MASTER'S THESIS

The role of capability-based planning in the shaping of an innovation architecture domain. An exploratory study

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The role of capability-based planning in the shaping of an innovation architecture domain

An exploratory study

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Abstract

Continuous innovation is a strategic necessity. Companies need a set of capabilities to be innovative, track which ones have been implemented or remove the ones that are no longer part of the organization. If this ability to manage change is missing, the success of the innovation may be compromised and organizations may be limited to bring new digital services and product offerings to market.

Capability Based Planning (CBP) can help with the planning of these organizational transformations in terms of capability changes over time, by creating, improving, eliminating or outsourcing capabilities.

With a literature review and empirical research, insights were gained regarding the application of CBP in the shaping of an innovation architecture domain. It was found that effective management, governance, and planning of innovation capabilities are critical for developing and delivering high quality, competitive products and services.

With these insights, organizations can better develop innovation capabilities, respond smarter to market changes, and make investments that bring the most value to the business.

In addition, it is recommended to establish clear requirements for innovation capabilities, define performance measurement indicators, and record and communicate all elements of the innovation capabilities as well as the roadmap within the organization.

Key terms

Capability Based Planning, Innovation Capabilities, Innovation Strategy, Capability roadmap, Capability life cycle

Summary

Within every business, digitization has brought significant changes. New technologies have led to an increased focus on digital transformation. Organizations are being forced to innovate as a mechanism that enables them to develop new products, processes, or (organizational) systems to keep meeting customer expectations. To be innovative, companies need a set of innovation capabilities and a well-governed change roadmap to manage their life cycle.

The goal of this research is to better understand if capability-based planning (CBP) can shape the creation of an innovation domain architecture, and improve the efficient management and governance of innovation as a strategic business capability.

It answers the research question "*Can capability-based planning shape an innovation domain architecture in support of an organization's innovation strategy?*".

This research is based on a literature review and an empirical investigation. The insights obtained from the literature review revealed a theoretically assumed intersection and the suspicion of a relationship between two knowledge domains, namely innovation strategy and CBP, on the concept of “capabilities”. This led to an empirical study based on two existing models from literature. We expect this research will generate further insights on the role of CBP in the creation of an innovation domain architecture by applying these two models.

Based on the theoretical research, the following theses are expected to be confirmed by the empirical research:

1. A fit between innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.
2. The role of management and governance is of importance for creating an innovation capability.
3. CBP contributes to product and process innovation which in turn contributes to increased competitiveness.
4. Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation.

During the empirical research, a single case study was conducted. A stakeholder analysis was performed to identify key stakeholders. Five interviews were conducted, with respondents that had sufficient knowledge about innovation and capabilities within the case organization. Prior to these interviews, a survey was conducted in order to form an initial view that was further zoomed into during the semi-structured interviews.

Several insights resulted from the research. The case organization is unable to map and leverage existing innovation capabilities from other business divisions, and as a result builds local innovation capabilities to address local market and business needs, placing innovation under the board of directors’ supervision to ensure governance and executive management support. However, this model is not scalable for the business as it lacks capability lifecycle management.

The case organization considers innovation as a competitive differentiator, but the impact of CBP and its effect on increased competitiveness is questioned by all respondents due to different measurement definitions. There is consensus that industry frameworks may help structure how to manage innovation capabilities, but these frameworks need to be adaptable to the case

organization's needs, and require an unambiguous definition of capability requirements and performance indicators.

Innovation requires organizations to have the right capabilities in place. This study partially confirmed the four theses and supports the hypothesis that proper management, governance and planning of innovation capabilities are essential for producing and providing high-quality, competitive products and services. It confirmed that CBP can help organizations manage change, develop innovation capabilities, respond to market changes, and make informed investment decisions. This however requires organizations to accurately define capability requirements, measure performance, and communicate elements of the capability roadmap.

In a follow-up study, it is desirable to collect more empirical research findings. Additional research can be done to analyze the required performance indicators and effectiveness of CBP on the individual dimensions of an innovation capability, being people, processes and tools. In addition, it is recommended that the study be tested in an organization with a higher level of innovation capability maturity.

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Glossary

Nbr.	Term	Description
1	ATLAS.ti	Is a computer program that helps in the analysis of qualitative research data, among other things. Coding is one of the core functionalities of ATLAS.ti and aids in the organization of data and data analysis.
2	Capability Based Planning (CBP)	CBP focuses on the planning, engineering, and delivery of strategic business capabilities to the enterprise and can be used to set investment priorities that would deliver the most value to an organization, according to the organizational strategy.
3	Capability life cycle	Is the planning of organizational transformations in terms of capability changes over time, and used to set investment priorities that would deliver the most value to an organization, according to the organizational strategy.
4	Digital transformation	Digital transformation can be seen as intelligent business processes and using new and efficient technology concepts such as Omnichannel strategies, Big Data, Cloud and Mobile Computing, Internet of Things or Social Software.
5	Enterprise Architecture (EA)	Business processes, applications and an organization's technical architecture make up EA. The focus of EA is on the dependencies between how the business relates to IT.
6	EA frameworks	An EA framework can be seen as a logical structure for classifying, organizing, managing and communicating the EA.
7	Innovation Capabilities	Capabilities to innovate, with following dimensions: • People (training, professional development) • Processes (concepts, business processes, and information management) • Material (infrastructure, IT, resources)
8	Innovation Strategy	Is the long-term goals, ways, and scope to which innovations will be used to build a strategic advantage and can be categorized into products, processes, and strategy.
9	Microsoft Teams	is a proprietary business communication platform developed by Microsoft, as part of the Microsoft 365 family of products.
10	RDAP	Using the RDAP scale, primary stakeholders can be characterized. Using an RDAP scale, stakeholders can be divided into the four approaches "Reactive," "Defensive," "Accommodative" and "Proactive.
11	Stakeholder analysis	Is the process of identifying, assessing, and prioritizing the stakeholders who will be affected by your business or project. A stakeholder can be defined as an individual, or group with an interest or some aspect of rights or ownership in the project.

Table 1 - Glossary

1. Introduction

1.1. Background

Digital transformation is high on the agenda of every business. Coordinating all activities related to this transformation on strategic, tactical and operational levels requires governance, and needs to be properly managed for a consistent arrangement of business processes, organizational structure and culture. Many believe that Enterprise Architecture (EA) can guide organizations through these difficult and complex times (Gong & Janssen, 2019; Lapalme et al., 2016). However, there are still many challenges when implementing EA that are important to realize the intended benefits (Tamm, Seddon, Shanks, & Reynolds, 2011; Weiss, Aier, & Winter, 2013).

An important challenge is to constantly innovate, as a mechanism that enables an organization to develop new products, processes or (organizational) systems (Lawson & Samson, 2001), and for which the complexity and risks of innovation needs to be managed within organizations (Thomond & Lettice, 2002).

Research by Dijkman (2014) regarding the alignment between EA and product innovation states that innovation should be captured in an innovation domain architecture. First of all, the study revealed that within most companies, there is an innovation process with phases as Ernst (2010) names it, but EA has only a limited role in the organization of this process. Secondly, it shows that companies need a set of capabilities to be innovative (Lange & Mendling, 2011).

