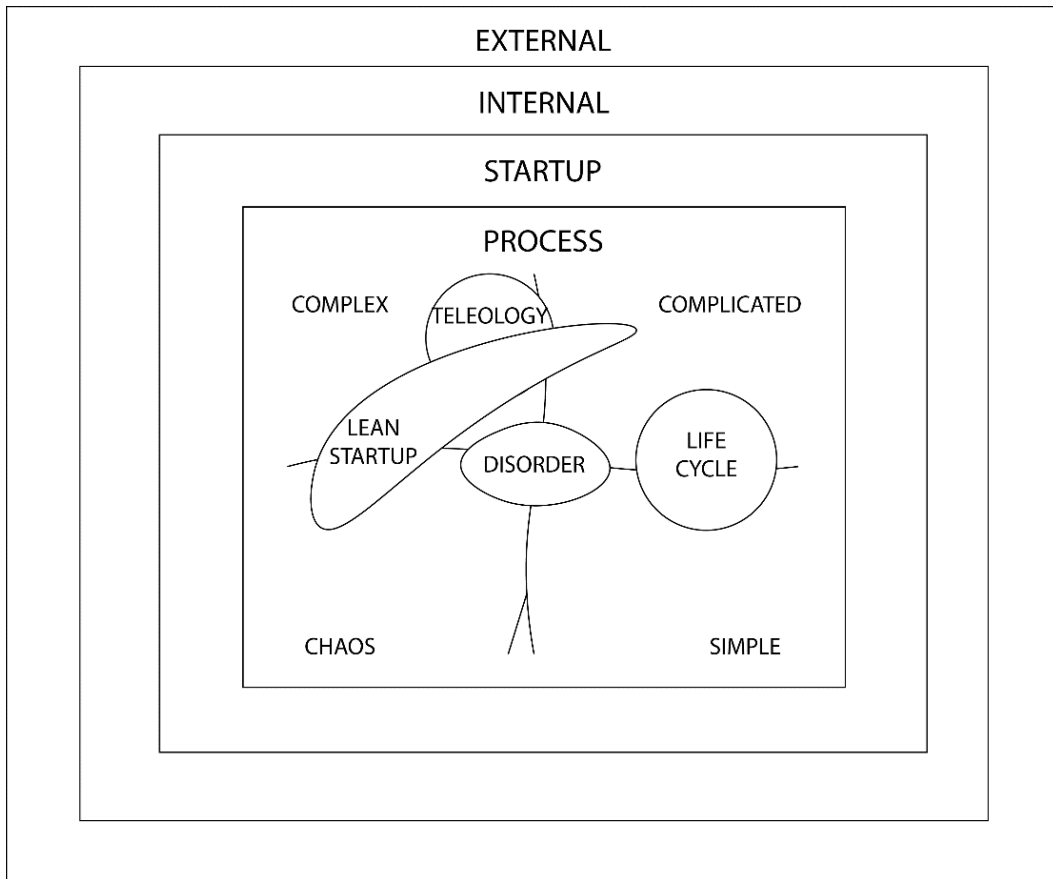


Figure 11 Research model

3.2 THEORETICAL PROPOSITIONS

To answer the research questions, six theoretical propositions have been developed to facilitate the analysis of the empirical research. The theoretical propositions are linked to the three research questions, explaining the complex phenomena development processes at internal startups. Considering the literature review uncovering the linkages between internal startups and ICV, it was found evidence to build the research on. Thus, chosen to establish theoretical ground to base the results on and contributing further to both practical implications and theoretical contributions.

3.2.1 Connection between parent organization and internal startup

The first research question relates to the connection between the parent organization and the internal startup:

RQ1: How does the connection between the parent organization and the internal startup influence the development process of internal startups?

As Morris et al. (2010) definition of new businesses, displays the various positions an internal startup can have relatively to its parent organizations. The categorization provides the possibility to analyze the connection between the two entities. The assumption of an internal startups closer to the current core business, possess more market and product knowledge than new business farther away from the core business is self-explanatory. However, the importance of strategic relatedness, in the degree the internal startup is in line with the current state of the parent organization, has been further discussed through topics as market familiarity (Thornhill et al., 2001; von Hippel, 1977) and prior experience (Day, 1994; MacMillan et al., 1987; von Hippel, 1977; Zahra, 1996).

The connection between the parent organization and the internal startup relates to the strategical relatedness. In consideration of known causalities and the Cynefin framework, an internal startup creating a new product in the current market of the parent corporations, would find itself in a more ordered domain than an internal startup creating new product entering a new market. A natural way of illustrating the differences, would be by categorizing the internal startups based on the complicated and complex domain. Whereas new businesses based on previously known technology or market, decreasing the uncertainty of the creation relates to the complicated domain. The complex domain includes the internal startups, having a high degree of market and technology uncertainty, exploring in a greater extent new possibilities, see figure 12.

		COMPLICATED KNOWN UNKNOWN		COMPLEX UNKNOWN UNKNOWN	
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
MARKET FOCUS OF THE VENTURE	Market creation (New to "World")	new business	new business	new business	new business
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	new business	new business
	Current Market of the Corp.	market penetration	minor product development	major product development	new business
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
		PRODUCT FOCUS OF THE VENTURE			

Figure 12 Classification framework

Though, the assumption to categorize them new business creation in two domains, perpetually placing the internal startup could claimed to be quite naive. Kurtz et al. (2003) advises to cautiously apply the Cynefin to categorization, due to its dynamic nature. For this reason, the position in the framework must be studied as a snapshot at a certain time, not taking the time and space perspective into consideration.

From the Cynefin framework, it applies to the domain of the internal startups and its influence on the connections between the two entities. Whereas the complex dimensions require weak central connections, the complicated dimensions require stronger ties. The first proposition takes the connections into considerations, and proposes the strategic relatedness to be essential in understanding how process theories should be applied by an internal startup.

- 1) *The strategically relatedness between an internal startup and their parent organizations, influences the connection and development process of the internal startups*
 - a) *Internal startups which are more strategically related to their parent organization, will have stronger connections to their parent organization and use process theories from the complicated domain.*
 - b) *Internal startups which are less strategically related to their parent organizations, have weaker connections to their parent organization and use process theories and patterns from the complex domain.*

3.2.2 Alignment with Cynefin domains

The second research question to be answered, is concerning the application of tools in internal startups and their alignment to the Cynefin framework. Tools, referring to patterns, principles, methods and sequence of events given applicable to the process theories. The propositions here are set to answer the alignment of the tools

to the internal startups domain given by Cynefin and which impact it has on the internal startups progress. The research question is:

RQ2: How well are the tools used in the internal startups in alignment with the Cynefin framework domains?

The essence in the Cynefin framework, is to provide strategies to overcome hurdles of uncertainty and provide efficiency in multiple contexts. The framework gives the possibility to apply the right tools at the needed time, leading to desired outcomes. Conversely, it gives reasons to assume applying the inaccurate mechanisms would misguide and potentially hurt the outcomes of the internal startups (D. Snowden, 2002). For internal startups finding themselves in a complicated domain, where the causalities are more known it would make more sense to perform the tasks in an analytical way than explore multiple options, as it would be for an internal startup in the complex domain.

Internal startups could be perceived as exploratory vehicles (Covin et al., 2015). Yet, the degree of exploration may vary depending from each specific case. Accordingly, the tools applicable needs to be modified to fit the given context, which to the next propositions:

2) Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.

A complimentary theoretical proposition then links to not applying the right tools to the context. Kurtz et al. (2003) argues the ignorance of not applying the right tools, can relate to not knowing which dimension and tools to apply. Not being aware of the placement and which work methods to apply, might lead the internal startup out in the domain of disorder. It could be argued that this would possibly hurt the future of the startup. Directing towards the third proposition which is:

3) Internal startups mixing methods from the process theories and lean startup are in a disordered domain, and by applying the wrong tools could misguide the internal startup.

3.2.3 Evolution of causalities

Internal startups change their positions over time. The third research question relates to the evolution of internal startups. Which links to the known and unknown causalities within the development processes.

RQ3: How do the development process of the internal startups change over time?

From the dynamics proposed by Kurtz et al. (2003), there are several dynamics moving clockwise, towards more known domains. Throughout the development phases of internal startups, product and the core business is moving from an idea towards a mature business as projected by ACCELERATE ITEA (2015) and Mohout (2015).

With explorations tools, as lean startup, the internal startups validate its assumptions, creating more known knowledge during development progress. Hence, it is presumably for the internal startup to have more knowledge, moving toward to further ordered domains, creating the fourth propositions:

- 4) *Throughout the course of internal startups, more causalities are known. And the internal startup tends to move with dynamics to domains with more knowledge.*

The causalities and progress of an internal startup can also be influenced in more means by its parent organization. Corporate support was identified as a success factor for internal startups (Tukiainen, 2004). However, illustrated by Shrader et al. (1997) internal startups greater extent of short-term quantitative goals or milestones compared to external startups. Aforementioned, the domain of chaos relates to the pressure requiring action. Time pressure from the parent organization can therefore cause the internal startup into the domain of chaos, described in the fifth proposition.

- 5) Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.

A vital part of software startups, thus internal startups, is the origin of the idea behind the new product and business. As Seppänen et al. (2016) found the narrow-shoulder innovation to be evident, and the founder of the startup having a great extent of dominance. Yet, the origin and its influence on the progress of internal startups are unknown and would have to be explored in other to understand the effect on the process theories applied in the internal startups. Which leads to the sixth and last proposition.

- 6) The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.

3.3 SUMMARY

The theoretical framework was composed by the theoretical layers from the multidimensional view of venture performance, combining the Cynefin framework with process theories and lean startup to explain the development processes in internal startups. It consisted of the research model and a set of theoretical propositions, which was directed by constructs built on the chosen theory.

The multidimensional view, which have been found necessary to understand the whole context of the performance and process of internal startups. It was added to the research model, by applying the theoretical layers as internal, external and internal startup environment. From the process theories, it was chosen to only consider the life cycle process and teleology, due to the unit of analysis being the single entity of an internal startup team.

Considering the process theories, Cynefin and lean startup has not applied collectively in a research setting before, it was a necessary to explain the connections between the components. The life cycle process was found to be within the simple and complicated domain, due to the orderly nature and prescribed knowledge of the process. Whereas, teleology is in a less prescribed mode of change, it was therefore found more related to the complex and complicated domain, with a mix of ordered and un-order.

The lean startup patterns were placed within the Cynefin framework, and additionally compared to the process theories. As lean startup builds on experimentations, stating that the assumptions are not always valid, it clearly links to the complex domain. It connected to the chaos domain as it has been in previous literature, additionally to the complicated domain. Hence, there were found associations between the teleology process theory and lean startup overlapping each other, both adjusting goals in the progress.

Connecting the components resulted in the research model, which with the literature review resulted in six theoretical propositions. The theoretical propositions are summarized in table 8. Together with the research model they were empirical tested in the multiple case-study providing primary empirical conclusions which impacts the internal startup research observations.

Table 8 Summary of theoretical propositions

Proposition Number	Research question	Proposition description
P1	RQ1	<p>The strategically relatedness between an internal startup and their parent organizations, influences the connection and development process of the internal startups</p> <ul style="list-style-type: none"> a) Internal startups which are more strategically related to their parent organization, will have stronger connections to their parent organization and use process theories from the complicated domain. b) Internal startups which are less strategically related to their parent organizations, have weaker connections to their parent organization

		and use process theories and patterns from the complex domain.
P2	RQ2	Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.
P3		Internal startups mixing methods from the process theories and lean startup are in a disordered domain, and by applying the wrong tools could misguide the internal startup.
P4	RQ3	Throughout the course of internal startups, more causalities are known. And the internal startup tends to move with dynamics to domains with more knowledge.
P5		Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.
P6		The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.

4 RESEARCH DESIGN AND METHODOLOGY

The section is split into five parts. First explaining the literature review, then construction of the theoretical framework. Thereafter explanation of the execution of empirical research in form of a multiple case-study. Lastly, limitations to the research design and methodology is discussed, and the three section will be disclosed and reflected upon the validity and reliability of the research.

4.1 LITERATURE REVIEW

The literature was collected in a systematic way by applying methods as snowball sampling (Wohlin, 2014) and database search. This sections includes justification and specific details relevant for the chosen methods.

The basis for this literature review, was collected in a systematic manner, by using techniques applied in systematic literature reviews and mapping studies (Kitchenham et al., 2007; Petersen et al., 2008). Even though, the time frame did not allow for a systematic literature review, the systematic approach was implemented to build an extensive foundation for the conceptual framework. A combination of database search, expert advice and snowball sampling (Wohlin, 2014) was chosen as the search strategy.

As the main literature concerning internal startups, relates to the concept of ICVs, it was the decided to conduct a thorough database search for this field. Search strings are displayed in table 9.

Table 9 Search strings for databases

Database	Search string	Search Field	Results
ACM	recordAbstract:("internal startup" "internal corporate venture" "internal start-up") OR acmdlTitle:("internal startup" "internal corporate venture" "internal start-up")	Abstract and Title	7
IEEE Explore	((Internal corporate venture) OR internal startup) OR internal start-up	Metadata	138
Engineeringvillage	(("Internal startup" OR "internal start-up" OR "internal corporate venture") WN KY)	Abstract, Keyword and Title	15
ScienceDirect	TITLE-ABSTR-KEY ("internal startup" OR "internal corporate venture" OR "internal start-up").	Abstract, Keyword and Title	14
Scopus	TITLE-ABS-KEY ("internal startup" OR "internal corporate venture" OR "internal start-up")	Abstract, Keyword and Title	33
Results			207

The database search consisted of search on four databases, ACM, IEEE Xplore, Inspec/Compendex (Engineering village) and Scopus based on previous proposition (Dyba et al., 2007; Petersen et al., 2015). In addition to these, Science Direct was

also included. All references were downloaded to EndNote X7 (reference management software package), to manage and store the references found from the database search and snowballing.

The database search exhibit a literature sample consistent of 32 articles, subsequently conducting the snowball sampling, the total collection extended to 72 articles, table 10. The collection formed the foundation of the research project delivered autumn 2016. In addition to refine the scope for the current thesis.

Table 10 Systematic database search ICVs

Action	Removed papers	Result
Database search		207
Removed duplicates	-33	174
Not considered research paper	-6	168
Not considered relevant	-136	32
Snowball sampling	Add 40	72
Final collection		72

Considering the comprehensive literature concerning innovation and the access of experts on the field of software startups and lean startup, the literature concerning these topics a snowball sampling and extraction based on expert's advices. Due to the limited time frame, the main attention was on disclosing more knowledge in the internal startup field. The various search strategies for the key areas is listed in table 11.

Table 11 Literature review search strategy

Key area	Method
Innovation	Snowball sampling, discourse with experts.
CE	Snowball sampling, based on findings from ICV search.
ICV	Systematic database search, see table 5 and Figure 13, snowball sampling.
Internal startups	Systematic database search, see table 5 and Figure 13, snowball sampling, consultations with experts of the field.
Software startups	Snowball sampling, consultations with experts on the field.
Lean startup	Database search, snowball sampling and consultation with experts on the field.
The Cynefin framework	Database search, snowball sampling and consultation with experts on the field.
Process theories	Database search, snowball sampling and consultation with experts on the field.

4.2 THEORETICAL FRAMEWORK

The construction of theoretical framework is explained, by how the model was built, then describing the reference theories which was considered as reference theories.

4.2.1 Building the model

Considering the exploratory nature of this research, the theoretical framework was constructed in an iterative approach by searching through existing theory and data collected by empirical research, figure 13.

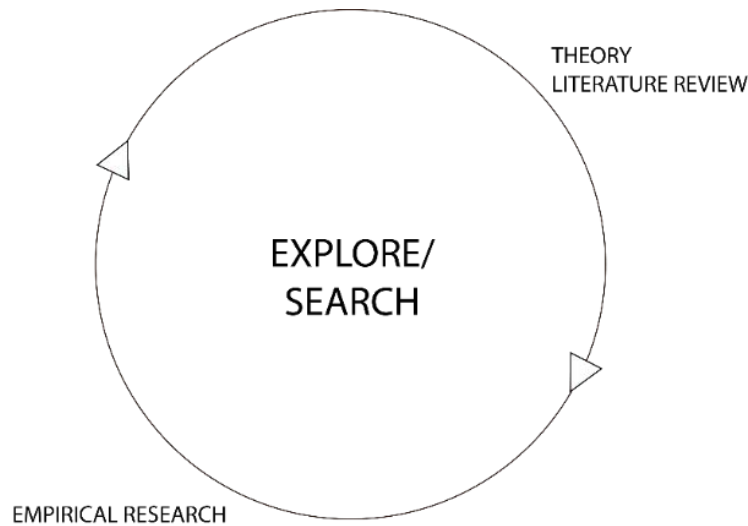


Figure 13 Searching for theoretical framework

4.2.2 Possible reference theories and models

A few theories and models were tested and explored, the reasoning behind the decided theories and why they were not chosen follows.