Dijkman (2014) suggests researching the application of Capability Based Planning (CBP) to shape this domain architecture for innovation since popular frameworks don't clarify how to arrive at the right capabilities (Greefhorst, 2009; Greefhorst & Proper, 2011), but do make clear this takes place using so-called "capability increments": people, processes and material (The Open Group, 2018).

Conclusion

This research focuses on a better understanding if CBP can shape an innovation domain architecture in support of an organization's innovation strategy.

1.2. Exploration of EA and its link with innovation

EA itself will not be in the scope of this research. However, the following provides the reader with context on the concepts of innovation, capabilities, and their relationship with the field of EA.

EA is defined as “a coherent whole of principles and methods that are used in the design and realization of the enterprise’s organizational structure, business processes, information systems, and infrastructure” (Lankhorst, 2009), with goals (Table 2) that include the support of innovation through capabilities, as described by Lange and Mendling (2011).

Nr.	Summary
Goal class 1 “Create baseline”	Understanding the organization’s landscapes and their interrelations in order to improve cost efficiency. With this transparency companies aim to reduce costs by decommissioning not-required or redundant assets. Transparency allows aligning business and IT especially in the context of ongoing projects.
Goal class 2 “Manage complexity”	By engineering a target EA and defining EA principles, complexity shall be removed from the as-is architecture step-by-step and also be avoided in the future by considering prospective requirements.
Goal class 3 “Drive transformation”	Improve and actively manage the delivery of the target EA from a holistic perspective in terms of effectiveness and efficiency.
Goal class 4 “Support innovation”	Support innovation from an EA perspective. Hereby, the EA needs to provide, on the one hand, a stable set of capabilities that allows to operate and to implement the EA in an efficient way; but on the other hand, needs to highlight and support situations where architectural changes can improve and innovate the business.

Table 2 - Overview Enterprise architecture goals

Conclusion

EA goals cover the support of innovation, Goal class 4 in Table 2, and includes the need for capabilities to innovate. This research will focus on whether CBP can shape an innovation domain architecture through "capability increments". Future research related to “how” this architecture would be designed, could benefit from the above research of Lange and Mendling (2011).

1.3. Exploration of CBP

Most organizations today need to undergo transformations to stay competitive. Knowledge is power. Knowing what your organization can do (capabilities) and what resources are available can help make better decisions. EA can help this transformation as it is focused on planning and implementing organizational change, however, it is designed primarily as a communication mechanism between Enterprise Architects. This makes it difficult to elaborate on required changes, which are reflected in the EA, in terms that business leaders recognize. These long-term plans need to be specified and made actionable in a way that both business leaders and Enterprise Architects can act upon them (Aldea, 2016).

Planning organizational transformations based on “capabilities” can help to reduce this gap (Aldea, 2016) since capabilities provide a high-level view of the current and desired abilities of an organization as a whole, concerning the organization’s strategy and its environment (Ulrich & Rosen, 2011).

Aldea (2016) states that CBP's main goal is to help with the planning of organizational transformations in terms of capability changes over time and used to set investment priorities that would deliver the most value to an organization, according to the organizational strategy.

Conclusion

The study of Aldea (2016) positions CBP as the link between strategy and EA by specifically managing the planning of organizational transformations using capabilities in terms of capability changes over time (creation, improvement, or elimination/outsourcing of capabilities).

1.4. Problem statement

Innovation continues to be a strategic issue for many organizations (Ashurst, Freer, Ekdahl, & Gibbons, 2012). Continuous innovation is a necessity (Hanelt, Busse, & Kolbe, 2017).

The challenge for organizations is how to manage innovation as a business capability (Assink, 2006; Lawson & Samson, 2001; Tidd, 2001).

It is difficult to achieve optimal alignment between innovation and the business strategy, and to check whether projects and programs are developing in the direction desired by the organization (Greefhorst & Proper, 2011) if innovation is not supported by capabilities and a well-governed change roadmap to manage the capabilities life cycle (Aldea, 2016).

If this ability to manage change is missing, the success of the innovation may be compromised. For example, organizations may not be able to provide the service that goes with the new product. (Lawson & Samson, 2001).

Conclusion

Companies need a set of tracked capabilities to be innovative, by adding the ones that have been successfully implemented or removing those that are no longer part of the organization (Aldea, 2016).

However, according to Dijkman (2014), popular EA frameworks do not clarify how to arrive at the right capabilities (Greefhorst, 2009; Greefhorst & Proper, 2011) but do make it clear that this takes place from thinking in so-called "capability increments" (Aldea, 2016).

Failing to develop and manage innovation as a capability can cause initiatives related to innovation to become disconnected from the company’s strategy to remain competitive and limit the ability to bring new products to market.

1.5. Research objective and questions

This research aspires to provide insight if CBP can address the risks described in chapter 1.4. The following main research question has been formulated:

''Can capability-based planning shape an innovation domain architecture in support of an organization's innovation strategy?'

The objective to answer the main research question is achieved using the three following central questions:

1. Which criteria and concepts are relevant for determining the effect of CBP on the shaping of an innovation domain architecture?
2. What hypotheses related to the effect of CBP on shaping an innovation domain architecture can be formulated, and found relevant within the case organization?
3. What insights are developed by the comparison of the analysis results from the case organization study and the formulated hypotheses?

The case study approach is used as it offers the possibility of applying the knowledge gained from an in-depth literature research, in an empirical exploratory study where the main research question is central.

Theoretical research questions

1. What are the different visions of innovation strategy?
2. What capabilities are needed for innovation?
3. What characteristics are known regarding CBP?
4. What is the relation between CBP and innovation strategy?
5. What methods are known that identify relevant stakeholders?

Empirical research questions

6. Given the stated criteria based on the literature review, what insights can be gained about the use of CBP to shape an innovation domain architecture, in support of an organization's innovation strategy?
7. Which stakeholders are relevant as respondents within the case organization to answer the research question?
8. What are the conclusions and how can this be linked to the literature?

Questions 1 to 5 are answered in the literature research. Questions 5 to 8 will be answered during the empirical research.

1.6. Motivation/relevance

Innovations are difficult to manage and often fall short. Partly this has to do with the complexity, risks and unpredictability inherent in innovation. (De Marez, 2006).

Companies need capabilities to innovate, but popular frameworks do not make clear how to arrive at the right capabilities (Greefhorst, 2009; Greefhorst & Proper, 2011), and keep a company's innovation capability map up to date (Aldea, 2016).

This re-enforces the need that the complexity and risks of innovation need to be managed as a strategic business capability within organizations (Thomond & Lettice, 2002), so that innovative ideas from all parts of the organization are gathered to be turned into innovation and competitive advantage for the organization, and use of company capabilities is optimal (Assink, 2006; Lawson & Samson, 2001; Tidd, 2001).

Even though CBP is already being used, there is little research into how to design, assess, implement, and monitor capabilities, and how to use this in a real case (Mikloš, 2012).

Conclusion

This research makes an empirical contribution to the scientific literature by providing new insights in the unexplored domain of CBP's ability to shape an innovation domain architecture in support of an organization's innovation strategy.

1.7. Main lines of approach

To describe the approach of this research paper the research onion by Saunders (2009) is used. By conducting a literature review and interviews, a multi-method qualitative research approach is achieved. The research strategy used is the case study approach, as we research one case holistically (Yin, 2011).

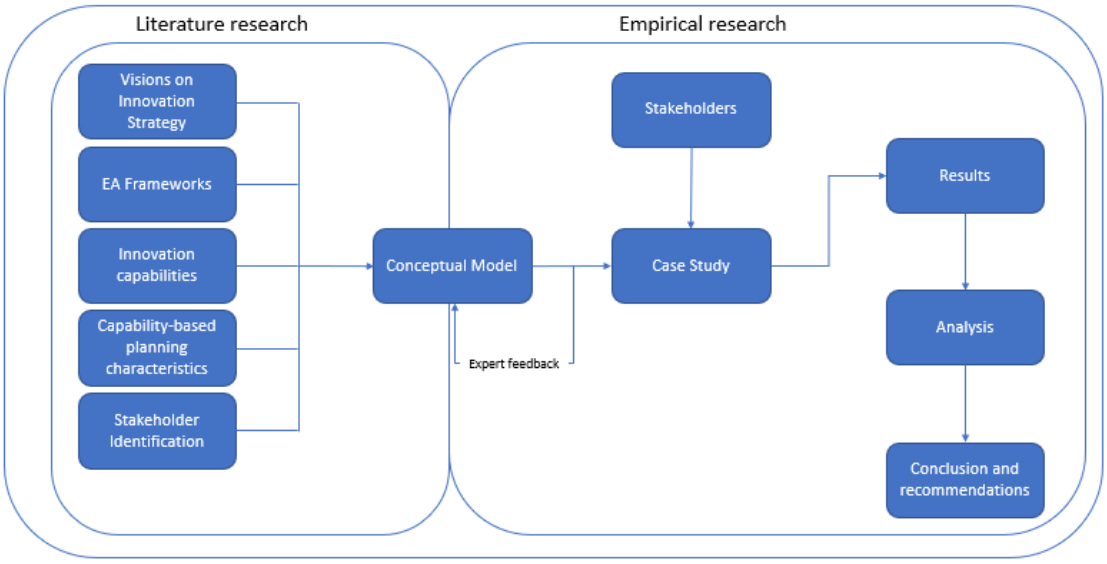


Figure 1 - Research model

This literature review consists of:

- **Literature research:**
  A literature study will be carried out to answer the theoretical research questions. The conceptual research model will be shared with an expert in the case organization to review its relevance, scope and accuracy, and adjusted if needed. This is important to avoid misunderstandings about the taxonomy used in the scope of the research.
- **Empirical research:**
  A empirical research will be conducted to search for answers to the empirical research questions covering stakeholder analysis, construct validity, data collection, data analysis, and finally the conclusions and recommendations.

The literature review will be described in chapter 2. From the literature review, the conceptual model will be formed. Chapter 0 will outline the methods that will be used to answer the sub-questions that have been formulated. After these questions are answered, the results will be shown and discussed in chapter 4. Finally, chapter 5 provides the conclusion and recommendations and identifies the shortcomings within the study.

2. Theoretical framework

2.1. Research approach

The research approach used is based on Saunders (2009) literature review process and visualized in Figure 2. Articles were selected that increase knowledge related to the problem statement, relate to the research question and objectives, and possibly answer the research question(s). The content used is up-to-date and the overview contains clear references so that based on the research report, the original publication referenced can be found.

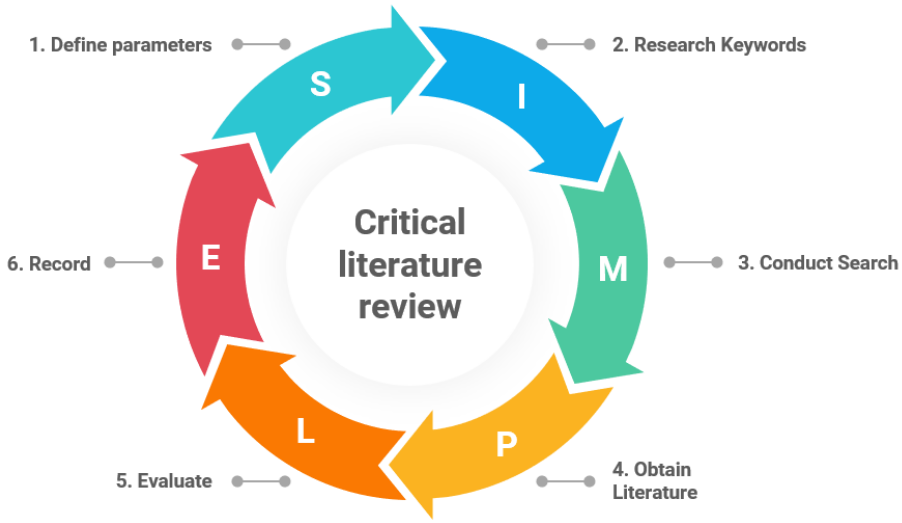


Figure 2 - Schematic overview of literature review

2.1.1. Search terms

To find relevant articles, terms related to the research questions were combined with the research model (Figure 1) and translated into search terms (Table 3).

Sub Question	Search term in English	Combined with
1.	Definition	Innovation strategy
2.	Capabilities	Innovation
3.	Characteristics	Capability-based planning
5.	Identification	Stakeholder

Table 3 – Search terms

2.1.2. Search

The search strategy is based on a combination of filtering techniques, the backward snowball method, and the literature review process of Saunders (2009). It consists of process steps as described in Table 4.

1. **Search engine used Google Scholar and Open University library** - Google Scholar is freely accessible to everyone. This is important for reproduction purposes. Regarding transparency, Beel & Gipp (2009) provide an insight into the Google Scholar ranking mechanism. Next to Google Scholar, the Open Universities library was used to get access to articles not freely available via Google Scholar.
2. **Article language: English-** most research relating to the subject is expected to be written in English. And English is best for the researcher for the understanding of the text.
3. **Article search term-** this filter makes an initial selection of articles by content based on the presence of the search terms in the article text.
4. **Year of publication> 2010-** to use current insights about the subject, a filter has been applied to only select articles published after 2010.
5. **Search term in the title-** to make the search result more concrete, a filter is applied that selects the publications based on the presence of the search term in the title of the publication.
6. **Number of citations-** the number of citations that a publication has indicated the quality of the publication ("Citation impact," 2017).
7. **Publications available-** the basic principle is that all publications that are consulted for the research are freely accessible. Publications that are not freely available online, or that cannot be retrieved free of charge, are filtered (manually).
8. **Assess-** the filtered results are assessed in terms of content. It could be that although filtered and search terms used, a publication may not seem relevant given the research question. Where the publications refer to other relevant research, these publications are added to the selected publications after they have been assessed in terms of content (snowball method).
9. **Critical literature overview-** the combination of search terms, filtering, and assessment must ensure a relevant and current selection of publications that is suitable in size for further study. The final selection forms the critical literature review based on which conclusions and recommendations can be made

Table 4 – Search steps description

2.1.3. Assess search results

The selected publications are the basis for answering the central research question and the theoretical research questions. The assessment of relevance in answering the questions is described in chapters 2.2 and2.3. Chapter 2.2 involves an assessment whether the publication is relevant for further study. In chapter 2.3, these publications were studied to answer the theoretical research questions.