4.2.2.1 Implementing Lean-ICV

The first framework considered, was the Lean-ICV model proposed by Edison (2015), based on Robert A. Burgelman (1983), figure 14. It sets the lean startups in an ICV context. Even though the model fits the scope of internal startups, due the lack of details and unit of analysis applying to development processes in internal startups it is not applicable in this studies context. This research project mainly see the synergies from the parent organization and internal startup from the internal startup perspective having the internal startup team as the unit of analysis. Supplementary to the decisions, there was a few limitations when referring to the model. The model distinctly differs the corporate management from the new venture department. Due to the venture management, this was applicable to two of the three cases. There are non-evidences that companies setting up ICVs would have an own venture division for coaching. However, the model is applicable as how large companies can setup their internal startups implementing lean startup principles, but is then difficult to apply to existing incidents of internal startups and to grasp details of the phenomena.

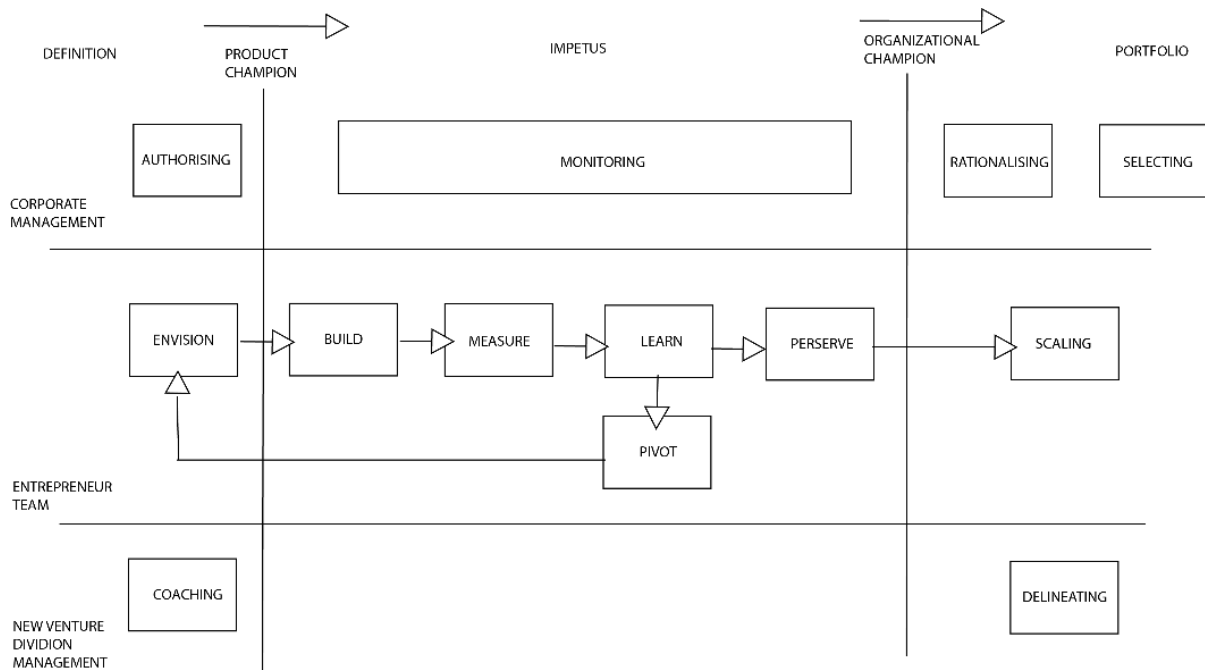


Figure 14 Lean-ICV model (Edison, 2015)

4.2.2.2 Structuration theory

By consolidating with expert in the field of information systems, duality of structure from the structuration theory of Giddens (1979) was considered as a reference theory. The structuration theory has been widely implemented in the information system research. DeSanctis et al. (1994) proposed a framework for using the structuration theory to explain organizational changes based on the role of advanced information technology. Considering the adaption perspective of their framework, it would be applicable when considering the adoption of the product innovation produced by internal startups. Since the scope is regarding to the process and activities within the internal startup team leading to scalable businesses, it was difficult to find the right angle utilizing this framework.

Parts of the structuration theory were considered applicable for the internal startup context, as the duality of structure theory. Duality of structure, explains the complex relationships between individuals and society. It claims that both parts are influenced and dependent on each other actions. Giddens (1979) divides the duality of structure into three dimensions, structure, modality and interaction, where the modality links the structure and interaction, figure 15.

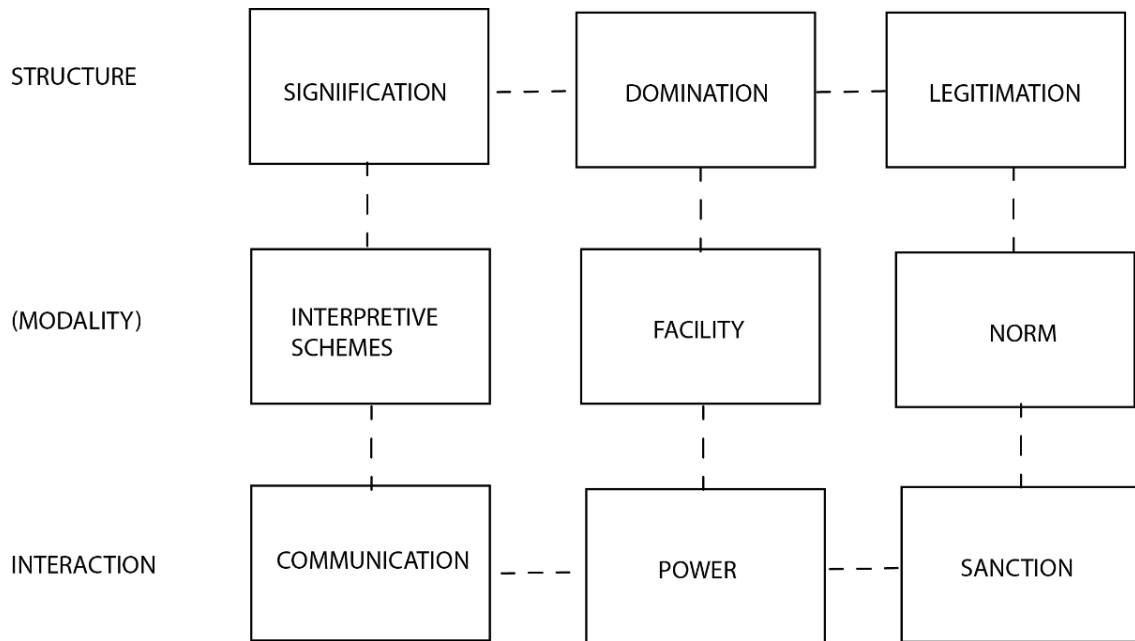


Figure 15 Duality of structure (Giddens, 1979)

As the duality of structure explains the complex relations between individuals and society, it could explain the synergies between internal startups and their parent organizations. Internal startups are in multiple ways influenced by their parent organization, and internal startups drive change in the organizational structure inside the established companies. Yet, this conceptualization would require more extensive research on both the parent organization and the internal startup, due to the limited time frame of 20 weeks was not applicable for this research project. Though, extending the theory, duality of structure, studying the dual relations between the two entities could be extended in future research.

4.3 EMPIRICAL RESEARCH

This section includes a description of the chosen research method and design. Considering the essence of researching lean startups within software engineering in large companies, a qualitative research approach in form of a multiple case-study has been chosen as the method for the empirical research.

4.3.1 Research method

A qualitative method was selected to understand the underlying reasons for decision taking and work processes within the internal startups. Therefore, the research aims to create understanding and foundation for theory, which can be further tested in future research with quantitative approach to generate valid knowledge.

The chosen research method is a multiple case-study of internal startups in the software engineering field within large companies. The exploratory approach was chosen based on the complexity of the social phenomena (Runeson et al., 2008). Concerns regarding the limited time frame and intent of cross-case pattern search (M. B. Miles et al., 1994), a multiple case study was chosen as the preferred option.

The flexible research strategy of performing a case study and the subjective context of understanding the research participants experiences, places the research in the interpretive paradigm (Klein et al., 1999). Therefore, it is important for the researcher to be aware of the threats to internal validity, see section 4.4.

4.3.2 Research design

To increase the validity of a case study, there is a clear need for a well-defined and designed research approach (Runeson et al., 2008). The significant components of the research approach will be discussed in the following sections case selection, unit of analysis, data collection, data analysis and ethical consideration.

Case selection

The number of cases and criteria of selection should be defined early on in the process (Runeson et al., 2008). The criteria for these cases in research process is defined below:

1. The case is an internal startup and the unit of analysis the internal startup team within a large company.
2. The internal startup team is responsible for the product innovation from ideation until commercialization.
3. The internal startup has successfully developed a software product which has real customers.
4. The software product represents an innovation outside the current product line of the company.
5. Availability to the research team.

The cases are presented in table 12. All cases are internal startups responsible for the product innovation from ideation to commercialization. They are in different stages, but all have paying customers (some pilot customers). And the software developed is a new product innovation within the firm. The respective parent companies, are presented in table 13. Both companies are defined as large

companies with the criteria from EU (2015)¹. The name of the second internal startup from Tieto Finland is renamed to Delta, not using the real name of the startup, the two product offerings is then referred to as D1 and D2.

Table 12 Case description

Case	Software product developed
Vipps	Mobile payment application
Intelligent Building	Data-driven service product, sensor- and IoT-technology combined with data analytics
Delta	Consist of two products, D1 a data collation service and D2 a data analyzing tool using artificial intelligence technology

Table 13 Parent organization description

Internal startup	Vipps	Intelligent building, Delta
Company	DNB	Tieto
Industry	Banking	Consulting, IT-services
Revenue	52 163 NOK million, 2016	1 514.5 EUR million, 2016
Balance sheet	2 653 NOK billion, 31th, 2016	1 074.5 EUR million, 2016
Employees	11 459, average 2016 ²	13 876, 31th of December 2016 ³

Unit of analysis

Considering the size and nature of internal startups and the various problem domains and technological innovations within the cases, it is chosen to study the phenomena by an holistic approach (Yin, 2013). When conducting a case study with a holistic approach, the entire case has one unit of analysis and differs from embedded approach where there are multiple unit of analysis. The multiple case-study will then consist of three separate holistic cases, yet there should be consistency in how the cases are conducted in a sense that some ecological validity is obtained. The cases as explained are the internal startups, and the unit of analysis is therefore the internal startup team.

Data collection

A case study protocol was created to keep track of the case study data, as recommended by Runeson et al. (2008). There were three types of data collection, interviews, observations and documentations, to have evidence in a triangular manner. Types of data collection, and their specific approach follows.

Interviews

The main source of insights from the case studies, came from the interviews. Based on the exploratory nature of the research, the interviews were unstructured,

¹ Large companies defined by the EU (2015): Staff headcount > 250 employees and turnover > 50 million euros or balance sheet > 42 million euros.

² <https://cdn-wpm2.redink.digital/wp-content/uploads/sites/84/2017/03/Full-report-ENG-1.pdf>

³ <https://ar2016.tieto.com/media/download-centre/en/annual-report-full-report.pdf>

consistent of multiple topics framing the interviews, see table 14. All interviews were transcribed shortly after conduction, spontaneously impressions were also documented. The interview subject was chosen based on their role and experience in the internal startups, as well as the availability to the researcher and recommendations from key personnel within the internal startup. The interview guideline is presented in appendix.

Table 14 Case interviews

Case	Type of interview	Interview subject	Duration	Focus
Vipps, DNB	Online interview	Interview subject A1	30 min	Preliminary interview
	On-site interview	Interview subject A1	48 min	Interview guideline
	On-site interview	Interview subject A2	1 hour	Interview guideline, unstructured, more technical focus
Intelligent Building, Tieto	Online meeting	Interview subject B1	88 min	Interview guideline, unstructured
	Online meeting	Interview subject B2	20 min	Exploratory
	On-site interview	Interview subject B1	30 min	Specific questions, based on analysis
Delta, Tieto	Online meeting	Interview subject C1	58 min	Interview guideline, unstructured
	Online meeting	Interview subject C2	62 min	Interview guideline, unstructured
	Online meeting	Interview subject C2	30 min	Specific questions, based on analysis
Intelligent Building and Delta, Tieto	Online meeting	Interview subject BC3	29 min	Interview guideline, unstructured
	On-site meeting	Interview subject BC4	58 min	Exploratory, specific questions based on analysis
European, data service company ⁴	Face to face interview, not on-site	Board member	30 min	Meeting
	Online meeting	Manager	42 min	Planning meeting
	Online meeting	Manager for the internal startup	65 min	Interview guideline, unstructured

⁴ A case from a European data service company was preliminary was not included considering the product focus of the thesis. Therefore,

Documentation

Documentation from the cases were downloaded from online sources and accessed from the respective contact persons within the company. Due to the companies' considerations, the documents will not be shared.

Observation

The on-site interviews were combined with observation of the internal startup team. Since the scope were rather on past events, the observation was meager and the main sources of information were interviews and documentation. Due to the limited time frame and availability of the cases there were not possible to have longer observations, as desired. These limitations required more focus on the two other sources of data, in addition archival data given by the subjects.

Data analysis

The qualitative research approach and exploratory study of internal startups, leads to process data which is challenging to interpret (Langley, 1999). Thus, multiple strategies have been adopted to ensure the quality of the interpretation. In the first place, thematic synthesis (Cruzes et al., 2011) was applied, to get an overview of the data collected. Then, the cases was analyzed separately by employing strategies as narrative, alternate template and visual mapping (Langley, 1999). This was to explain the evolution of the internal startups, answering the research questions and analyze the theoretical propositions. A cross-case analysis was at last conducted to see the overall results connections and the possibility to draw generality investigated. The data analyzing techniques and their application is explained further in the next sections.

Thematic Synthesis

Collected data were thematically analyzed, to find recurring patterns and to systematically analyze the data. Cruzes et al. (2011) propose a step by step guideline to a thematic synthesis for literature in software engineering. There are 5 steps: extract data, code data, translate code into themes, create a model of higher-order themes and at last assess the trustworthiness of the synthesis. This guideline was used in the context of transcribed interviews to link the information, increasing the level of abstraction to meet the research model, the overall process is shown in figure 16.

The first action was to read through all the transcribed interview, to get the foundation and overview of the material. Based on the research model and theoretical framework, 24 codes were initially identified, displayed in table 15. After the immersion, there was another readthrough of the transcribed interviews and data, before segments of text where identified, which further were labelled with codes. An integrated approach was chosen as the coding strategy, to both get the strength of adding key concepts from the literature review and theoretical framework, as well as giving room for new findings. In addition, a general coding scheme, with high-level concepts and labels was created and was used during the labelling. Cruzes et al. (2011) recommends to categorize the codes into conceptual,

relationship, subject and context codes. This technique was applied to ensure validity, considering that there is a threat to coding practices to be too general.

Table 15 Initial coding

Type of code	Codes
Conceptual	External environment, internal environment – parent organization, internal startup, development process, Cynefin domain
Relationship	Parent organization and internal startup: resources, control, strategic relatedness External environment and internal startup: customers, industry, partners
Subject	Interview subject (dependent on case)
Context	Cynefin domain: simple, complicated, complex, chaos, disorder Development processes: life cycle, teleology, lean startup, software development Milestones

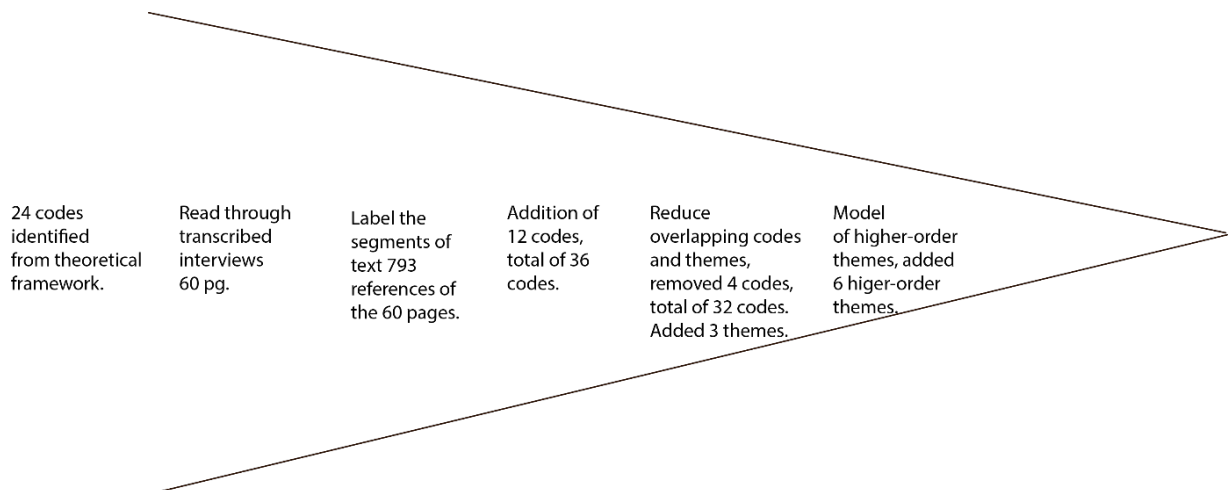


Figure 16 Data analysis procedure adapted from Cruzes et al. (2011) and Creswell (2002)

After an extensive readthrough of all the transcribed interviews, text segments were each labelled with a total of 793 references. Then codes were added, which resulted in 32 codes, 6 higher order themes and 3 lower themes. The data analysis was conducted in NVivo 11 Plus software. Thereafter, recurring themes were identified and used to identify themes to analysis the research question and theoretical propositions. A map of higher-order themes and codes, figure 17, was constructed to capture and explore the relationships between the data. Due to the exploratory conduction of adding relations between the codes, there are limitations to the relations additional methods was used interpreting the data. The codes and data, were divided based on the data source, separating the data from the three cases. This strategy suggested by Eisenhardt (1989), was chosen based on the variation of cases and the chosen holistic research design, treating the cases separately before cross-analysis.