2.2. Implementation

The search terms from Table 3 were the input for the search strategy and resulted in a selection of relevant publications.

2.2.1. Search results

Table 5 shows an overview of the results for all search actions and the filtering applied. The URL for each step is included in Appendix 7.14 so the publications used can be utilized for reconstruction purposes.

Search action	Sub question	Search terms	Presence search terms in publication	Where in article	Publication Date	Nr of citates	Date of search	Nr of found articles + search URL
1.1	1.	"Innovation strategy" Definition	all words	anywhere	n.a.	n.a.	April 03th 2022	75.100
1.2	1.	"Innovation strategy" Definition	all words	anywhere	after 2017	n.a.	April 03th 2022	17.700
1.3	1.	"Innovation strategy"	Sub-set	in title	after 2017	n.a.	April 03th 2022	1.160
1.4	1.	"Innovation strategy"	Sub-set	in title	after 2017	>=5	April 03th 2022	162
1.5	**1.**	**"Innovation strategy"**	**Sub-set**	**in title**	**after 2017**	**>=20**	**April 03th 2022**	**68**
2.1	2.	"Capabilities Innovation"	Sub-set	anywhere	n.a.	n.a.	April 10th 2022	3.120.000
2.2	2.	"Capabilities Innovation"	Sub-set	anywhere	after 2010	n.a.	April 10th 2022	1.340.000
2.3	2.	"Capabilities Innovation"	Sub-set	in title	after 2010	n.a.	April 10th 2022	2.700
2.4	**2.**	**"Capabilities Innovation"**	**Sub-set**	**in title**	**after 2010**	**>=20**	**April 10th 2022**	**59**
2.5	2.	"Capabilities Innovation"	Sub-set	in title	after 2010	>=50	April 03th 2022	28
3.1	3.	"Capability-based planning" Characteristics	all words	anywhere	n.a.	n.a.	April 10th 2022	805
3.2	3.	"Capability-based planning" Characteristics	all words	anywhere	after 2010	n.a.	April 10th 2022	544
3.3	3.	"Capability-based planning"	Sub-set	in title	after 2010	n.a.	April 10th 2022	55
3.4	**3.**	**"Capability-based planning"**	**Sub-set**	**in title**	**after 2010**	**>=3**	**April 10th 2022**	**22**
3.5	3.	"Capability-based planning"	Sub-set	in title	after 2010	>=10	April 03th 2022	6
4.1	4.	"Stakeholder Identification"	all words	anywhere	n.a.	n.a.	April 10th 2022	25.200
4.2	4.	"Stakeholder Identification"	all words	anywhere	after 2010	n.a.	April 10th 2022	16.700
4.3	4.	"Stakeholder Identification"	all words	in title	after 2010	n.a.	April 10th 2022	142
4.4	**4.**	**"Stakeholder Identification"**	**all words**	**in title**	**after 2010**	**>=5**	**April 10th 2022**	**33**
5.5	4.	"Stakeholder Identification"	all words	in title	after 2010	>=30	April 03th 2022	14

Table 5 - Search results

2.2.2. Assessment of usability of articles found

The search strategy from section 2.1.2 resulted in a selection of 182 articles, shown in the framed searches in Table 5.

Table 6 to Table 9 contain a short-list of articles selected for further assessment based on a higher citation criterion, and that were publicly available. If selected (Y), articles are relevant for the research, if not selected (N) the article was less relevant.

Search action 1.5 - Innovation strategy
Results were narrowed to citations > 50.

Nr.	Title and URL	Cited by	Selected
1	The role of absorptive capacity and innovation strategy in the design of industry 4.0 business Models-A comparison between SMEs and large enterprises	134	Y
2	Innovation strategy of private firms	113	N
3	Fit between organizational culture and innovation strategy: Implications for innovation performance	54	Y
4	STRATEGY FORMULATION PROCESS AND INNOVATION PERFORMANCE NEXUS.	50	Y

Table 6 - Search results Innovation strategy

Search action 2.4 - Capabilities Innovation
Results were narrowed to citations > 60.

Nr.	*Title and URL*	*Cited by*	*Selected*
1	*From innovation to commercialization through networks and agglomerations: analysis of sources of innovation, innovation capabilities and performance of ...*	*227*	*Y*
2	*Dynamic capabilities, innovation and organizational learning: Interrelations and impact on firm performance*	*161*	*N*
3	*Management capabilities, innovation, and gender diversity in the top management team: An empirical analysis in technology-based SMEs*	*140*	*N*
4	*Dynamic capabilities and organizational performance: The mediating role of innovation*	*116*	*Y*
5	*The effect of technological innovation capabilities and absorptive capacity on firm innovativeness: a conceptual framework*	*72*	*Y*
6	*The impact of managerial and adaptive capabilities to stimulate organizational innovation in SMEs: a complementary PLS–SEM approach*	*66*	*Y*

Table 7 - Search results Capabilities Innovation

Search action 3.4 - CBP Characteristics
Results were narrowed to citations > 9.

Nr.	Title and URL	Cited by	Selected
1	Capability-based planning with ArchiMate-Linking motivation to implementation	26	Y
2	Capability-based planning for Australia's national security	22	N
3	Capability-based planning: The link between strategy and enterprise architecture	18	Y
4	An Overview of the Canadian Forces' Second Generation Capability-Based Planning Analytical Process	10	N
5	Implementing capability based planning within the public safety and security sector: Lessons from the defence experience	10	N
6	Capability-based planning with TOGAF® and ArchiMate®	9	Y

Table 8 - Search results CBP Characteristics

Search action 4.4 - Stakeholder Identification
Results were narrowed to citations > 30.

Nr.	Title and URL	Cited by	Selected
1	A framework for stakeholder identification and classification in construction projects	104	Y
2	A framework for stakeholder identification in concept mapping and health research: a novel process and its application to older adult mobility and the built ...	100	Y
3	An applied methodology for stakeholder identification in transdisciplinary research	64	N
4	Stakeholder identification and engagement in problem structuring interventions	55	N
5	Contextual-and behavioral-centric stakeholder identification	30	Y

Table 9 - Search results Stakeholder Identification

Additional articles of interest

Nr.	Title and URL	Cited by	Selected
1	Innovation strategy on the example of companies using bamboo	34	Y
2	Enterprise architecture framework selection for higher education using TOPSIS method	7	Y
3	*The effect of TQM practices on technological innovation capabilities: Applying on Malaysian manufacturing sector*	33	Y
4	*A review of dynamic capabilities, innovation capabilities, entrepreneurial capabilities and their consequences*	30	Y
5	*Skills and capabilities for Australian enterprise innovation*	24	Y
6	*Architecting the enterprise towards enhanced innovation capability*	18	Y

Table 10 - Additional articles of interest

2.3. Results and conclusions

This literature review aims to answer the research questions and offers the basis for empirical research.

2.3.1. Question 1: What are the different visions on innovation strategy?

Several visions are available in existing literature. Companies can differentiate their innovation strategy between exploitative, which refers to presently employed technologies and tasks, and exploratory, which consists of technologies and tasks that are novel or radical and give guidance on how to improve the innovative potential of the firm (Jansen, Van Den Bosch, & Volberda, 2006; Lavie, Stettner, & Tushman, 2010). Companies need to absorb new information from the environment and use it internally to shape their innovation strategies (Kranz, Hanelt, & Kolbe, 2016; Lendel & Varmus, 2011).

Conclusion question 1

Several definitions of innovation strategy can be found. We choose the definition of Baker and Sinkula (2002), Hamel (1996) and Van Zyl (2006) who define innovation strategy as the long-term

goals, ways, and scope to which innovations will be used to build a strategic advantage and can be categorized into products, processes, and strategy.

2.3.2. Question 2: What capabilities are needed for innovation?

Different capabilities such as marketing (Nwachukwu & Chladkova, 2019), product, and process innovation capabilities (Camisón & Villar-López, 2014) are important for a firm that needs to constantly deploy, mobilize, and integrate its resources and capabilities to innovate, create competitive advantage (Liao, Kickul, & Ma, 2009) and continuously transform ideas into new products, processes, and systems (Lawson & Samson, 2001).

The three-dimensional innovation capability maturity framework of Louw (2017), Figure 3, uses a content analysis approach called Latent Dirichlet allocation (or LDA) to research, and summarizes innovation capability requirements based on literature review.

Conclusion question 2

The literature review shows there is a lack of theoretical frameworks and empirical studies on the mechanism through which firms employ their innovation capabilities and enhance organizational performance (Zhou, Zhou, Feng, & Jiang, 2019). The innovation capability maturity framework of Louw (2017) will be used for this research as it contains an overview of consolidated innovation capability requirements from literature.

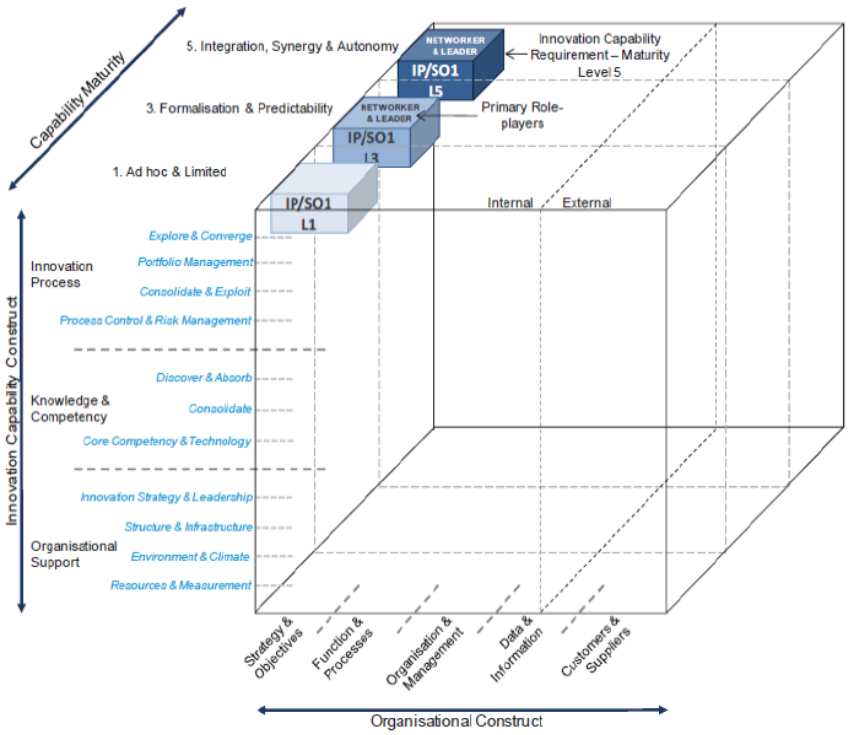


Figure 3 - Innovation capability maturity framework of Louw (2017)

2.3.3. Question 3: What characteristics are known regarding CBP?

CBP focuses on the planning, engineering, and delivery of strategic business capabilities to the enterprise and can be used to set investment priorities that would deliver the most value to an organization, according to the organizational strategy.

Good and explicit definitions of CBP exist, however mostly related to Defence organizations and thus not relevant to our research.

Papazoglou (2014) states that CBP focuses on goals, end-states and encourages innovation. The Open Group (2018) describes CBP best as "*the method that is focused on planning the required improvements (over time) through a defined series of capabilities that will help to achieve the specified business outcomes*".

Aldea (2016) developed a framework that identifies activities in CBP, which are typically executed in successive cycles where some activities may need more or less focus, depending on what drives the planning cycle.

Conclusion question 3

We conclude that implementing CBP implicates defining capabilities, their increments over time, developing capability dimensions to drive change, and measuring success through KPIs.

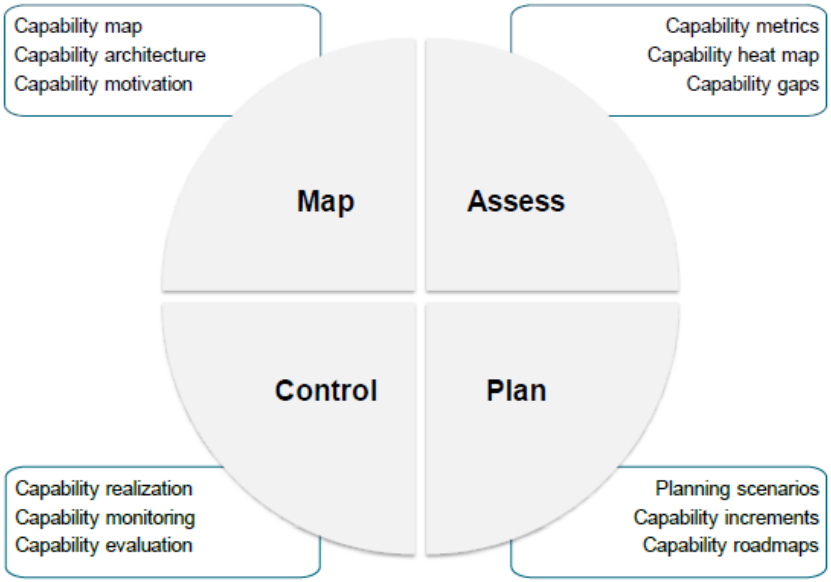


Figure 4 - CBP Generic Activities Framework

The CBP Generic Activities Framework of Aldea (2016), Figure 4, illustrates these generic activities with the expected outcomes of each of them, and will be used for this research.

2.3.4. Question 4: What is the relation between CBP and innovation strategy?

A company's innovation strategy should specify how the different types of innovation fit into the business strategy and the resources that should be allocated to each (Pisano, 2015).

CBP focuses on the management of capabilities that are key to the business strategy and goals of the enterprise (Aldea, 2016), however, not all capabilities sit in the same business operation category.

The level of investment and commitment can vary depending on whether the capability is strategic, operational imperative, or operational support oriented.