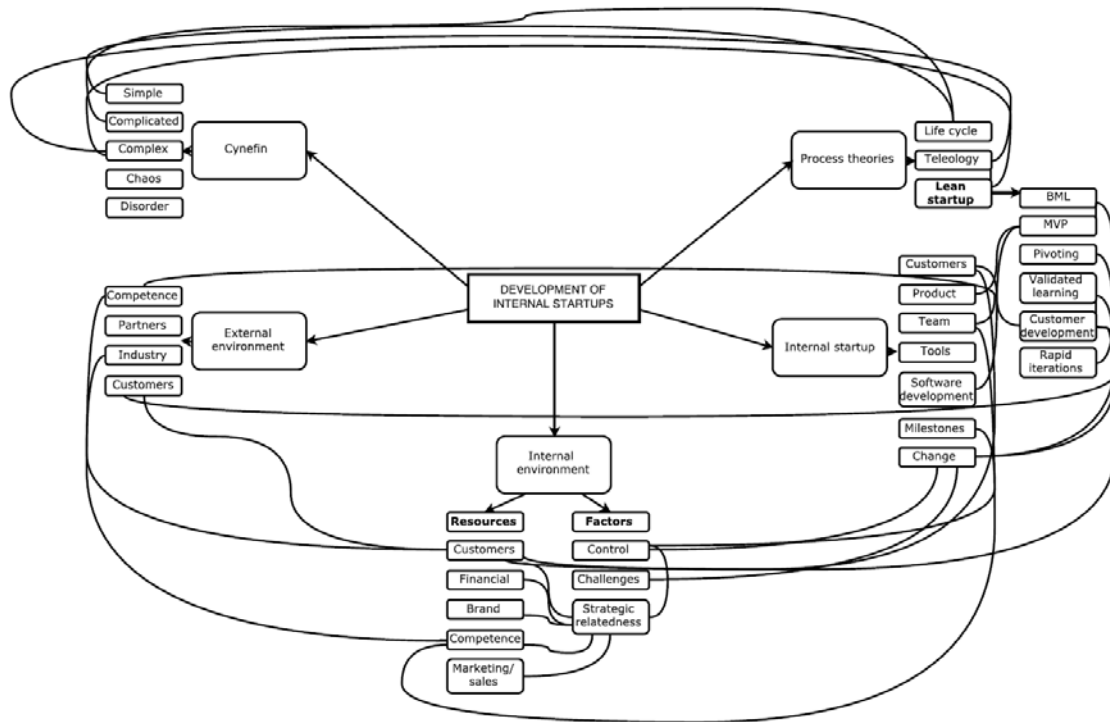


Figure 17 Thematic map, internal startup development⁵

Narrative, alternate template and visual mapping strategies

Process data from qualitative research is challenging in multiple ways. The data consists of events of variable temporal essence. Since, the main source of data is through exploratory interviews, the data have the risk of being led by the interview subject perceptions. Therefore, multiple sources are needed to validation. An additional challenge is the multiple units, as internal startups are a part of a larger organization and there are multiple influencers to the causalities and proceeding events. It is difficult to draw boundaries between the entities and hard to comprehend multiple factors (Langley, 1999). Hence, the cases will be analyzed separately first to grasp the whole course of events, utilizing the narrative strategy proposed by Langley (1999).

The narrative strategy is incorporated in most process research. Considering the research questions and the objective of this study, the narrative strategy was used to investigate the causalities and evolution of the internal startup. In addition, the strategy provides the reader with an informative portray of the case, establishing accuracy. Subsequently, the generality of the method is weak, which is reinforced by the multiple aspects influencing a specific case of internal startups.

After, narrating the progress of each case, parts of the alternate template strategy were utilized comparing the cases to the theoretical propositions. The alternate template strategy is based on the foundation of several alternate theories, which then can give divergent reasoning behind course of events. Due to the difficulties of developing a singular model explaining the connections between dimensions, there is grounds to apply multiple models and explanations. The theoretical premises

⁵ Subject theme of persons is not included considering the variations between cases.

then gave the lenses to interpret the found data, conversely not all aspects of the method were implemented. Considering the exploratory nature of the thesis, the theory extraction lacks some parts of the deductive rules proposed. The theories were then based of the theoretical propositions, which are then proven or creating new insight based on data from the real cases.

Both narrative and alternate template strategies are suitable for few cases and thus applicable for this study (Langley, 1999). Visual mapping strategy is mostly used when studying 5-10 or more cases. Yet, the visual mapping strategy was found valuable in the illustration of the internal startups evolvement over time in the context of the Cynefin framework. The three strategies adapted from Langley (1999), comprise an encyclopedic analysis of each specific case. Still, cross-case analysis was required to compare and draw conclusions from the result.

Cross-case analysis

Cross-case analysis is suggested as a practice, which should be applied whenever possible (Seaman, 1999). Considering, conduction a multiple case-study, a cross-case analysis in this study was vital to create insight answering the research questions and providing some generality to the outcome. The results from each case, was compared to find similarities and differences within the cases (Eisenhardt, 1989). Through the cross-case analysis, weaknesses to other strategies applied where handled, as the analysis of the theoretical propositions within the cases was distinguished and compared. The results were then compared to previous literature and the validity of the results discussed for fruitful contribution of the study.

Ethical considerations

All case companies were informed by email and during interviews of the research project about their right to be anonymous and possibility read through the thesis before publication. Considering the nature of the qualitative research and per the Norwegian Center for Research Data test⁶ there were not necessary to report the research project to the Data Protection Office.

⁶ <http://www.nsd.uib.no/personvernombud/>

4.4 QUALITY ASSURANCE

The quality assurance approaches and measurements to support validity for the research methods are explained below.

4.4.1 Literature review

Throughout the literature review it was given priority to conduct it in a systematic and validated approach. Several measures were taken to assure the quality of the review, such as:

1. Review with experts in the fields
2. Systematic approach, utilizing database search and snowball sampling
3. Only adding publication where research method was clearly stated
4. Only publications in English
5. Focusing on publications which are peer-reviewed, with some exceptions regarding topics as lean startup which there are scarce base of peer-reviewed articles and conference papers.

There are some limitations to the literature review, explained below:

1. By utilizing snowball sampling, it may bring bias to the research as the researcher performs the selection of the material.
2. The collection of some of the topics, example the topic of innovation, are of such a degree and number that it is complex to choose the proper literature, may bring bias to the explanations.

4.4.2 Empirical research

To ensure quality of the empirical research, couple of measurement were taken to ensure the validity. Those are explained in table 16.

Table 16 Validity measurements

Validity	Description of preventative measurements
Construct validity	To construct validity the draft was reviewed by the interview subjects.
Internal validity	Internal validity was ensured by having at least three interviews, constructing each case.
External validity	External literature was collected in a systematic manner, and reference theory was thoroughly explained to construct external validity.
Reliability	Documentation of case study procedure contains details of all aspects of the data collection. External researchers and interview subjects, could read through the research, validating the reliability.

All aspects of the research have been thoroughly explained, to construct replication possibilities of the research. Still, there are multiple limitations to the research of its exploratory nature and construction, which will be discussed in the last section.

4.5 SUMMARY

The research design and methodology section explain the chosen methodologies and practices which was conducted for the literature review, theoretical framework and empirical research. The literature review was executed in a systematic approach applying techniques as database search and snowball sampling. Even though there were multiple topics included in the literature review, the focus was on the internal startup literature. 72 relevant articles to internal startup and ICV were included in the collection.

The theoretical framework was built on exploration by searching through previous literature and the empirical research. Multiple frameworks were considered, as the Lean-ICV model and duality of structure. Yet, they had limitations as the scope were focusing on development processes, which supported the decision of applying other frameworks. The argumentation behind the chosen frameworks can be found in previous sections (section 2.3, 2.4, 3.1)

Due to the complex nature of the phenomena internal startups, and the scarce foundation of previous research, an explorative and qualitative research method was preferred. The method was designed by a flexible approach, within the interpretive paradigm. The empirical research was based on a multiple case-study, of three case companies. The cases were selected on criteria's, which ensured them all to could be defined as internal startups creating product innovations. One case company was initially considered, but were found to not be within the scope of product innovation. Therefore, the three remaining cases for the studied, were vips from DNB and two internal startups from Tieto,

The unit of analysis was the internal startup team, and the data was collected by triangulation of unstructured interviews, documentation and observation. After collecting the data, there was conducted a comprehensive data analysis, utilizing techniques from thematic synthesis and process data analyzing strategies as narrative, alternate template and visual mapping strategy. At last, there was conducted a cross-case analysis to provide primary empirical conclusions which further could be compared to previous observations. There were taken several quality assurance approaches both to the literature review and the empirical research, to ensure the validity and outcomes of the thesis.

5 RESULTS

In this section the results from the empirical research is presented. Generally, this includes a rich description of each case with the specific narrative displaying sequence of events. Furthermore, the theoretical propositions per the results found will be described. Finally, the comparison of the results for the individual cases derived from the cross-case analysis.

5.1 VIPPS

Vipps is an internal startup within the Norwegian Bank DNB. They have developed the mobile payment application vipps, which has taken the leading market position in the mobile payment industry Norway with 2 million users by 6th of December 2016. The internal startup was initialized in October 2014, and later integrated as an own business unit in DNB. They are currently separating out as an own business, partly owned by their parent organization DNB.

The business and product vipps have been remarkably successful with their massive user growth and usage of the service. Vipps are currently one of the vast success stories of mobile applications in Norway. In the next sections, the narrative and results regarding to the theoretical propositions of vipps is presented.

5.1.1 Narrative

Autumn 2014, with marked trends as people meagerly using cash and the importance of smartphone applications, implied the right timing for a mobile payment application. The top management in DNB decided to set up a project group responsible for developing such an application. This application would fall outside DNB's traditional product line and include all Norwegians with a bank account as target users.

The group responsible for the developing the idea performed some questionnaires and market analysis of the mobile payment market in October and November 2014. Hence, finding the right problem and solution fit. From customer contact and trends, they specified the requirements and specifications for the application.

On the initialization of vipps, DNB had started to outsource most of their IT-development. Concurrently, they had a suspension of IT-development in the organization, due to a transition of IT-infrastructure. They therefore decided to outsource most of the development of vipps. They had a few offers in for consideration, but eventually decided to go for an Indian information technology consultant company, Tata Consultancy Services (TCS).

After setting up a devoted team for the internal startup, the product development was initialized in the end of November 2014. A team of 7-10 persons from the e-business and IT department in DNB, worked closely together with TCS developing the application. During this phase the team consisted of business and software developers, in addition to a few technical and business architects from both DNB and TCS.

Resources from TCS were moved to the offices at DNB, where employees from business development and the IT-department in DNB worked in close collaboration

developing the product. Since all the resources were collocated, the implementation of agile methods was found necessary to keep the right speed.

“The resources from both DNB and TCS were working from our office in Oslo. The development processes differed from the normal processes within our company. We quickly found agile methods, as using user stories and rapid iterations necessary to decrease the time to market.”
– Interview subject A1, vipps

From February 2015, prior to launch, the team were extended with resources from marketing, internal and external communication from the parent organization. Collectively the team created internally spirit and encouragement among the employees.

“We had 10,000 employees within DNB, being ambassadors for the application. When we launched, we got massive response.” – Interview subject A1, vipps

The initial plan was to launch vipps in April, only having 5 months to develop the product. This was considerably faster than any previous development project within the firm. The traditional development processes, did not have the required speed for the project. The development of vipps therefore differed from the traditional way of working in the parent organization.

“Development processes in DNB were quite traditional, with elements from waterfall methodology. First, in the start of developing vipps, the usual procedure was that employees from DNB-IT wrote requirements specifications and ordered to TCS. After TCS was finished developing the ordering, DNB-IT should have an acceptance test of the delivery. However, this was very far from how vipps was developed.” – Interview subject A2, vipps

When vipps launched 30th of May 2015, a small delay from the initial planned release, they had an enormous response.

“Even the most optimistic estimation could not compare to the number of transactions we received.” – Interview subject A2, vipps

The unexpected growth of users, lead to technical challenges. Additionally, there was a high demand for new features, since the MVP consisted of only the minimum functionality. To keep the quality of the product, while developing new features, they divided the development into four groups. Three groups working on delivering new features, and one continuous improvement team, securing the quality of the product.

“We obviously launched without being 110% ready. Working in more of a startup manner, we had to expose ourselves early. We hadn’t envisioned the enormous response, and have had some technical challenges due to this.” – Interview subject A1, vipps

Furthermore, quickly after launching they observed another customer segment, small businesses, teams and associations in addition to the business market. Going beyond their first customer segment, which was private users, all Norwegian

citizens with a bank account. They decided to develop the application further for this customer segment.

“After releasing the solution for person to person payment, we saw another segment having challenges with handling cash. This was the typical kiosk at the soccerfield selling hot dogs, which were not big enough to invest in a bankterminal, and thus were handling cash. The desire for vipps among the small business, teams and associations were already immense from the start. “– Interview subject A1, vipps

The functionality was expanded to include the new organization segment and then expanding to larger scale B2B market. They launched the application available for small businesses in May 2016, and had 28 669 organizations signed up by 13th of December 2016. They further expanded towards the B2B market and developing new functionalities. There have been multiple releases and milestones after the release of vipps, to keep it concise, the major milestones are illustrated in figure 18.

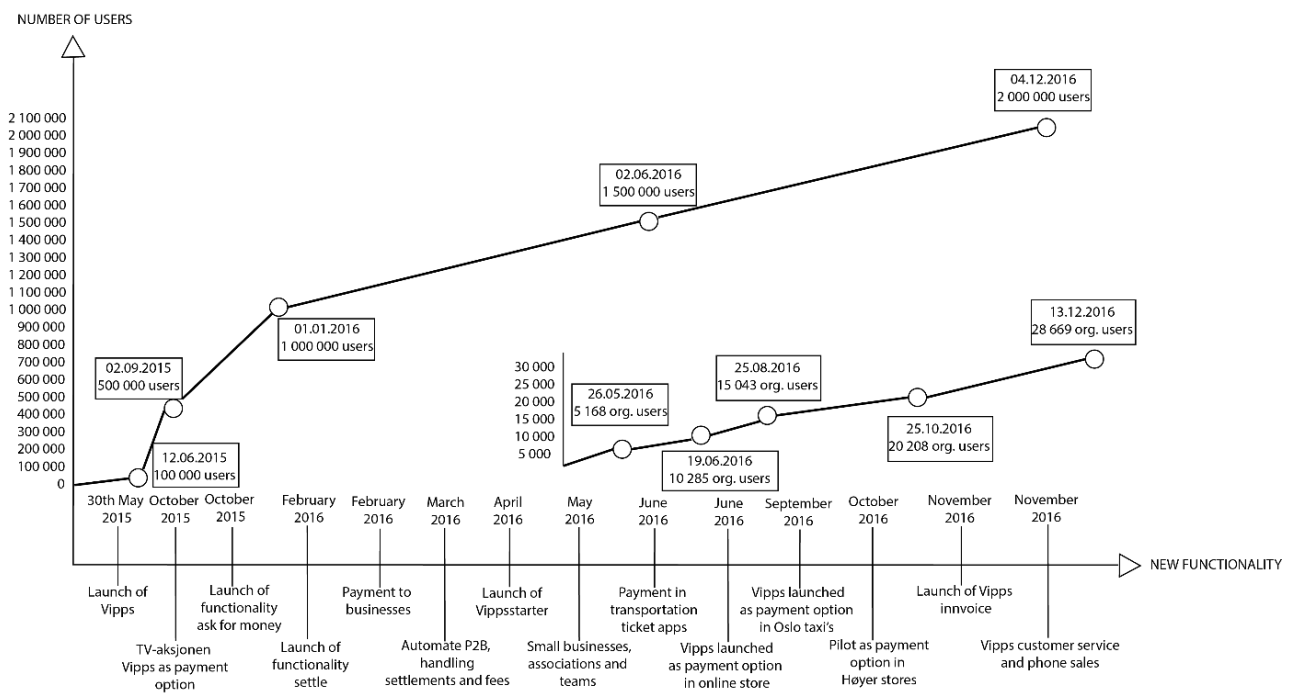


Figure 18 Timeline Vipps major milestones

In September 2016, vipps was launched as an own department, vipps and payment, in their parent organization. In near future, September 2017, vipps will separate from DNB, launching its own company, being partly owned by DNB in addition to multiple Norwegian banks.

5.1.2 Theoretical Propositions

Vipps was initialized as a clear goal from the parent organization to enter the aspiring mobile payment industry. Considering, the market of the parent organization which targets the overall Norwegian population, vipps is entering and extending the current market with a new product offering, see figure 19. As they are receiving new users independent on bank connection, in addition a new market

with the second customer segment of small organization, and being in the current market adding vipps to the existing product portfolio.

The strategic relatedness between vipps and their parent organization is relatively high. Due to the time perspective, there have been some fluctuations between the strategic relatedness and the position of vipps inside the parent corporations throughout time and space. Still, vipps have utilized the expert competence found internally throughout the lifetime of the startup, which has been an advantage when entering the market. Hence, taking the leading market positioning.

“The available expert competence has been crucial for us. Having our marketing department among others, which we can leverage, which is some of the leading marketers in Norway. It has been extremely valuable.” - Product Owner & Business Developer, vipps

MARKET FOCUS OF THE VENTURE	Market creation (New to “World”)	new business	new business	new business	new business
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	new business	VIPPS
	Current Market of the Corp.	market penetration	minor product development	major product development	
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
					PRODUCT FOCUS OF THE VENTURE

Figure 19 Position of Vipps

Due to a collation and movement of DNB’s data centers, the product was technically isolated from the other services and products in DNB. Thus, the team could aggregate more as a startup, having a higher degree of autonomy.

“At the same time as vipps started, DNB had an ongoing project collocate their data centers in Norway. Therefore, the technical solution had to be implemented on the side of the other IT-projects in the bank. Vipps where therefore an isolated solution. This has definitely been an advantage, as we could work as a small startup, not being so dependent on the other solution and processes within DNB.” – Interview subject A2, vipps

As the management and the key personnel making the calls were placed close to the team, the connections between the central of the parent organization and vipps have been quite strong. This has supported fast decision and the required speed for developing the application. Due to this and coupled with the independence to the

parent corporation technically and permission to self-organize, vipps were able to keep a high degree of agility.

“Vipps was technically more independent, since it was not reliant on the heavy processes other IT-projects have to attend. In addition, there were time pressure to be early in the market, so we got authorization from the top management to go outside normal routines and control processes. With the effect that we could work much faster and with a more agile approach.” – Interview subject A2, vipps

“The requirement specification lead to a lot of questions from TCS and overhead when developing. We started to write user stories and epics, having a coherent vision for the future of the application.” – Interview subject A2, vipps

From the strong connections, both within the team and between the management in the parent organization, and the strategic relatedness there is grounds to place vipps in the complicated domain. In addition, the extended use of expert competence supports the correspondence to the complicated domain and the need for sense – analyze – response activities.

Reengineering activities was not applicable to this case, since there were elements of uncertainty and circumstances lacking order. Further the time pressure added complexity, which then enforced new practices to the development processes. They applied a few elements from the lean startup method. One significant applications were the use of MVP principle.

“It is important to remember that our first launch only had one functionality. The MVP was explicit.” – Interview subject A1, vipps

The MVP can be categorized as a single feature MVP, since the core functionality of the first version was a single functionality of sending money. The MVP was developed further as a bootstrapping tool, which reduced the final development costs and was iteratively developed towards the launch. There has not been any extensive use of major pivots, as there have been no significant changes to the product or feature included in the application.

“There were no drastically changes. It was clear from the start what we were going to make. This was quite different from past project, the possibility of creating a success of a product with so few features.” – Interview subject A1, vipps

There has not been any other use of lean startup patterns, hence, there was a meager implementation of the lean startup methodology. As there were prescribed knowledge and order of events in the development process of vipps, more elements of the life-cycle process theory were present. This can be seen through the multiple stages vipps has went through, as first starting up with initializing a project, then to the idea, thereafter the problem and solution fit before involving TCS to develop the application, similar to previous IT-projects in the parent organization.

At the end of the life cycle a development process should go through the stage of termination (section 2.3.2). However, vipps was not terminated but developed further, also adding complexity to the process as more users were using the

application, a greater extent of customer segments and use scenarios were found. Which leads to the interesting found is the fluctuation of the dynamic in the complicated domain.

Figure 20, has been drawn to illustrate this fluctuation, of dynamics of causalities along the lifetime of vipps. Considering the uncertainty of the actual dynamic. It can both be interpreted as a dynamic in the complicated domain going toward more complexity or to the chaos domain not knowing the causalities and influenced by time pressure. The first diagram shows the fluctuation only in the complicated domain. When vipps first got the idea the domain of the process of the startup was closer to the simple domain than the complicated domain, due to the prescribed knowledge and which actions which had to be performed to get the desired effects. However, as time went one there were time pressure and more uncertainty on how the application would be met by customers.

“When launching, we were not sure how it would be received by the Norwegian population. We were extremely nervous to see if it would be a success or not.” – Interview subject A1, vipps

Considering the interpretive paradigm, there are two different interpretations of this fluctuation. First figure 20A, by illustrating it close to the complex domain, and second displaying it as a dynamic towards the chaos domain, in figure 20B. Due, to the time pressure there were no time to analyze the whole situation and predict the success of the application. Thus, providing the argument for action and not analysis caused by time as an essential success factor. Yet, the vipps team used experts in the various domains to acquire the acceleration of product development needed. Hence, giving the motivation for the first figure only being in the complicated domain.

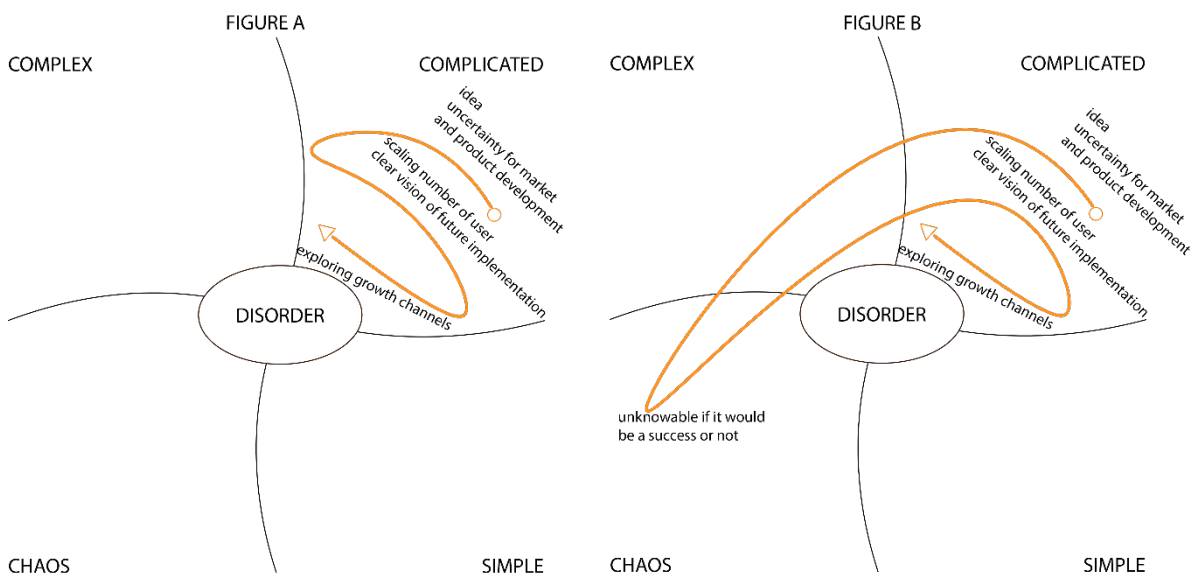


Figure 20 Visual map, vipps

Still, even though there were uncertainty, they managed to quickly get back to more order. Having an enormous success with involving their employees as their ambassadors and using storytelling to acquire more users.

“We have never communicated to our users or potential users to download an app, only about ‘vippse’ money. So, when a new user get an SMS with ‘this person has vippset this amount of money’ it is higher desire to download the app.” – Interview subject A1, vippse

Even though, the time pressure has had its influence on the outcome of the internal startup. They have managed to control the challenges caused by the rapid implementation. By setting up a continuous improvement team, they have both implemented new functionality while ensuring the quality and defects of being under control. Vipps has been extremely successful in acquiring users, however as the service is free for private persons to use under a certain size of transaction. Thus, they are not profitable yet, so they are still in search for a profitable business model.

Vipps has been a “idea-first startup”, with a clear idea and intend from the start. It is a narrow-shouldered innovation, as the development is influenced by few people. This has influenced the working methods, as from the start they have utilized more traditional methodologies. Time pressure and factors of colocation, changed the work methods, going from more traditional development processes to the use of more agile and collaborating tools. Yet, vipps managed to survive the time pressure and handle the technical debt, by self-organizing to a team for continuous improvement. Thus, they have had challenges but those were necessary to be in the market early and evolving to be the market leader in the mobile payment industry in Norway. The summary of the propositions is described in table 17.

Table 17 Summary theoretical propositions, vipps

No.	Proposition description	Summary for Vipps
P1	The strategically relatedness between an internal startup and their parent organizations, influences the connection and development process of the internal startups	Vipps has a quite high degree of strategic relatedness to their parent organization. It has influenced the connection between the two entities, as there are strong connections both centrally and distributed. Therefore, the internal startup had been placed in the complicated domain. Its development process has mostly been of life cycle process, with elements from lean startup.
P2	Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.	Vipps has been successful in the number of users and product innovation, yet they are not meeting the costs with the current business model. However, they have used some mixed tools, thus this proposition is not applicable.
P3	Internal startups mixing methods from the process theories and lean startup are in a disordered domain, and by applying the wrong tools could misguide the internal startup.	The startup has mixed some of the tools. This has been seen necessary due to the time constraints. Yet, this has led to technical debt. But by setting up a continuous improvement team they have tackled the maintainability in addition to evolvability.

P4	Throughout the course of internal startups, more causalities are known. And the internal startup tends to move with dynamics to domains with more knowledge.	Caused by the high competition in the market, more causalities have not been evolved for vipps throughout the evolution. As they have adapted to the circumstances both going towards more ordered and un-ordered domains.
P5	Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.	There has been time pressure to go to market, which has influenced the startup. Yet, they have managed to control the circumstances and continuously tackling the new challenges.
P6	The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.	The origin of the idea as a “idea-first startup” and narrow shoulder innovation have affected the causalities and domain of the internal startup. Starting in a more ordered domain, with prerequisite knowledge.

5.2 INTELLIGENT BUILDING

Intelligent Building is an internal startup inside Tieto, an IT software and service company. They are entering the global market service and digitalization platform for buildings, combining IoT- and sensor-technology with data-driven analytics.

The search and idea behind Intelligent Building started in late 2015. Currently, they have successfully implemented their solution and have several paying pilot customers. They are now in the phase of testing a scalable and repeatable business model of their service, scaling globally. The narrative and results of Intelligent Building follows.

5.2.1 Narrative

Intelligent Building has its origin from the internal startup industrial internet. Industrial internet was a group of employees within Tieto searching and collect various use cases, which would be applicable to products and services within disruptive technologies, as artificial intelligence, machine learning, IoT technologies etc. The head of Intelligent Building where a part of industrial internet startup, while searching for use cases. They found a demand for new solutions utilizing IoT-technology for office spaces and buildings during autumn 2015.

“We were meeting customers. I think we met more than 100 customers, to identify the act part which IoT can do. We found plenty of use cases, concerning the act part, which were related to buildings.” – Interview subject B1, Intelligent Building

This idea was combined with an idea from Tieto’s internal innovation program SPARK, which promoted a smart office idea with heat regulations. Concurrently, Tieto where planning their new head campus and services which would facilitate the experience within the workplaces. Thus, bringing motivation for an Intelligent Building service.

“We established an envision lever for our common ICT-solution, and experience what we want to experience with the solutions. At the same time, we also established what can we do, what is the level of different intelligent solution which we can use and implement in the office.” – Interview subject B2, Intelligent Building

In November 2015, the project group responsible for the new head campus decided to fund Intelligent Building. The latter part of 2015 and first quarter of 2016 was used to explore the technology and market opportunities of an Intelligent Building service. A market study was conducted in collaboration with Aalto university (Säynäjoki et al., 2016) and various technological were evaluated. After validating the assumption of the demand and more knowledge of possible implementations, they started the implementation of a minimum viable application. The minimum viable application was developed inside the head campus for the early arrivers in May 2016. The implementation was finished in August 2016, and the they quickly started planning the MVP and implementation for 1200 end users for the head campus. Throughout this period, the Intelligent Building team developed the solution hand in hand with their internal customer.

“The customer relations are more of an integrated solution. I am of course a customer, but at the same time, we are developing it together with them, so both me and my team is actively involved with the Intelligent Building team, to actively develop it further.” – Interview subject B2, Intelligent Building

Earlier in June 2016, all internal startups related to data-driven business including Intelligent Building in Tieto Finland were organized in a separate venture department, named the data-driven business unit. The data-driven business unit, separates the internal startups by which phase they are in depending on the progress of the internal startup.

By February 2017, Intelligent Building had 3 paying pilot customers, and was therefore moved to the commercialization phases, which consisted of additional funding and support to find a scalable business model, scaling globally. They are currently extending the customer base and further developing their product, still validating their assumptions.

5.2.2 Theoretical Propositions

Intelligent Building positioning relatively their parent corporation is quite strategically unrelated. They are developing a new product and entering an unfamiliar industry of their parent organization. Also, creating a market which is new in Finland, not relying on current customers of firm. Therefore, Intelligent Building is illustrated as a new business far from the core of their parent organization, figure 21.

MARKET FOCUS OF THE VENTURE	Market creation (New to “World”)	new business	new business	new business	INTELLIGENT BUILDING
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	new business	new business
	Current Market of the Corp.	market penetration	minor product development	major product development	new business
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
				PRODUCT FOCUS OF THE VENTURE	

Figure 21 Position of Intelligent Building

As Intelligent Building is less strategic related to the parent company, they have inferior integration with their parent organization. They are utilizing some resources from their parent corporation, as for sales network and the support from the parent organization for legal and financial services. Yet, it is less integrated than other internal startups which are more strategic related.

“Intelligent Building, is less integrated to Tieto compared to other internal startups. Yet, they are still working with branding people and some IT-employees, but not as much as other internal startups. I think this is justified with that Intelligent Building is less connected with Tieto’s core business. It does not make sense have a high degree of integration, if don’t have the synergies to keep it so close.” – Interview subject BC3, Tieto

Due to the strategical unrelatedness, the connections to the central point of the parent organization and the internal startup are quite weak. This correlates with the complex domain, where organizations should apply weaker central ties to enforce exploration. Yet, there are some connections between the two entities, but Intelligent Building perceives the parent organization mostly their customer and main investor. They collect other resources from their partnerships outside the parent corporation.

“The relations we have to Tieto, is mainly as a customer and investor, investing money for our offering, similar to external investors. In addition, to being one of our main customers. We also have external partners; we have several different partners to our platform for numerous aspects.” – Interview subject B1, Intelligent Building

Even though the ties centrally are weaker, the ties within the team are strong. The strong ties between the distributed team, facilitate their communication between team members across disciplines and fast decision-making. By detaching the Intelligent Building team, the operations of the internal startup can go outside some of the current control and develop with a higher agility.

“When we now go into new areas, we need to test and develop in light speed, and be extremely agile in our approach. The startup model is a way to detach the startup from a lot of other requirements which need to be in the large organization, because of security demands, financial etc. We run the startup in more independent way, which enables us to be much faster.” – Interview subject BC3, Tieto

The Intelligent Building team consist of both internal and external employees, both working full and part-time for the startup. There are strong connections between the team members, and they are using new tools to facilitate their communications, agility and speed is crucial within the Intelligent Building team.

“If you keep your team as small as possible, it keeps the ability to be fast. We don't have any regulated meetings, we communicate through slack and WhatsApp. We communicate in real time.” – Interview subject B1, Intelligent Building

Considering, the uncertainty of both technology and market, the Intelligent Building team needed to use other tools and work methods than their parent organization. When analyzing the internal startup per the Cynefin dimensions, there is a clear relatedness to the complex dimensions. From both the uncertainty to product and market, in addition to the connections and application of tools.

“Normally, when developing a new product in Tieto, you would know the customers, product and the market area. But in data-driven business, we don’t know if the customers would buy the product and we don’t know if the product would be good enough. So, there are many uncertainties, we need to work in a different way than we are used to” – Interview subject B1, Intelligent Building

There are number of unknown attributes. Thus, there is a need for experimental approaches, probing their way to knowledge and creating new attributes. Due to the newness of the firm, they cannot utilize existing material. The creation of these materials take time and resource which then needs different resources than the startups exploiting the current market and core business of their parent organization.