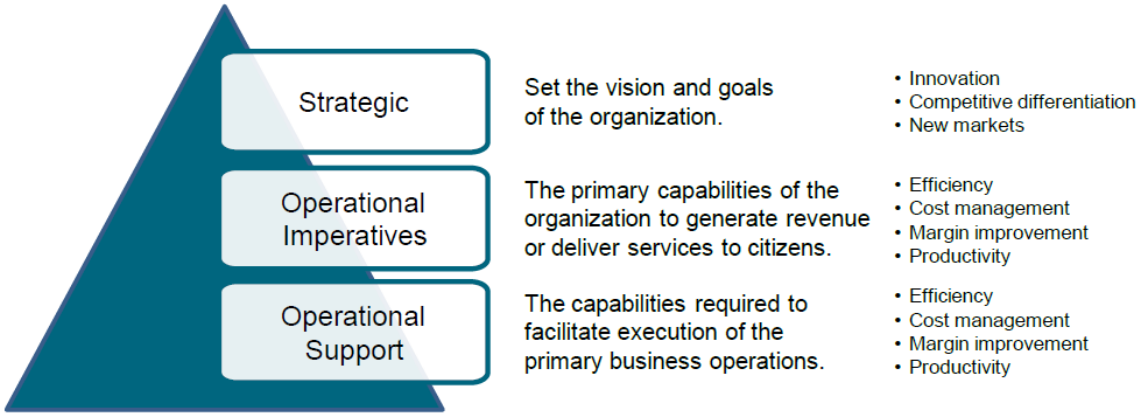


Figure 5 - Capability Stratification

Figure 5 illustrates the three levels of capabilities and typical characteristics (CEB, 2013), where innovation is listed as a strategic capability.

Conclusion question 4

The work of Pisano (2015), Aldea (2016), and The Open Group (2018) shows that relations between business strategy, innovation strategy, and CBP exits. However, the work of Dijkman (2014) suggests further research to understand if implementing CBP can shape an innovation domain architecture in support of an organization's innovation strategy.

2.3.5. Question 5: What methods are known to identify relevant stakeholders?

A stakeholder can be defined as an individual, or group with an interest or some aspect of rights or ownership in the project (Schiller, Winters, Hanson, & Ashe, 2013). We refer to the model of Mitchell, Agle, and Wood (1997) for stakeholder analysis. This model is known as the 'Salience model' (Figure 6Figure 1) and divides stakeholders into three aspects.

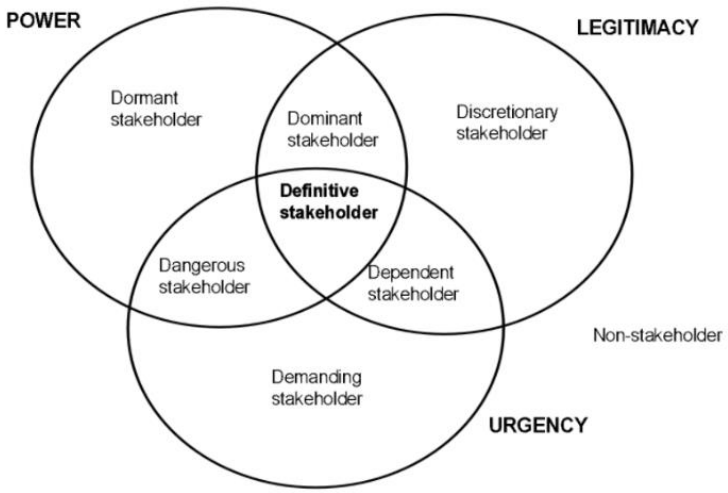


Figure 6 - Stakeholder Salience Model - (Mitchell et al., 1997)

- 'Power': the power a stakeholder must influence the organization, project, or program.
- 'Legitimacy': the legitimacy in which a stakeholder can act.
- 'Urgency': the urgency with which a stakeholder can act.

Stakeholders with three aspects represent a high form of priority. Stakeholders with two aspects represent a medium priority, possessing one of the aspects represents a low priority whereas having no aspects represents no priority.

Conclusion question 5

Stakeholder identification has been extensively documented. Stakeholders can be selected using a sample which is a homogeneous collection of units (persons, objects, or situations) that share one or more characteristics within our study. Purposive sampling is a selective sampling method where the researcher's judgment determines which individuals will be part of the sample.

2.4. Conclusion literature review

Our review revealed several definitions of innovation strategy as well as a lack of theoretical frameworks and empirical studies on the mechanism through which firms employ their innovation capabilities.

No scientific literature has been found on the intersection of both knowledge domains, innovation strategy and CBP. However, when both knowledge domains are considered, a corresponding area of interest can be assumed between innovation strategy and CBP. This interface is described as the concept of "capabilities", which is seen in both knowledge domains and selected frameworks:

- The capability maturity framework of Louw (2017), Figure 3, structures the formation of innovation capabilities related to all kinds of organizational aspects (employees, processes, organizational structures, information provision, and technology). The alignment of these organizational aspects is managed by EA, however, falls outside the scope of this research.

- The framework of Aldea (2016), Figure 4, guides the activities related to building capabilities by defining capability increments and will be used for our research.

- The framework of Mitchell et al. (1997), Figure 6, is used to select stakeholders using a sample which is a homogeneous collection of units that share one or more characteristics within our study.

Conclusion

Based on this concept of "capabilities" there is a theoretically assumed intersection and relationship between both knowledge domains innovation strategy and CBP. This has a consequence for the empirical research. Therefore, the empirical research will focus on gaining insights at the intersection of both knowledge domains.

2.5. Objective of the follow-up research

An empirical study is needed to review and enhance insights that can be used in practice by other organizations with similar challenges as described in chapter 1.4.

The selected frameworks, Louw (2017), Aldea (2016) and Mitchell et al. (1997), will be verified in a broader context by an empirical study that will be conducted as qualitative research in the form of a single case study at a Belgian ICT service provider.

Figure 7 depicts the conceptual model used, with the main challenges, the chosen models from the literature and expected benefits, all derived from our literature review (chapter 2.3)

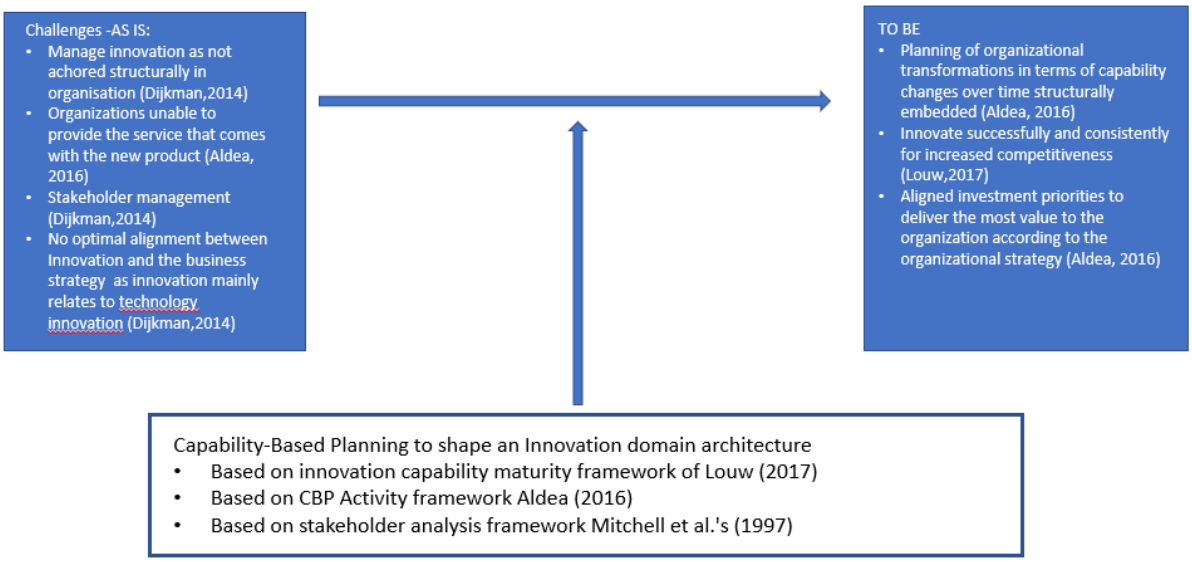


Figure 7 - Conceptual model

We expect this research will generate insights at the intersection of both knowledge domains, and further clarify the role of CBP in the shaping of an innovation domain architecture by applying the models from literature.