“Normally, we have been delivering services and project, which we have tons of good material for. But when we are selling the service through another sales channel, we don't have these materials available.” – Interview subject B1, Intelligent Building

The explorative nature then demands tools which are differently than the traditional process methodologies, when having specific demands from customers. Hence, Intelligent Buildings methodology is heavily influenced of patterns from lean startup. From applying testing of assumptions through customer development and validated learning. Throughout the development time testing their assumptions with customers, creating a customer lead innovation, focusing on the end-users.

“Lots of assumption have been tested. I calculated that I had about 250 customer presentations. The assumptions have all the time been validated. At first when we have an idea, we always validate the idea with potential or our paying customers. We want to confirm, that we don't code anything which is only our idea and not a customer need.” – Interview subject B1, Intelligent Building

Specific patterns from lean startup that they have applied is building MVPs through BML loops. As they have built various MVP, both mockup and single feature MVP with their first minimum viable application and later their MVP at various customers. They utilized the various MVPs as a design, boundary spanning and reusable artifacts, being the basis for their development, going from an idea to make an intelligent building service to a real-life product implemented at several early adopter customers.

“We quickly created a minimum viable application, based on base working, to select your workplace on activity, have freedom to select the workplace not depending on hierarchy. Then we created the MVP which we implemented for 1,200 end users here at our head campus.” – Interview subject B1, Intelligent Building

Prototypes have been used to visualize design ideas, between team and customers by this facilitating creativity and clarify mismatches on user experiences. Thus, being a bridge between technical, business, customers and parent organization. At the same time, Intelligent Building has applied the MVP for growth mechanism

and as a bootstrapping tool, developing the functionality further. They constantly develop the MVP, iterating rapidly through the BML loop, in collaboration with the internal customer, and getting satisfying results.

“It is developed all the time, but I mean it is working fantastically. We have, about 80% of the users utilizing the solution frequently. And this we can pin point to people which are using the indoor positioning tag, it is being used daily, and it is one of the tools which enables the office experience.” – Interview subject B2, Intelligent Building

Intelligent Building hasn't had any major pivots. However, throughout the product development they have had minor technological pivots, due to the uncertainty in which technology they should utilize. It is evident that the internal startup has applied several lean startup patterns when developing the service as the BML loop, customer development, validated learning, MVP, prototyping and rapid iterations.

The startup started far out in the complex domain, having no clear idea of what to make, but exploring for ideas in disruptive technology. When it comes to the Cynefin dimensions, the high degree of uncertainty and the nature of the weak central and strong distributed connections obviously relates to the complex dimensions. Through time, the goal has been adjusted and there and more causalities has been discovered. Thus, they have moved from the complex dimension to the complicated dimension having more knowledge and order.

A visual map of the evolution of the internal startups has been made, see figure 22. Displaying the transition and movement towards a more ordered domain through probing validating assumptions. The explore boarder is added to illustrated the corporate initiative of exploration.

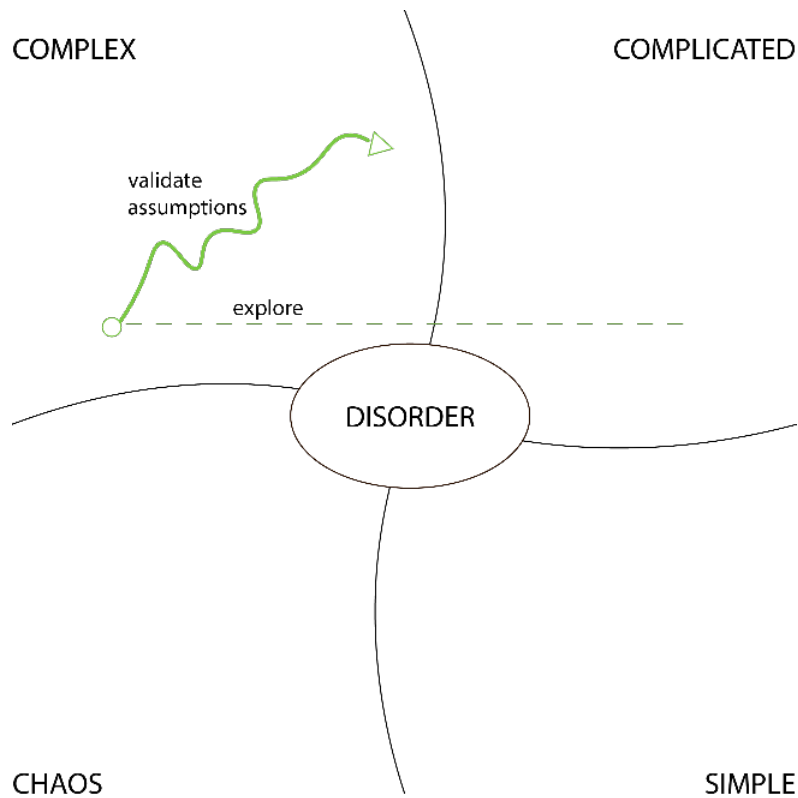


Figure 22 Visual map, *Intelligent Building*⁷

By being in the complex domain, Intelligent Building has applied the fit-to-context tools from a theoretical point of view, by applying lean startup patterns. Linking the lean startup patterns to the teleology process theory, where the goals has been adjusted throughout the development and are still being adjusted, evidently following the teleology process.

However, there have been partly mixing processes when it comes to the relations between the parent organization and the internal startup. Since the parent organization have influenced the internal startup by dividing the progress into phases and setting defined goals for the startup linking towards the life cycle process. They have had phases with decision points leading to no or go outcomes, depending on the progress of the startup. As in any project, there has been time pressure from the parent organization. Though, separating the innovation activities of internal startups in the data-driven business unit, there has been given more freedom to the teams, also in form of time and mixing methodologies. Still, analysis of the data show that Intelligent Building has not been in the domain of chaos.

Intelligent Building is a “team-first startup” and the origin of the idea, comes from multiple sources. Hence, it can be categorized as a broad shoulder innovation, reaching out wide among multiple customers before implementing the specific idea. The results from the theoretical propositions are summarized in table 18.

⁷ The curves are displayed for illustrative purposes, there have been many minor changes.

Table 18 Summary of theoretical propositions, Intelligent Building

No.	Proposition description	Summary for Intelligent Building
P1	The strategically relatedness between an internal startup and their parent organizations, influences the connection and development process of the internal startups	Intelligent Building is less strategic related and thus have weaker connections to their parent organization. However, with the use of the parent as an internal customer their ties are somehow stronger. Their development process is influenced by the explorative approach by being in the complex domain, implementing processes as teleology and lean startup patterns.
P2	Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.	The internal startup has been using the appropriate tools for the complex domain as they have been in. They are on the right track to successfully in creating interest for smart office solutions, giving a clear indication that they are on the right track.
P3	Internal startups mixing methods from the process theories and lean startup are in a disordered domain, and by applying the wrong tools could misguide the internal startup.	Even though, the internal startup alone has used the appropriate tools, there are some elements from the life cycle process related to the relations between the internal startup and the parent organization. Still, the internal startup has not been misguided by these tools.
P4	Throughout the course of internal startups, more causalities are known. And the internal startup tends to move with dynamics to domains with more knowledge.	The team has discovered more knowledge and learnings about their business domain, customers and technology. Therefore, the goals and actionable knowledge have become clearer, moving from the complex to the complicated domain.
P5	Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.	There has been time pressure for the internal startup to deliver. Yet, separating the activities has given the startup more freedom, not leading the internal startup into the chaos domain.
P6	The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.	Considering the broad shoulder innovation type, the progress has been explorative in the complex domain. This has influenced the startup in taking explorative approached, utilizing lean startup patterns.

5.3 DELTA

Delta is another internal startup established inside Tieto. The internal startup develops two product offerings, D1 and D2. D1 is a data collation service, which support organizations to manage data from disparate sources. Whereas, D2 is a data analytics tool, analyzing data with machine learning and artificial intelligence. D2 can be utilized on top of D1, but can also be implemented separately, by using snapshots of data.

Delta was initialized in January 2016, and are now in the product/market phase, validating their product, market and business model. D1 has developed their product in collaboration with a lead customer, and are starting to productize to make it repeatable for more customers. While the D2 product team are testing various MVPs with several early adopter customers, finding the desired product which they can commercialize. Narrative and the theoretical propositions results follows.

5.3.1 Narrative

With the internal startup, industrial internet, a group of employees at Tieto were exploring business and product ideas around disruptive technologies. One of the priorities of the program were to leverage the competitive advantage of their parent organization, by finding ideas within existing industry groups.

“One of the reasons to why we have internal startups, that we can leverage our resources.” – Interview subject BC3, Tieto

The founder of Delta was responsible for exploring the opportunities in an existing industry of Tieto. At the same time, he was responsible a customer project managing data from disparate sources, D1. The exploration for a valuable business and product idea started and continued during the first half of 2016. They had a profound number of interviews with customers, trying to find the right idea to go forward with.

“We did a lot of changes to the idea, basically pivoting the idea every day based on customer interaction. We were trying to find the right angle for the service. The basic assumption, software as a service, was basically the only thing that stayed the same throughout the process from March to September.” – Interview subject C2, Delta

In September 2016, they decided to utilize the already ongoing customer project, D1, making a service on-top of D1, aggregating data with machine learning. They were then testing various concepts with customers, finding the right fit between problem and solution.

“We have been presenting our ideas and concepts, and been asking numerous customers in the market, what would you like to buy, and how much would you like to pay, and so on. Based on the feedback, we have done changes to the concepts so that we can grow the product we are developing.” – Interview subject C1, Delta

Development of the first MVP with a customer started in December 2016 and were further developed the next year. In March 2017, they started the development with the second customer to validate the replication of the solution. While working on

this solution they started the agreement with the third customer, adding functionality and integrate the D2 solution further with the D1 product. They currently have five early adopter customers for the D2 product. The startup has also decided to productize the D1 service, the more traditional customer project, making it repeatable and scalable for more customers, applicable to sell D1 and D2 as a product offering together.

5.3.2 Theoretical Propositions

When looking at the strategical relatedness of the internal startup, there is a clear connection to the market entry of Delta and their parent organization. As Delta is entering and extending the current market of their parent. They are utilizing the existing customer channels, contracts and relationships to build their market and sell their offerings.

“All the sales and marketing of Delta is done in cooperation with the existing industry group and customer service in Tieto. So, each of our customers, has their customer executive inside the established organization. All our customer relationships go through them.” – Interview subject C1, Delta

However, there are differences between the two products, as the product D2 is new for the corporation utilizing new competence. While the D1 project, is applying traditional technology. By analyzing the internal startup, the market uncertainty is low, while the technology uncertainty is higher, at least for the D2 product, and both products are new to the corporation in the current industry, which places the startup quite strategically related to the core business of Tieto, see figure 23.

MARKET FOCUS OF THE VENTURE	Market creation (New to “World”)	new business	new business	new business	new business
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	DELTA	new business
	Current Market of the Corp.	market penetration	minor product development	major product development	new business
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
				PRODUCT FOCUS OF THE VENTURE	

Figure 23 Position of Delta

As D1 product is similar to the current products and traditional development processes in the parent organization. They are leveraging existing competence in a greater extent than other internal startups in the organization. Considering that

the requirements have been quite specified from the start and they co-creating the product with the customer, they find themselves in a more ordered domain than the D2 offering. As the D2 product is built on new competencies, with a more exploratory and less traditional approach than D1. Therefore, the development of the two products have been quite different compared to each other.

“D1 team is more traditional product development team. There is a product manager, leading operation, and chief architect responsible for technical structure of product, more traditional in D1. For D2, the capabilities needed are more related to machine learning and advanced analytics, which are difficult to find inside our parent organization.” – Interview subject C1, Delta

Due to the variation in required capabilities, there are two different teams developing the two product offerings, D1 and D2. While the D1 team consists of mostly internal employees from the parent organization, D2 has hired external competence due to the untraditional capabilities needed. The teams work separately, but are starting to collaborate more as they are developing the MVP with the third customer, implementing D1 with the D2 service on top analyzing the data collated from disparate sources.

The development processes for the two offerings are separate, hence it is purposeful to address them separately when placing them within the Cynefin domains, figure 24. As D1 went from being a standard customer project, going towards exploration of productization of the service, it moved towards a more un-ordered domain creating more uncertainty as they were extending the product. The other offering, D2, was an initiative from the parent organization to explore the possibilities, validating their way through to more knowledge. This is presented in figure 24, as D2 started in the complex domain going towards the complicated, and D1 started in the complicated domain adding complexity by extending the customer project.

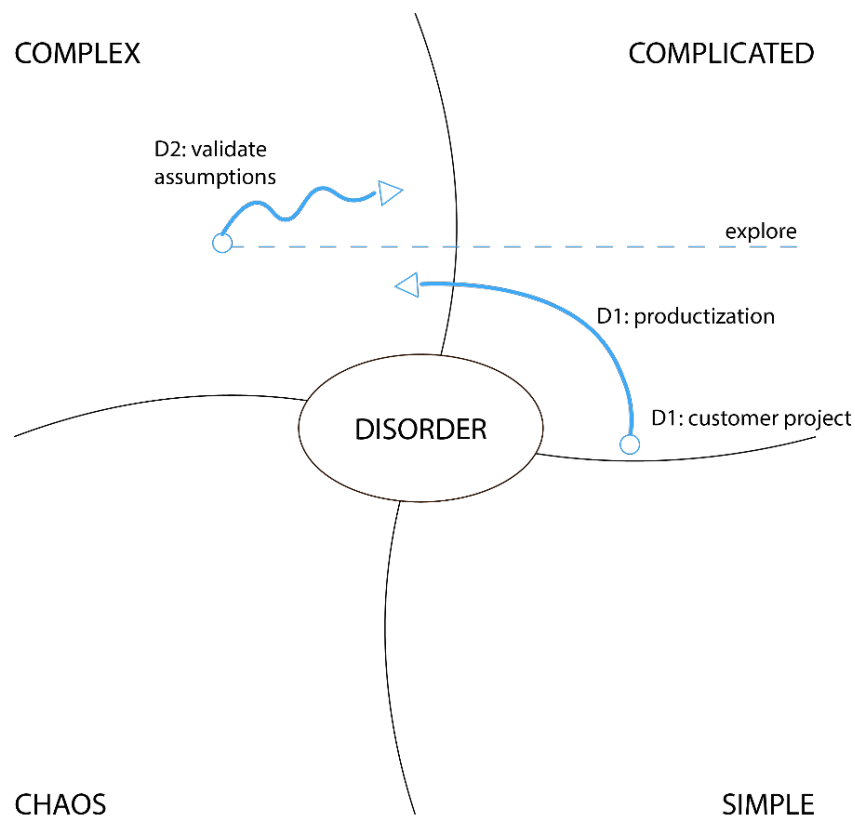


Figure 24 Visual map, Delta

D1 started as a customer project, developing based on specific requirements from one customer. Therefore, there has been more certainty and prescribed knowledge of what to develop and how to develop it, which have directed them in using more traditional development processes. While with D2, the team have developed the product in collaboration with customers, but there have been several different customers, the customer needs and specification are not known.

“For D1, we have had customer relationship throughout the development, with one lead customer. We have been quite sure that we are doing the right thing. Whereas for the D2 service, where we are building machine learning capability on top of the D1, there have been more uncertainty. We have used MVP development methodology all the time. So, we have had co creation customer as with D1.” – Interview subject C1, Delta

There is some underlying reasoning to why the D2 product could be more explorative in its approach. The reason relates to the type of data they are handling. As D1 are handling sensitive data, they must follow the rules and regulation for data privacy and security. Thus, the development of D1 needs more rigid structures and control. Whereas, building on top of these solutions, the development can be more unconstrained, since the data management and requirements are already handled by the underlying service.

“The requirements are quite specified for D1. Since, when we are dealing with sensitive data we need to be compliant with legislations and laws. We need to have quality management systems to certify the products...”

But for D2, the operating is quite different. Because the D1 service is handling the strict regulations and other official sources, we can more freely develop the D2 product. We are using more lean, design thinking and agile methods. Every time when we are building a new iteration, MVP or design sprint, we interview customers and potential customers. By collecting their demands, we validate concepts quickly and test prototypes.” – Interview subject C1, Delta

For D1, the life cycle process theory is more applicable dividing the time and space into phases. Due to its strict regulations and more knowledge about what to make, the starting point of D1 project, can be interpreted as reengineering project. Where the steps forward are known and the goal is known. Yet, by deciding to productization the offering, the internal startup has moved into the unordered domain having to use other patterns and following other processes. Whereas, D2 as an explorative product, has followed teleology process and lean startup patterns all along. They apply the teleology approach adjusting the goal, utilizing lean startup patterns as pivoting throughout the idea generation, building MVP through customer development and validated learning, while keeping the speed up. The internal startup has involved users throughout the development, always testing their assumptions.