By selecting a single case study based on a time-bound scope, and an assumed validity of the context of an ICT service provider, we are confident that the scope of this research is realistic and feasible.

The following theses were constructed from the conceptual model (Figure 7 - Conceptual model) based on the chosen models from the literature, are expected to be proven and provide answers to the main research question.

2.5.1. Thesis 1: A fit between innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services

The innovation strategy defines the long-term goals for strategic advantage, and needs well-managed innovation capabilities to develop and reconfigure its resource base in developing and delivering new products and services and create its competitive advantage (Helfat & Peteraf, 2009; Nwachukwu & Chladkova, 2019; Teece, 2007). The most common use of capabilities is in the context of CBP and focuses on the planning, engineering, and delivery of such strategic business capabilities to the enterprise (Aldea, 2016).

Therefore, we can expect that managing innovation capabilities using CBP will increase a firm's strategic advantage and probability of success in terms of developing and delivering new products and services.

2.5.2. Thesis 2: The role of management and governance is of importance for creating an innovation capability

Management has the task of organizing innovation in the right way and applying the skills and resources needed so the organization can permanently meet changing conditions (Assink, 2006). Stakeholder management and support will help to adopt this change in people, processes, and tools (Fassin, 2009; Friedman & Miles, 2002).

Therefore, we can expect that managing innovation as a strategic business capability requires management having a key role in organizing innovation.

2.5.3. Thesis 3: CBP will contribute to innovation which in turn contributes to increased competitiveness

CBP focuses on the planning, engineering, and delivery of strategic business capabilities to the enterprise (Aldea, 2016). Scholars suggest that different innovation capabilities such as marketing innovation capability (Nwachukwu & Chladkova, 2019), product innovation, and process innovation capabilities (Camisón & Villar-López, 2014) are important for a firm success.

Therefore, we expect that CBP will help to structurally embed and manage innovation capabilities in the organization, which contributes to innovate successfully and consistently for increased competitiveness.

2.5.4. Thesis 4: Planning required innovation improvements through a defined series of innovation capabilities will help to shape a domain architecture for innovation

Innovation strategy defines the long-term goals, ways, and scope to which innovations will be used to build a strategic advantage (Baker & Sinkula, 2002; Hamel, 1996; Stjernholm, 2000; Van Zyl, 2006), but EA frameworks do not make clear how to arrive at the right capabilities (Greefhorst, 2009). They however do make clear this takes place using so-called "capability increments".

CBP can manage these capability increments since it focuses on sequencing the delivery of business improvements by the life-cycle of a capability, were an increment represents a change in the performance/maturity of that capability (Aldea, 2016).

Therefore, we can expect that CBP will help an organization manage its innovation capabilities to shape a domain architecture for innovation.

Conclusion

These four theses are formulated based on theoretical research, expected to be proven through an empirical study, and provide an answer to the main research question.

3. Methodology

Through a literature review, insights were gained that led to the design of an empirical study. This chapter describes the justification for the empirical research. It starts with the description of the conceptual model, the technical design, the data analysis and ends with the argumentation of why the research was conducted in a responsible manner.

Figure 8 visualizes the operationalization of the research.

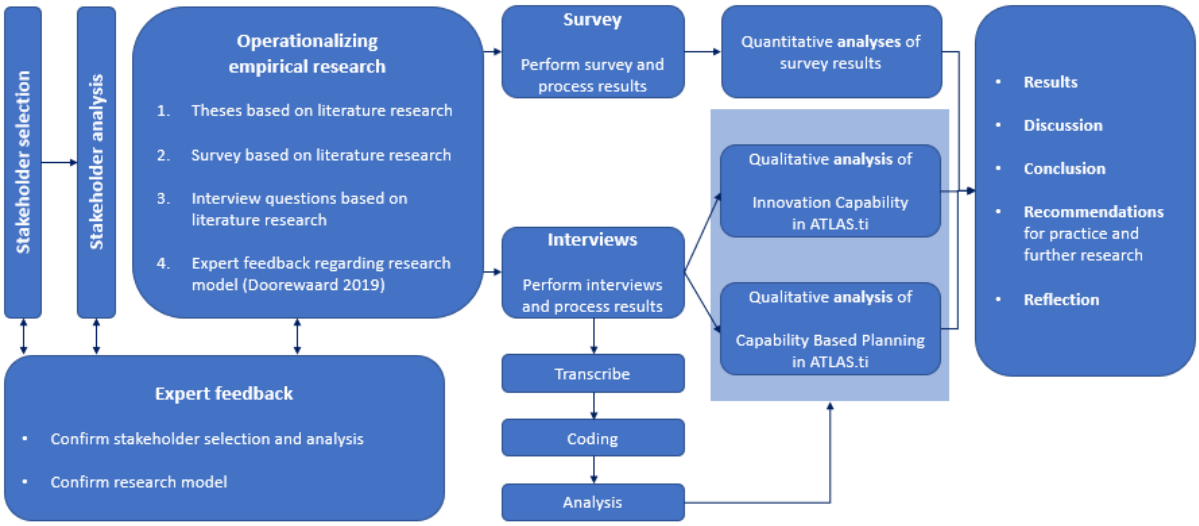


Figure 8 – Operationalization process

3.1. Conceptual design: select the research method(s)

A qualitative single case study with multi-method data collection was selected and performed on the basis of the following rationale.

The empirical research will be split into two parts.

1. Identify which stakeholders are relevant.
2. Collect the data needed to answer the empirical research questions.

Table 11 shows the key strategies described by Verschuren and Doorewaard and their approach (Saunders, 2009).

Research strategy	Qualitative or quantitative research	Empirical or desk-based research	Inductive or deductive approach
Survey	Quantitative research	Empirical research	Deductive approach
Experiment	Quantitative research	Empirical research	Inductive approach
Casestudy	Qualitative research	Empirical research	Inductive - or Deductive approach
Grounded theory	Qualitative research	Empirical research	Inductive approach
desk-based research	Qualitative research	Desk-based research	Deductive approach

Table 11 - The main research strategies

A survey and an experiment drop out due to the low number of respondents which prevents quantitative research.

Due to time limitations, we focus on hypothesis testing of existing theory, also called a deductive approach (Verschuren & Doorewaard), in combination with a focus on gaining insights at the intersection of both knowledge domains. Due to its exclusive inductive nature, the grounded theory approach is dropped. The case study is the only remaining research strategy as it supports an inductive approach with deductive elements.