“We have always tried to use customers for testing our ideas. The deliveries moneywise have been relatively small in the piloting cases, most important have been the customer feedback and data. It is easy to make something on your own, but if you don't have the data, you will not have any progress. You need data for this type of services. The most difficult use cases came from the data. Capability to find out something interesting without data is not possible with current tools.” – Interview subject C2, Delta

Based on the outcome from customer feedback Delta had several major pivots. In the early phases, they had complete changes, deciding in-between focusing on previous established sectors within the parent organization. They then pivoted towards the core business of their parent organization, focusing on the existing industry and market of their parent organization. Thereafter, there were minor pivots throughout the development concerning functionality, technology and customer needs. Their MVP have been used as all types of artifacts, as design to visualize, clarify, facilitate and reflect, being a bridge between stakeholders and as a bootstrapping tool continuously developing the product based on customer feedback.

“The products we are building compared to what we thought we were building one year ago, is totally different. We have been transforming the concept, based on interaction with customers and potential customer.” – Interview subject C1, Delta

The Delta startup is complex since it has two very different offerings, with divergent teams and development processes. Still, they have been using the tools suggested applicable for certain domains in their development progress. However, similar to Intelligent Building they have been influenced by life cycle elements from the parent organization as they went through a certain set of stages, decided

by their parent organization. Although, being protected by placing the internal startup in separate data-driven business unit. The causalities and order have been more present for Delta as they are in and extends the current market of their parent organization. Still, predicting the success of the venture is not possible, due to the early phase of Delta and its two products.

The starting point and origin of both product offerings also reflect the domains and development process of the startup. Yet, the technology uncertainty added complexity to the D2 offering, as they are strategical related to the parent organization, but had far more complexity than the D1 project caused by the newness of the service. When separating the startup into two offerings, the D1 is then an idea-first with a clear narrow shoulder innovation, whereas D2 is linked to team-first not having a clear idea from the start where to focus. However, it pivoted towards the core business of the parent organization, by utilizing the D1 service. The results from the case per the theoretical propositions is summarized in table 19.

Table 19 Summary of theoretical propositions, Delta

No.	Proposition description	Summary for D1	Summary for D2
P1	The strategically relatedness between an internal startup and their parent organizations, influences the connection and development process of the internal startups	Very strategically related to their parent organization. Utilizing traditional competence and capabilities within the parent organization. Clearly influences the development process with a high degree of life cycle process, were knowledge is prescribed.	It is entering the same industry and extending the current market of the parent organization, but built on new competences. Strategically related, but a high degree of technological uncertainty. This influences the team with the utilization of lean startup patterns and teleology process. From being an idea approaching exploring, they pivoted towards their parent corporation core business.
P2	Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.	Traditional processes are applicable to domain of prescribed knowledge which D1 find themselves in. However similar to the other product offering, there are no grounds to justify their impact due to the early phase of the internal startup.	Uses tools fit-to-context. By the high uncertainty in technology and market need as they are creating a new service. However, there are no grounds to justify their impact due to the early phase of the internal startup.
P3	Internal startups mixing methods from the process theories and lean startup are in a disordered	Similar to other customer project in the parent organization. Therefore, applying the same	As with Intelligent Building, regulations from the parent organization mixes the explorative approach with more

	domain, and by applying the wrong tools could misguide the internal startup.	processes, not mixing the two.	prescribed process theories. It provides some tension between the two entities. There is no evidence of this being misguiding the internal startup, at least not in the current state.
P4	Throughout the course of internal startups, more causalities are known. And the internal startup tends to move with dynamics to domains with more knowledge.	For the D1 project, there are more uncertainties created during the time as they are going to productize and try to make the product repeatable for more customers.	For D2, they pivoted towards the core business of their parent firm. Through probing, creating validated learning, they moved towards a more ordered domain, going from complexity to the complicated domain.
P5	Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.	The D1 project, have been under the same time pressure as similar project in their parent organization. Having the contract established with the customer, they are generating revenue for the parent firm.	Being organized in a separate unit, decreases the time pressure. Still, the internal startup has been under some time pressure, but still not led to the domain of chaos.
P6	The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.	The idea for the D1 project came as a demand from a customer being an idea-first project, as it is not a startup but builds up around D2 it is seen upon as a normal customer project in the parent organization. Implementing traditional development processes.	The origin of the D2 offering comes from a team-first, and have influenced the explorative nature of the startup. The Cynefin domain of being in complex domain and by utilizing lean startup patterns and teleology process.

5.4 CROSS-CASE ANALYSIS

The cross-case analysis is a comparison of the overall results from all cases. As concluded in figure 25, all three cases are divergent when it comes to the strategical relatedness between the internal startups and their parent organizations. Vipps and Delta are more related to their parent organization caused by market entry, than Intelligent Building which is further away from the core business of their parent organization. This influences clearly the connection and dependencies between the two entities of the internal startup and the parent organization.

MARKET FOCUS OF THE VENTURE	Market creation (New to "World")	new business	new business	new business	INTELLIGENT BUILDING
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	DELTA	VIPPS
	Current Market of the Corp.	market penetration	minor product development	major product development	
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
					PRODUCT FOCUS OF THE VENTURE

Figure 25 Case positioning, cross-case analysis

Delta and vipps both leverage their parent organizations resource in a great extent, especially customer channels, sales and marketing. Both being new product innovations, they are partly using external competency for the technical competence. Delta with a team of external freelancers and one team of internal employees, and DNB with a mix of consultants from TCS and own employees in DNB. The same counts for Intelligent Building which is a mix of internal and external employees. However, they are less strategical related to their parent organization, resulting in weak connections centrally and creation of more material as they are lacking existing resources and competence for their target industry and market.

When comparing the dynamics in the Cynefin framework, it is necessary to view the internal startups from the same time perspective. Since the three cases are in different phases of their productization and business creation, it gives motivation to view all three cases from a common ground. As vipps have already scaled into a larger organization, concurrently with product and processes. Intelligent Building is in the growth stage finding the repeatable business model to scale and Delta is still testing their product towards the market finding a repeatable product. It is therefore chosen to view all cases from the time perspective of finding a repeatable

product, as this is the phase which all the cases have been through. The dynamics from the time perspective for all cases, is illustrated in figure 26.

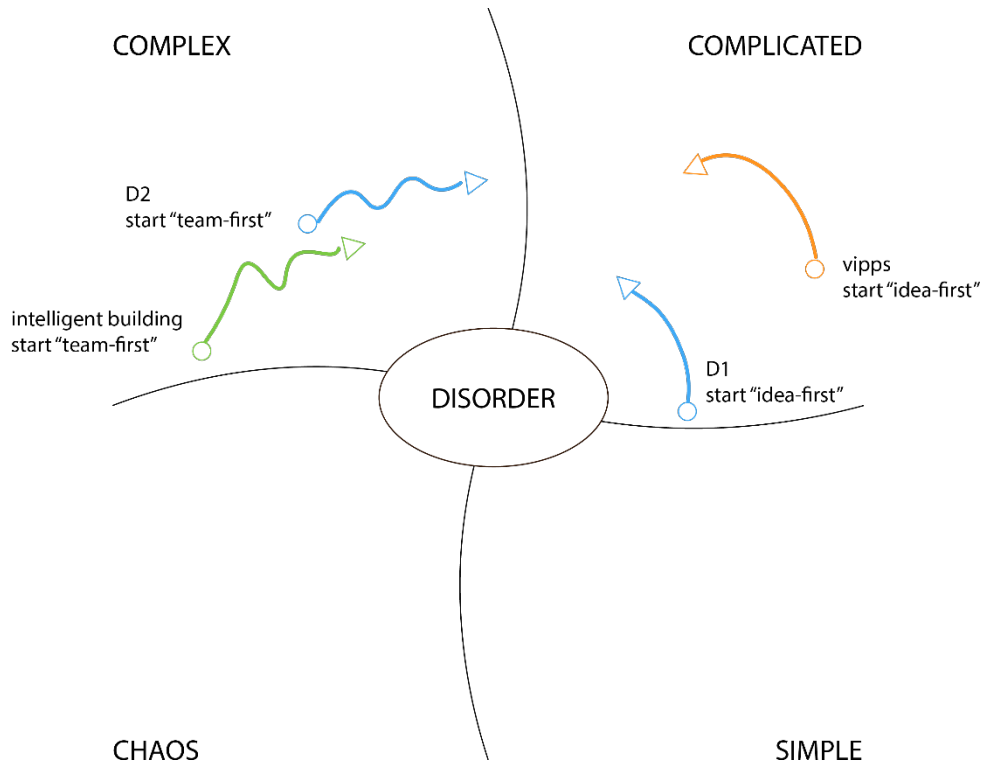


Figure 26 Cross-case dynamics

D1 product is also included, as it is of importance of the Delta case. From the illustration, the difference between the team and idea-first startups is evident. The team-first startups in these cases start directly in the complex-dimension, whereas the idea-first more strategically related to the parent organization in the ordered domains.

5.4.1 Primary empirical conclusions

To get a deeper insight the theoretical propositions are compared in table 20 producing the foundation for primary empirical conclusions.

Table 20 Comparison building primary empirical conclusions

No.	Proposition description	Vipps	Intelligent Building	Delta
P1	The strategically relatedness between an internal startup and their parent organizations, influences the connection and development	-Strategical related -Strong connections to the parent firm -Complicated domain	-Strategical unrelated -Weak connections to the parent firm -Complex domain -Heavily use of lean startup	-Strategical related -Strong connections to the parent firm -D1: complicated domain and D2: complex domain

	process of the internal startups	-Use of life cycle and few lean startup patterns	patterns and teleology process, some influenced by life cycle events	-D1: use of life cycle, D2: use of lean startup and teleology
	<p>Primary Empirical Conclusion: Clearly this proposition has some value in real-case settings. Strategically related internal startups find themselves in a more ordered domain using more life cycle processes. This due to the prerequisite knowledge of the area, thus less need to explore.</p> <p>Whereas, the newer to the business the more used is patterns as lean startup and teleology process. The connections also link to this. Yet, the Delta case, with the disruptive product has strong connections also, since it pivoted toward the core business by being built on top of D1.</p>			
P2	Internal startups applying tools which are fit-to-context, are more successful in new product and business innovations.	-Life cycle, few lean startup patterns -Expertise competence fits to the context	-Not applicable	-Not applicable
	<p>Primary Empirical Conclusion: Overall results between the cases is that this proposition is tough to measure, due to the few cases and that most of them had not been able to yet scale. Vipps which is the internal startup being the most mature startup, have used expertise competence both internally and externally which have been fit-to-context for their complicated domain. Supported them in retrieving the success of business and product creation. Yet, they have had some challenges due to time pressure and mixed methods.</p>			
P3	Internal startups mixing methods from the process theories and lean startup are in a disordered domain, and by applying the wrong tools could misguide the internal startup.	-Mixing few lean startup patterns to the life cycle -Some challenges with technical debt	-Mixing heavily use of lean startup with life cycle process requested by the parent organization	-Two project, separately using different processes -Some mixes with lean startup process and life cycle process requested by the parent organization
	<p>Primary Empirical Conclusion: All the cases have mixed methods or processes in some degree. However, there is no ground to state that they have misguided the startups. The evidence of challenges to the product development is the technical debt, by use of lean startup patterns. Others are the time pressure and use of life cycle stages by parent firm, which will be further discussed in the section 6.</p>			
P4	Throughout the course of internal startups, more causalities are	-Not evidence for more known causalities, as the startup has	-More causalities known by time and space	-More causalities known by time and space for

	known. And the internal startup tends to move with dynamics to domains with more knowledge.	gone to un-ordered domains		the D2 product and team, opposite for D1
Primary Empirical Conclusion: The results are divergent as the starting point of the internal startups are various and influential. This will be explained in P6.				
P5	Time pressure from the parent organization, sends the internal startups into the domain of chaos, where the causalities are unknowable.	-Time pressure, impacting technical debt, possible detour to the chaos domain	-Time pressure from the parent organization, no signs of chaos domain	-Time pressure from the parent organization, no signs of chaos domain
Primary Empirical Conclusion: Both Delta and Intelligent Building have been under the same time pressure from their parent organization. They have both been in an own unit, specially designed for developing new products and businesses. Thus, the time pressure has been under control. Vipps, has been under high time pressure, caused by high competition in the market. Due to the importance of timing, they were pressured to develop in a fast-pace not having the time to test many various solutions or technologies.				
P6	The origin of the idea for the internal startups affect the causalities and the domain of the internal startup, thus process theories applied in the internal startups.	-The origin by idea-first, have impacted in being in a more known domain	-The origin of finding the idea through exploration have influenced the progress of the startup.	-In the same way as Intelligent Building the origin has influenced, in addition the customer project, pivoting closer to the core business.
Primary Empirical Conclusion: As displayed in figure 26 there are differences and evidence from the empirical that state the origin of the idea affects the internal startups development processes. The events, progress and P4 is influenced by the origin of the idea. In this cases the team-first startups, utilized teleology process and lean startup patterns more heavily than the idea-first startup, exploring numerous opportunities.				

From the comparison, there are several primary empirical conclusions which can be drawn. The first one relates to the strategic relatedness as we can see that Delta and Intelligent Building essentially having different strategical relatedness to their parent organization, but both being in the complex domain. It is clear to see that the origin of the idea having more influence on the domain of the startups than the strategical relatedness. The team-first startups tended to origin in the complex

domain, while the idea-first started out in the complicated domain. Therefore, the first primary empirical conclusion states:

PEC1: The idea origin places the internal startup in a domain, where idea-first tend to be in the complicated domain, team-first startups tend to start in the complex domain.

Another interesting primary conclusion was found from the results connecting the strategic relatedness to the startups performance and tension with their parent organization. When looking at vipps and Delta's product D2 compared to Intelligent Building, there are weaker connections between the latter, due to less strategical relatedness. The weaker connections direct to more tension between the development processes in the two entities. As the exploratory project use essentially different methods than their parent organizations, they must validate assumptions. Instead of having specific and prescribed steps to achieve a goal. The second empirical conclusion then follows as:

PEC2: The more strategical unrelated the internal startups is to the parent organization, the weaker connections there are between the two entities.

The mixing of methods and process theories were cause by the differences between the two entities. As larger organization applies stages and control routines to the internal startups, it forces the exploratory internal startups to mix methods due to the internal environment of their parent organizations. The difference was in the internal startups strategically related and from an idea-first origin implemented similar processes as their parent leading then to less tension.

PEC3: The startups strategical unrelated and team-first are mixing methods creating more tension between them and their parent than the startups which are more strategical related and idea-first.

Time pressure was evident in all three cases, by the desire from parent organizations to see the results from the initiatives, having clear intensions behind setting them up. This also influenced the mixing of methods, as large organizations require results within a controlled time perspective. Yet, the two internal startups in Tieto, were protected from some of the time pressure, by being separated in an own unit specially designed for internal startups. The separation made it possible to easier go outside of normal routines for new projects in the firm, and creating less time pressure for the teams. This lead to the fourth empirical conclusion:

PEC4: Startups being within a NVD are less exposed for time pressure by their parent organization.

Due to the limited time developing the products for Delta and Intelligent Building, there is no evidence for the time pressure influencing the products. For vipps, the time pressure for developing the product required them to implement agile methods and patterns from lean startup. Where the development of the MVP and rapid iterations lead to some technical debt, which was handled by an own continuous improvement team. Applying then lean startup patterns with the fundamentals of experimentations and rapid hypotheses testing then can be linked to technical debt and provide the fifth primary empirical conclusion:

PEC5: Applying lean startup patterns with time pressure, leads to technical debt for the new software product created.

From the internal startups in the complex domain it was clear that they were utilizing lean startup patterns more heavily than the internal startup in the complicated domain. The motivation for applying lean startup patterns with experimental approach was greater when having less previous knowledge of the domains. The internal startups in the complex domain, tended to apply iterations through the BML-loop, MVP, pivoting, customer development and validate learning. Which leads to the sixth proposition:

PEC6: The development processes for internal startups in complex domains are heavily influenced by lean startup patterns, iterating through the BML-loop creation, MVPs and pivoting their way through customer interaction to validated learning.

5.5 SUMMARY

The result section includes the analysis and result from the separate cases and a cross-case analysis leading to the primary empirical conclusion. The first case, vipps, is an internal startup within DNB, which has developed a mobile payment application. The payment application is now one of the largest success stories of mobile applications in Norway. The internal startup was found to be strategical related to their parent corporation being within the complicated domain, and possible chaos domain caused by time pressure. Their main development process relates to the life cycle process theories, with a heavy influence of expertise competence from internal and external sources developing the product. They also applied lean startup pattern, by building their first product as single feature MVP, bootstrapping and growth mechanism tool, further adding functionality and customer segments with time. The internal startup was an idea-first startup which have now grown into becoming an independent business.

The second internal startup was Intelligent Building within Tieto, which is an internal startup creating smart solutions for buildings. The internal startup sprung out of industrial internet, which was an innovation initiative seeking for business cases within disruptive technologies. Customer interactions and exploration for opportunities within IoT-technologies, discovered a high demand and various use cases for buildings, in addition to an idea from an innovation program and a demand from the facilitation management in the parent organization lead to the creation of the startup.

Intelligent Building has been strategically unrelated to their parent organization, as they are creating a new market and a product within a new industry. They have been in the complex domain, but gradually moving towards a more ordered domain, discovering more causalities. The internal startup has been heavily influenced by lean startup patterns and teleology process, adjusting their goal along the way.

Along with Intelligent Building, Tieto has setup several internal startups in their data-driven business unit, one of them is Delta. Delta also sprung out from the industrial internet initiative, targeting the existing customer and industry groups within Tieto. Through customer interaction and caused by an ongoing customer project, they decided to focus on two offerings, productization of the customer project within data collation services, D1 and a data analysis tool with use of machine learning, D2.

Delta considering its base of two offerings, have had two different origins, D1 from the customer project being idea-first and D2 from customer interactions being a team-first startup. D2, has been in the complex domain, implementing lean startup patterns throughout the development time, creating various MVP and iterating towards more known domains. Whereas D1, which have been more traditional have then been more influenced of traditional development and life cycle process, having a prescribed sequence of events. Yet, this product development team has moved towards more uncertainty as they decided to productize the product.

All cases were compared in a cross-case analysis, it was found variations in the strategical relatedness of the startups. The strategical relatedness was found to impact on the connections between the internal startup and their parent organization along with their development processes. By visual mapping the

dynamics in the Cynefin framework it was found a variation between the idea-first and team-first startups. As the idea-first startups started in the complicated domain, while the team-first startups started in the complex domain. The comparison of the results lead to six primary empirical conclusions which are summarized in table 21.

Table 21 Primary empirical conclusions

No	Primary empirical conclusions
PEC1	The idea origin places the internal startup in a domain, where idea-first tend to be in the complicated domain, team-first startups tend to start in the complex domain.
PEC2	The more strategical unrelated the internal startups is to the parent organization, the weaker connections there are between the two entities.
PEC3	The startups strategical unrelated and team-first are mixing methods creating more tension between them and their parent than the startups which are more strategical related and idea-first.
PEC4	Startups being within a NVD are less exposed for time pressure by their parent organization.
PEC5	Applying lean startup patterns with time pressure, leads to technical debt for the new product innovation.
PEC6	The development processes for internal startups in complex domains are heavily influenced by lean startup patterns, iterating through the BML-loop creation, MVPs and pivoting their way through customer interaction to validated learning.

6 DISCUSSION

The discussion links the results to the theoretical foundation and previous literature, going through the six primary empirical conclusions. The primary empirical conclusions and existing research provides practical implications for practitioners. Expounding on how to implement and successfully create new software products and businesses in larger organizations. Additionally, comparing the results with established knowledge gives the foundation to explain the theoretical contributions of the research.

6.1 COMPARING PRIMARY EMPIRICAL CONCLUSIONS TO EXISTING RESEARCH

Internal startups are complex phenomenon's. They occur in multiple forms and shapes, and there is limited research directly linking to the use of the term internal startup (Henry Edison, 2015; Edison et al., 2015; Lepp et al., 2015). Yet, by connecting internal startups to internal corporate ventures, as a new wave of ventures, there is a rich foundation of previous literature to build the results on. However, the connection should be applied carefully, considering the immersive technological revolution and change in recent years which might have affected how these initiatives work and develop. Therefore, an explorative and qualitative approach was practiced to provide in-depth insight. The insights given by the primary results and primary empirical conclusions, section 5, and previous literature, section 2, are discussed to explain the contributions and implications of this research.

6.1.1 Idea origin

The first PEC, relates to the origin of idea and its impact on the development processes in internal startups. As seen, internal startups can be divided into "idea-first startup" or "team-first startup" (Seppänen et al., 2016). However, the knowledge regarding the origin and its influence on the development is scarce. There are no evidence leaning towards one of the origins as favorable or their impact on the internal startups progress. Therefore, the contribution discovering the differences in development processes based on the origin of idea is novel.

From the results, the starting point strongly influences the progress and development processes within the internal startups. The team-first startups which are searching for an idea, starts in the complex domain and needs to apply lean startup patterns to explore the causalities. As idea-first startups, has a clearer idea of where to start, they use less time exploring. Thus, providing motivation to further explore the importance of the starting point and idea for the development of internal startups.

The results connecting the starting point to the causalities, also disproved the proposition of more causalities known by the progress of the internal startups. As the origin of idea has an extensive impact on the course of events, it is not possible to state the internal startups moving towards more ordered domains, as the actual progress could be opposite direction. Considering, the limitation of the cases, generalizability is weak, but the primary empirical conclusion and the limitations

of existing literature provides incentive to explore the importance further to succeed with the entrepreneurial initiatives.

6.1.2 Relations between the internal startup and parent organization

From the results, there is evidence that internal startups vary in multiple areas. An important factor found in the primary empirical conclusions is the connection between the parent organization and the internal startups. Both PEC 2 and 3, addresses the strategical relatedness between the internal startups and their parent organizations, in relation with the connection, tension and variation between the two entities.

As the cases were all strategical different from their parent organization, there was a need of a categorization, by applying the new business definition from Morris et al. (2010). There was found a clear correspondence between the strategical relatedness and the development process and progress of the internal startups. The second PEC relates to the connections between the two entities, which can be addressed by looking at the influence of autonomy, found as an important topic from previous literature.

The development processes for Intelligent Building, which was the corner case most strategically unrelated to its parent company, was influenced by lean startup patterns due to its exploratory nature. Intelligent Building was also the case utilizing most lean startup patterns, in addition to being the most autonomous one of the startups. The connections to their parent organization was weak, as expected by an organization in the complex domain (Kurtz et al., 2003). To understand the weak connections further, it is necessary to look at the degrees of autonomy.

From Gemünden et al. (2005) definition of autonomy, Intelligent Building had a high degree of structural autonomy. The structural autonomy is displayed in their autonomous boarder lines to the external environment. Intelligent Building were enforced to build their own customer relationships and channels, due to the non-existing relations to the new industry from their parent organization.

The opposite cases here is vipps and Delta, which both had low structural autonomy. Since they were entering extension of and current markets of their parent organizations, they could leverage the existing relations to the external environment through their parent organization. Other autonomy types as goal-defining, resource and social autonomy was aligned throughout the various cases, as all cases had an overall high degree of goal-defining and social autonomy. The internal startups could prioritize and set their own goals for the project. For the social autonomy, the teams could self-organize, and find their suitable working culture adapted to their needs.

The lower degree of autonomy was found in resource autonomy. As all cases were reliant on the financial resources given from their parent organization. The interesting fact which was present in all three cases, was that there were a mix between internal and external employees, since the capabilities needed was not found inside the parent organization. This could be linked to the fact that all the cases were product innovation, thus requiring new competences to decrease the technological uncertainty.

The type of autonomy which was divergent between the cases was structural autonomy, due to the strategic relatedness of the internal startups. Still, the overall degree autonomy in internal startups is quite high, which correlates to previous findings done by Birkinshaw et al. (2002) and Simon et al. (1999). They found more autonomy has a positive impact on the performance, thus should be applied to internal startups.

Yet, as Tidd et al. (1999) present that there are no best way to organize an internal startup, there is still no consensus on the impact of autonomy. This research claims the reason for not being able to reach a consensus in the topic of autonomy, is the lack of understanding the importance of strategical relatedness as an influencing factor of the autonomy of the internal startups. Not only should the strategical relatedness be viewed as a multidimensional factor, but also the various types of autonomy should be taken into consideration. The shortage of proper separation between cases and understanding the multidimensional view in previous literature, have been prominent to not being able to fully understand the practical implications towards successfully setting up and creating successful innovations with internal startups. Then, this contradicts the previous findings from Tidd et al. (1999), arguing that there are patterns which can support in organizing internal startups, creating more secure paths to success.

The Cynefin framework give guidelines in understanding the connections between the internal startup and their parent organization based on the domain they find themselves in. As seen, the less strategical related the internal startup is to the parent organization the tendency to have weaker connections is stronger. This corresponds to the framework, as prior knowledge and strategical relatedness correlates to placing the internal startup in a more ordered domain, with then stronger connections. Or in opposite case, weaker connections for less related startups.

Prior knowledge and experience has been seen as a success factor for ventures (Day, 1994; MacMillan et al., 1987; von Hippel, 1977; Zahra, 1996), as strategical relatedness adds corporate support and persistence to the ventures (Tukiainen, 2004). Vipps is strategically related to their parent corporations, and have received a substantial amount of corporate support and persistence. Thus, they could recruit experts to work with analysis and the development processes, fit-to-context with the complicated dimension (Kurtz et al., 2003). Still, corporate support was also present for the most strategically unrelated internal startups, Intelligent Building. As they involved their parent corporation's as their internal customer. By having the parent organization as an internal customer, they manage to display direct value and receiving corporate support.

The overall findings imply the importance of having some connections inside the parent organization to preserve the persistence to continue the venture, which then corresponds to the previous findings (Tukiainen, 2004). Although, the connection could be seen outside the strategic relatedness, as having a customer relationship or other ways to tie the organizations ensuring enough resources and time.

The influence of being inside an organization, also impacts the sequence of events, chosen tools and work methods. Traditional management, and development processes in internal startups have been influenced by dividing the sequence of

events in different stages (Robert A. Burgelman, 1983; Crowne, 2002). There is a clear correspondence to the tension between the traditional work methods and rigid structures to the new exploratory approaches which is required by internal startups in the complex domain.

Internal startups exploring new options, should be given support even though they go outside the normal procedures. Which requires time to probe and explore options not being forced to apply life cycle process. Rather adapt to the circumstances as in the teleology process (Van de Ven et al., 1995). This then reinforce ambidexterity by loosen the control and connections to the internal startup team. The lean startup patterns could then also be applied to move to more known domains, where knowledge of how to succeed is further available. In this context, apply the just-in-time dynamic to exploit the opportunities discovered by the internal startup (Kurtz et al., 2003).

The third primary empirical conclusion presents the differences in methods and practices applied by the startups. It is important to not only include the element of strategical relatedness, but also the origin of idea as an influencing factor to the practices applied. The results could not imply if the tools aligned with the Cynefin framework or if mixing tools had any profound effect on the success of the new business and product creation. Still, it was found that the more exploratory the startups were, the more they implemented lean startup patterns which then was mixed with the traditional life-cycle processes of their parent organizations, thus creating more tension between the two entities. Considering the new research model applied to this research the findings are novel, and therefore lacks the link to existing research.

6.1.3 Time pressure

The mixing of tools was mostly due to the time pressure, but also the control and bureaucracy within the parent organizations. As Shrader et al. (1997) deliberates the differences between external and internal ventures, they found external venture to possibility receive longer commitment than internal ventures. This corresponds with the time pressure in the results as all the startups are influenced by some sort of time pressure from their parent organizations. Yet, there is a protection given by placing them in an own division, which is linked to the NVD (R. A. Burgelman, 1985; Fast, 1979). Connecting the fourth PEC, corresponds to the previous literature. Shielding the internal startups from the pressure, enforcing the ability and time needed to explore new opportunities. By placing the internal startups in an own division protects them as separate entities.

Time pressure can come in diverse forms, as some pressure might intrigue and make the internal startup flourish, other types might have destroying effect on the progress of internal startups. Again, the Cynefin framework can be used to make sense out of when pressure can be worthwhile and not. For a startup in a complex dimension, probing through various options, time pressure might lead the startup to go for an option, sending it out in the chaos domain acting before probing. The results from the case, showed that the cases protected by another layer by being inside a NVD, manage to avoid chaos.

Technical debt has been a topic of increasing interest, as a challenge constructed by applying lean startup patterns (Cunningham, 1992; Giardino et al., 2016; Kruchten

et al., 2012; Yli-Huumo, 2015). From the results, there is evidence that time pressure accumulates technical debt. For some product innovations, the time pressure is vital to achieve the right timing and enter the market before competitors. Still, as Giardino et al. (2016) mentions, it is important to deal and control the technical debt, ensuring stability and quality of the new software product. Therefore, the fifth PEC corresponds to the previous findings as a challenge to implementing lean startup patterns and caused by time pressure.

6.1.4 Lean startup patterns

Lean startup patterns were implemented in various degrees dependent on the cases. As seen the application of these patterns corresponded with the newness and uncertainty linked to the product innovation and market entry of the internal startups. The internal startups using lean startup patterns heavily were placed in the complex domain, being further away from their parent organizations. This was then analogous with the predictions and theoretical proposition, which was made based on the research model. The research model was proven applicable as the visible elements and factors influencing the internal startups could be affiliated and explained by the components of the model.

All patterns from the lean startup method was utilized in various degrees, depending on the value of the patterns for the practitioners. The novelty of the sixth PEC, lies in understanding when and in which situation lean startup patterns as BML-loop and MVP creation among others, can be applicable. By providing the research model based on the Cynefin framework, it is possible to observe when the patterns are of value for the development process. As the knowledge about development processes for internal startups are meager, the categorization and use of Cynefin is novel and hence useful for further theoretical contribution, as while as useful for organizations setting up internal startups.

6.2 PRACTICAL IMPLICATIONS

There are numerous practical implications which applies to the development processes of internal startups and how these initiatives should be setup, managed and evolve to maximum outcomes of the innovations. Internal startups are indeed an initiative which can support large organization to innovate with extreme agility. However, there are still uncertainty, connecting the threads, to the how large companies can create the highly scalable and repeatable product innovations.

What is seen from both literature and the empirical results is the need for the large organization to support the internal startups by the different requirements. As strategically related startups can leverage their parent organizations advantages in a greater extent. Internal startups strategically unrelated, having a more exploratory approach should be given more autonomy and ability to go outside the traditional development processes. Time pressure can both be vigorous and damaging for the internal startup, and therefore should be applied under these considerations.

This thesis provides a foundation for understanding how lean startup can be applied in large organizations, facilitating ambidexterity. As seen, lean startup patterns are especially valuable when internal startups are going outside the normal operations exploring new options. Thus, the application of lean startup patterns should be applied where the startups have a great deal of uncertainty. The patterns while then create more knowledge and certainty for the internal startup and the product development.

In the opposite case, were the internal startup have a clearer goal and more knowledge of the new business, lean startup patterns are less fruitful, there should be put increasing focus on utilizing expert competence. In addition, the origin of the idea, has major impact on the sequence of the events of the startup and its starting point for which type of practices which should be applied.

An important aspect for larger organization setting up the internal startup is the support and pressure, which varies from the various cases. The corporate support should be present even though the goals are not evident from the start. The internal startups being more outside the traditional business of the organization, need allowance to go outside the normal routines and control to experiment their way to new creations.

From the primary empirical conclusion and the previous literature, a handful of practical implications have been created, which are summarized in table 21.

Table 22 Summary of practical implications

Practical implication	Relation to the PEC
The origin of the idea influences the organization of internal startups development and which practices which should be implemented.	PEC 1
Internal startups going outside existing parts of their parent firms core business should be given the freedom to go outside normal routines and control.	PEC 2, 3

Internal startups going into existing parts of their parent firms core business should leverage the resources established in the firm.	PEC 2, in the opposite case, stronger connections.
The corporate support and facilitation of internal startups should be customized depending on the type of internal startup. Placing the internal startups in an own division (NVD) is a favorable option if possible.	PEC 4, 5
The parent firm of the internal startup should be careful with enforcing time pressure and control routines on exploratory projects which are going outside the core business of the corporation.	PEC 5
Internal startups going outside the current business of their parent firm, should apply lean startup patterns as rapid iterations through the BML-loop, creating MVPs, testing with customers and constructing validate learning to build the new product innovation.	PEC 6

6.3 THEORETICAL CONTRIBUTIONS

There are multiple theoretical contributions, not only linked to the primary empirical conclusions section 5.4.1, but also the research method built and applied. By exploring internal startups, this thesis contributes to connect the dots between internal startups and previous literature of ICVs. A comprehensive framework of previous ICV literature, the Cynefin framework, process theories and lean startups was developed, which guided the research through exploring real-life cases. Thus, it contributes to the meager literature of how to apply lean startup methodology in large companies.

Additionally, the use of Cynefin framework in a research setting which is relatively new (McLeod et al., 2013). By applying Cynefin and connecting it with the development process theories creates a new theoretical contribution and a research model and tool for practitioners which can be used in the future. Whereas McLeod et al. (2013), actively used Cynefin with research participants through workshop and as a research tools, this research has used Cynefin as a sense-making tool. Using the framework to interpret the collected data, explaining the process data and the development of the internal startups.

The existing literature in the field, is fragmented and mostly concerning ICVs. Even though, there is a rich body of literature there are limited consensus regarding the results and practices which should be applied to internal startups. This research contradicts the previous findings with the notion that there is a need to improve the definition and theoretical lenses of internal startups, as there are several types and variations of internal startups. As autonomy, have been found of importance to the success of internal startups (Birkinshaw et al., 2002; Simon et al., 1999), it is found that the overall degree of autonomy should be high. However, there are cases where the degree of autonomy should be linked to the strategic relatedness, which then is a novel result.

From the primary empirical conclusions, numerous findings which are novel to the previous research in the area, which are summarized in table 22.

Table 23 Primary empirical conclusions

No	Primary empirical conclusions	Compared to existing research
PEC1	The idea origin places the internal startup in a domain, where idea-first tend to be in the complicated domain, team-first startups tend to start in the complex domain.	Novel, few results in existing literature (Seppänen et al., 2016).
PEC2	The more strategic unrelated the internal startups is to the parent organization, the weaker connections there are between the two entities.	Novel. Contradicting, to no best way to organize an internal startup Tidd et al. (1999), due to the lack of proper understanding the various natures of different types of internal startups.
PEC3	The startups strategic unrelated and team-first are mixing methods creating more tension between them and their	Novel, scarce research on the topic of development

	parent than the startups which are more strategical related and idea-first.	process in internal startups (Covin et al., 2015).
PEC4	Startups being within a NVD are less exposed for time pressure by their parent organization.	Corresponding to previous research, which emphasize the fruitfulness of placing internal startups in a NVD (R. A. Burgelman, 1985; Fast, 1979). No new or contradicting results.
PEC5	Applying lean startup patterns with time pressure, leads to technical debt for the new product innovation.	Corresponding results in form of lean startup patterns leading to technical debt (Cunningham, 1992; Giardino et al., 2016; Kruchten et al., 2012; Yli-Huumo, 2015)
PEC6	The development processes for internal startups in complex domains are heavily influenced by lean startup patterns, iterating through the BML-loop creation, MVPs and pivoting their way through customer interaction to validated learning.	Novel contribution, as the newness of the research model.

6.4 SUMMARY

The discussion consists of three main parts, placing the empirical results in the context of existing research. First, comparing the primary empirical conclusion (PEC) to the previous findings. Thereafter, providing a set of practical implications and discussing the theoretical contribution of the research.

From the existing literature and PEC's, the importance of idea origin was found as a novel contribution to the literature. The development processes in internal startups were highly affected by their starting point, directing the practices which were applied. The fourth theoretical proposition was disproved as the empirical results found the order of the domain and knowledge of causalities to be variable between the cases.

Previously, the relations between the internal startup and their parent organization has been of importance for the development of internal startups. A frequent term used to explain the relations between the two entities has been autonomy. However, there are no consensus on the topic or impact of the factor. The study found internal startups to have a high degree of autonomy, except resource autonomy which was low and structural autonomy which differed between the cases based on strategical relatedness. The overall findings and previous research, displays that it is beneficial to have some connections between the internal startup and the parent organization, as corporate support is essential for the survivability of the startups. Thus, providing the support and autonomy needed for less strategical related startups.

The empirical results linked with the previous observations, gives an argument to consider the differences in autonomy caused by strategical relatedness. The divergent results and lack of consensus haunting the existing literature, could be claimed to be a consequence of the scarcity from preceding research to properly define and separate the various incidents of internal startups.

Also, time pressure was found by the discussion to influence the development processes. The two cases within Tieto was protected by being within a NVD, supporting the value of separation. Time pressure was also found to impact technical debt, caused by lean startup patterns. However, lean startup patterns were implemented in various degree among the cases, as the cases were of various exploratory degree. Thus, the results gave insight in understanding when lean startup patterns are useful to implement, leading to the practical implications.

Based on the previous section, a set of practical implications were constructed, related to the primary empirical conclusions. The practical implications were made for practitioners setting up internal startups, giving some guidance to execution of the entrepreneurial initiatives. The implications found argued that the more exploratory internal startups should apply lean startup patterns more heavily than those less exploratory, which would benefit more by utilizing expert competence. The idea origin influenced the development processes, as less previous knowledge requires more experimentation. Also, the corporate support and facilitation should be customized to the specific cases, where the more exploratory startups should be given the freedom and time to explore the new opportunities.

From the PEC's and the previous literature, there were numerous theoretical contributions. As the research model was new to the world, there were several novelties as well as the theoretical foundation to the research field of internal startups. Using Cynefin as a tool for analyzing, also provides a practical tool to understand which development practices which fits to the situation of the internal startups. Another theoretical contribution was the contradiction to previous literature in the way of seeing autonomy and strategical relatedness as multidimensional factors. Overall, the results form a basis of deeper understanding the causalities and development of internal startups. Providing both practical implications on how to successfully implement and run internal startups, their development and furthermore theoretical contributions to future research.

7 CONCLUSION

This section concludes the thesis by summarizing the research. It consists of four parts, where the first part answers the research question which have guided the research. The second part, discusses the limitations of the research conducted and the results found. Thereafter, directions to future research building on the discoveries are presented. Lastly, a synopsis of the research procedure and outcomes finalizes the conclusion.

7.1 ANSWERING RESEARCH QUESTIONS

This thesis started out with listing a set of research questions related to main question of the research, figuring out how internal startups can successfully develop. By interpreting the results (section 5), previous literature (section 2) and discussion (section 6), the answer to the research questions are summarized in this section.

The first research question this study set out to answer was:

RQ1: How does the connection between the parent organization and the internal startup influence the development process of internal startups?

It was found that the connection between the two entities, influences the development process of internal startups in multiple directions (section 6.1.2). Not only by the resources and persistence by the corporate towards the venture, but also the domain and sequence of events which the internal startup goes through. The more strategically unrelated the startup and the newer their product innovation was, the more exploratory development process were needed. As the team were in the complex domain due to high level of uncertainty, the lean startup pattern (section 6.1.4) was found of value, to discover and validate the assumptions taken.

The internal startups which was more explorative, had weaker ties and connections to their parent organizations. Yet, there were an overall high degree of autonomy (section 6.1.2). Lower degree of autonomy was found in the resource autonomy, as internal startups are financially dependent on their parent. There were also divergent results in the structural autonomy due variations in strategic relatedness. The structural autonomy was then low for the cases entering the same or extending the current market of their parent organization, as they used interface to the external environment as their parent organization.

The overall results (section 5), success factors found in previous literature (section 2.2.3), implies that the connection between the two entities, influences the development processes. When internal startups are entering an area which the parent firm previously have competence, there are less incentive to explore. If there are clear goals and set milestones there are reasoning to rather use elements from life cycle than teleology processes. Due to the broad definition of internal startups there are multiple development processes which fits, all depending on the type of case.

RQ2: How well are the tools used in the internal startups in alignment with the Cynefin framework domains?

The tools in the cases were mostly aligned with the Cynefin domain as the internal startup was situated in (section 5, 6.1). The internal startups were found to be dependent on the exploratory nature, as well as the idea origin (section 6.1.1). As the internal startups targeting new areas in both technology and market, benefits from utilizing the lean startup patterns. By implementing BML-loop, similar to the iterative teleology process, they can adjust the goal or pivot as they develop the product, ensuring the value of the innovation.

Yet, lean startup patterns should not always be applied when they don't fit the context. For some cases, expert competence is more necessary than experimentation, to assure the quality of the product. Internal startups in more ordered domains requires other processes than the unordered domains (section 2.3). As large organization are influenced by the ordered domains, having operational routines, there were often the notion of mixing methods and tools (section 6.1.2, 6.1.3).

The mixing of tools, were then most evident for the internal startups being further away from the traditional business of their parent, as life cycle process elements are mixed with the processes belonging to the complex domain. There was no evidence from the empirical research that it was damaging for the internal startup. However, this should be further empirically tested.

RQ3: How do the development process of the internal startups change over time?

The development of the internal startups was found to highly depend on the origin of the idea and variable to the specific case (section 6.1.1). There is a need for more quantitative measurements to state the real impact of the origin of the idea. The empirical results in this case, directed towards team-first startups starting in complex domains dynamically moving towards more ordered domains. While the opposite case was reflected in the idea-first startups, were the movement was from the ordered domains. However, this needs to be explored and research with both qualitative and quantitative methods.

As the theoretical propositions (section 3.2) predicted more order along the course of event and progress of the internal startup, was disproved. Still, it was present for the more exploratory startups, but including the cases closer to the core business of their parent organizations and idea-first there was a tendency to go towards more un-ordered domain. For future research, it would be interesting to analyze more cases of internal startups by separating them into idea- and team-first startups with dimensions of strategical relatedness, to explore the generalizability of the development of the internal startups finding patterns for best-practices.

7.2 LIMITATIONS

As previously mentioned there are limitations to the research and the results stated. As the research was conducted in a qualitative and exploratory approach within an interpretive paradigm, the results and implications is based on the researcher interpretation. Thus, one clear limitation is the generalizability of the outcomes. To decrease these limitations the procedure has been thoroughly described to increase the repeatability and reader's perceptions of the results.

The time frame, led to limited observations with the case companies. However, measures were taken to provide the research with sufficient data. All cases had to have at least three in-depth interviews as well as triangulation of data collection through documentation and observation (section 4.3.2). The interview subjects from the case companies varied in some degrees, due to the divergent cases. Two of the cases were from the same parent organization, which might have influenced the comparison of the cases. This also decreases the generalization of the results, even though there was conducted additional interviews to mitigate this.

Additional limitation was the construction of the research model. As the theoretical framework was built on divergent theoretical models, accumulated into one model, there could be raised suspicion to the choice of the use of models. Yet, the focus was on the theoretical propositions drawn from the model which was tested in real-life cases, not to test the contradiction of the method or the aggregation of the various models. While the research model and its viability cannot be proved, certain aspects can be tested as proven in behavioral science (Kaplan, 1973). Which then gives the support towards applying such a framework.

Yet, there are also limitations to using the Cynefin framework as a single researcher. Being only one researcher analyzing the results can undermine the utilization of Cynefin as a sense-making tool (Kurtz et al., 2003). Therefore, the results and analysis were inspected by the supervisors and systematically analyzed to mitigate these limitations. A thematic analysis, was conducted thoroughly and detailed described, to provide reliability to the results found (section 4.3.2). Measures have been enforced to mitigate the limitations. Still, there are elements which can be improved to future research, which will be presented in the next section.

7.3 FUTURE DIRECTIONS

There is a clear need for more research of internal startups in the software engineering field. Although, this study has provided a bridge filling the gap between the ICV and software startups literature, there is much which should be proven before having a clear understanding of how to successfully develop internal startups. In the path of discovering the best patterns and establish more knowledge in the field, it is necessary to reconsider the broad definition. As internal startups, by the definition of internal corporate ventures, are multiple ways of setting depending on their connections to their parent organization (Morris et al., 2010). The differences in internal startups leads to varying results and development processes and should therefore be separated to provide certain knowledge and insights in the phenomena.

As the definition includes all types of new businesses, it could be limited to only consider those with a certain amount of newness for the parent organization. Figure 27, highlights the type which most radical, from the parent organization point of view. This is a potential way of using a new definition only focusing on the exploratory internal startups, or in the opposite way.

MARKET FOCUS OF THE VENTURE	Market creation (New to "World")	new business	new business	new business	new business
	New Market for the Corp.	major market development	new business	new business	new business
	Extension of Current Market	minor market development	minor product-market development	new business	new business
	Current Market of the Corp.	market penetration	minor product development	major product development	new business
		Current Product of the Corp.	Extension of Current Product	New product for the Corp. in Current Industry	New product for the Corp. in New Industry (i.e., Diversification)
		PRODUCT FOCUS OF THE VENTURE			

Figure 27 New definition of Internal startups

A potential challenge could be towards the internal startups going outside the core business of their parent corporation. Considering the weak connections (section 6.1.2), would they be better of being external startups? As Shrader et al. (1997) discusses the difference between internal and external startups, there are both advantages and disadvantages to both. However, if the internal startup is only reliant on the financial support from their parent, having a low degree of the remaining types of autonomy (section 6.1.2), there might be reasoning to separate the innovation activities fully. This is a potential research area for future research, as startups are an increasing part of larger organizations development.

The motivation behind focusing on the most exploratory internal startups, is the direct linkage to the lean startup method. As the method is increasing in

popularity there are surprisingly lack of empirical results validating and prove the value of the methodology (H. Edison et al., 2015). Future research, should provide an improved categorization and definition of lean startup patterns. An example is the categorization of MVP. Even though the usage of the MVP is categorized by Duc et al. (2016), the various types and their impact should be identified. It is also necessary to further address the linkage between applying lean startup patterns and technical debt. How technical debt could be avoided or if it is avoidable at all. Perhaps, by applying the right tools from the Cynefin domain the maintainability and evolvability of the software products can be improved.

As lean startup is displayed as a method implemented only in internal startups context for large companies, it is important to mention that part of patterns could be implemented in smaller scale. For example, when developing new features for a service, iterating through the BML-loop ensuring customer value could and should be applied. A future research area is how large companies implement lean startup in other ways. Additionally, a topic not addressed in this research is the significance of innovation accounting, measuring the impact and creating true validated learning. This is an area in the lean startup method which should be investigated.

Previous literature in the area is fragmented and cross-sectional (Narayanan et al., 2009). Therefore, it is essential that the future research takes into consideration the previous literature in the field. A large part of this research has been to discover, placing the existing research and results into the current situation of internal startups. The research model was built based on theoretical models, frameworks and existing results. For future research the model could be developed and tested to provide practitioners with a tool to understand the various contexts and factors playing a part in the success of internal startups.

7.4 SYNOPSIS

The outcomes and contribution of this research creates a foundation to grasp new knowledge of internal startups and their development processes. Internal startups are exploratory initiatives seeking to create new businesses and products from the parent organizations. The previous literature in the area is scarce, and mainly builds on ICV and software startups literature. The development processes utilizing methodologies as lean startup are further less explored (Covin et al., 2015; H. Edison, 2015). Thus, creating a knowledge gap, of how to successfully develop internal startups.

The research started with an extensive literature review, building on methods promoted in systematic literature reviews (Kitchenham et al., 2007; Petersen et al., 2008). To understand internal startups, innovation in the corporate context was described. Thus, leading to ICV which built the foundation for internal startups. Due to the lack of a definition, a new description of internal startups was provided based on previous definitions of ICVs and software startups. Internal startups were defined as:

entrepreneurial initiatives, which is formed as an organization within a corporate structure. Searching for a repeatable and scalable business model intended as a new business for the corporation.

Previous findings regarding factors of internal startups, their development processes and success factors was presented. Forming with the theoretical propositions composed with the research model built on a multidimensional view of venture performance (Tukiainen, 2004), the Cynefin framework (Kurtz et al., 2003; D. Snowden, 2002; D. J. Snowden et al., 2007), process theories for change and development (Van de Ven et al., 1995) and lean startup patterns (Blank, 2013; Maurya, 2012; Ries, 2011).

To create in-depth insight in the complex phenomena, a qualitative approach in form of multiple-case study was chosen as the favorable research method. Three cases of internal startups in the software engineering field were studied. Vipps, an internal startup in DNB being extremely successful in the customer acquisition taking the leading market position as a mobile payment application in Norway. As well as Intelligent Building and Delta from Tieto Finland, both startups being in earlier phases having promising futures.

The data was collected through unstructured interviews, observation and documentation, adding triangulation to reinforce the validity of the study. The primary source was the interviews, which were further recorded and transcribed. The data collected, was analyzed using thematic synthesis (Cruzes et al., 2011), in addition to narrative, alternative template and visual mapping strategy for analyzing process data (Langley, 1999).

From the results and the previous knowledge in the field, there was found quite high variation between the internal startups. The impact of the strategic relatedness, origin of idea and connection to the current business of the parent organization was found of importance of the development processes. As internal startups with a higher degree of strategical relatedness were having stronger connections and lower structural autonomy, than those more unrelated. Lean

startup patterns were found to be aligned with more explorative internal startups, especially in the complex domain.

Considering the meager use of Cynefin framework as a research tool, this research displays use of it to make sense out of internal startups. In addition to linking the previous literature in various fields building a foundation for future research. As there are limitations to the chosen methods, the decisions and methods have been thoroughly described to ensure transparency. Yet, as a qualitative research, with limitations of evidence, there is a clear need for further exploring the topic with both qualitative and quantitative empirical research. By applying the recommendation promoted by this research, there are possibilities to further discover how large companies can successfully innovate by applying internal startups and lean startup methodology.

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9 APPENDIX

9.1 INTERVIEW GUIDELINE

The interviews were unstructured and exploratory; therefore, the guideline consist of key topics which was explored during the interviews. Questions and follow-up enquiries were added based on the answers given by the interview subjects. The main topics were:

- Role of the interview subject
 - Previous experience in the internal startup and parent organization
 - Daily tasks and responsibility within the internal startup
- Storyline of the internal startup
 - Origin of idea
 - Progress until their current situation
- Work methods within the internal startups
 - Organization of the team, competence and recruitment of team members
 - Procedures and processes within the team, change over time
 - Specific implementation of lean startup patterns
- Connection to parent organization
 - Leveraging of resources
 - Autonomy and control
 - Change of the connection by time and space
- Advantages and challenges by being an internal startup