Types of case studies

Type casestudy	Doel
descriptive case study	assumes the description of a phenomenon in practice, where different cases can be compared (Scapens, 1990)
exploratory case study	takes an inductive approach with the goal of developing theoretical hypotheses that can then be tested (Saunders et al., 2019)
explanatory case study	takes a deductive approach, using theoretical propositions to test their applicability in the case study, to build and verify an explanation (Saunders et al., 2019)

Table 12 - Types of case study

This research is an **exploratory case study**, hypotheses will be evaluated within a case organization using a multi-method qualitative approach. To accomplish this, the case organization will be asked for relevant documents in the area of innovation capabilities.

Conclusion

The empirical research uses an inductive approach (Saunders, 2009) since there is no theory at the intersection of innovation strategy and CBP. The assumed conceptual model can be regarded as a premise with which an exploratory case study is conducted. Knowledge from the existing theory of both knowledge areas is used to assess two frameworks in a real situation, and developing insights at their intersection.

3.2. Technical design: elaboration of the method

In this section we describe how the research will be conducted, what data and sources are required, and how the data will be gathered.

3.2.1. Triangulation

A case study causes validity issues in the observations due to limited observational context and stakeholders to interview. This risk is reduced by triangulation to support claims for validity and reliability. The case organization will be asked for relevant datasets to strengthen the external validity. In this way, bias is minimized and/or validity established. This multi-method qualitative approach (Saunders, 2009) uses multiple sources of data collection which fulfill the first of the three data collection principles by which the validity of a case study is ensured (Yin, 2011).

The empirical research is designed according to the view of Cepeda and Martin (2005) regarding theory building during the case-oriented research process. An analysis ("reflection") activity is undertaken after each iteration of data collection to distill insights relative to the research goal. A subsequent iteration of data collection can then focus on specific areas of interest resulting from the previous iteration to gain in-depth insight and flesh out the 'in-depth' aspect of the case study data collection methodology following Yin (2011) and Verschuren and Doorewaard (2021).

3.2.2. Research method

Stakeholder analysis in which stakeholders are ranked will be conducted before the interviews (Mitchell et al., 1997).

Since innovation and CBP are new concepts within the case organization, a group session will be organized before the interviews to ensure the respondents can contextualize the interview questions.

After permission, the interview is recorded, transcribed, and submitted to the interviewee(s) for validation. Due to the interpretivist nature, responses could be further questioned during the interview. When this occurs, the questions will be updated and submitted retrospectively to other interviewees.

Figure 9 shows the research method.

Figure 9 - Process steps of empirical research

3.2.3. Data collection

This research focuses on gaining insight on the intersection of both knowledge domains, and covers empirical research questions six and seven (chapter 1.51.7). Sufficient information is available from the literature in both knowledge domains, and the specific empirical aspects within these knowledge areas should be obtained from the data collection.

Insights can be gained by consulting documentation and obtaining views from the relevant employees of the organization through interviews. From the perspective of triangulation and the first data collection principle of Yin (2011), multiple sources are desired.

Survey: A survey is used prior to the interviews to increase face validity, and to go deeper into the content during the semi-structured interviews. In preparation, the respondents are briefed in a separate session to provide additional clarity about the scope, knowledge domains, and timelines of the research. A follow-up mail with the presentation is sent afterward to all participants (Appendix 7.6). The respondents answer the survey questions using a Likert scale of 1 to 5. The survey questions can be found in Appendix 7.87.7 and results in Appendix 7.97.9. It should be noted that the survey does not contain enough respondents to draw statistical conclusions.

Due to the subjective nature of our research and the varying perspective of different groups of people, we adopt the interpretivist approach for our interviews because business situations are complex and often unique, at least in terms of context, so new themes to explore may emerge from participants interpretations of the research setting (Saunders, 2009).

Semi-structured interviews are the most suitable as they provide us with the opportunity to 'probe' a response to understand the meanings that participants ascribe to various phenomena using open end questions where the logic of questioning may need to be varied (Saunders, 2009).

We use the four theses (chapter 2.5) as structure, and formulated interview questions both based on existing probing questions retrieved from the CBP Activity framework of Aldea (2016), and on the innovation capabilities to probe for as derived from the innovation capability maturity framework of Louw (2017).

Figure 10 illustrates the logic applied.

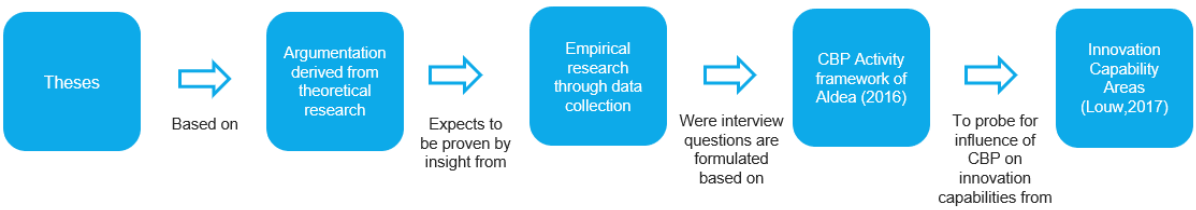


Figure 10 - Data Collection

Finally, for better structure, we number all Louw's Innovation Capability areas (1, 2 and 3) and map the questions to the Capability areas number we are probing for. Details can be found in Appendix 7.2 and 7.3. This results in Table 13 where interview questions are mapped per thesis and capability area(s).

Theses	Nr.	Question	Capability Area
A fit between Innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.			
1	1.1	How are we addressing the most-important gaps between what we are able to do at the moment and what we should be able to do in the future in terms of innovation?	1
1	1.2	To what extend are we defining the ways to link capabilities to their motivation (strategic goals) and their implementation (resources, competences, information, processes, etc.) to build a strategic advantage?	1,2,3
1	1.3	How does innovation impact the probability of success in terms of developing and delivering new products and services?	1
1	1.4	How are practices, procedures, activities, etc. that take ideas and/or opportunities through to concepts, then through development and implementation, and eventually to a stage of commercialisation and operations being defined in the organization?	1
The role of management and governance is of importance for creating an Innovation capability			
2	2.1	Do we have overlapping innovation projects?	1,2
2	2.2	To what extent we have redundant governance, or an inadequate organizational structure?	3
2	2.3	To what extent do we have adequate skills, broad-based knowledge and competency to innovate?	2,3
2	2.4	How are the associated management requirements for innovation knowledge, competencies, and technology defined ?	3
CBP will significantly contribute to product and process innovation which in turn contributes to increased competitiveness.			
3	3.1	How is innovation being defined as important for the firm's success?	1
3	3.2	Should the focus for innovation capabilities be a strategic differentiation or lower costs, what is the main competitive advantage?	1,3
3	3.3	Who do we want to invest more or less in innovation capabilities (people, processes, tools)?	2,3
3	3.4	How are performance levels of implemented capabilities defined and compare to expected level required to meet business outcomes (increased competitiveness).	1
Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation.			
4	4.1	How is the innovation capability life-cycle managed in terms of design, road mapping, migration planning, and feasibility?	1
4	4.2	Do we need to incorporate industry standards in order to set the right investment priorities that would deliver the most value to the enterprise?	1,2,3
4	4.3	Are we driving towards adapting or leveraging industry standards?	1,2,3
4	4.4	How does the enterprise review and assess how capabilities have been implemented with respect to people, procedural steps, and asset usage?	3

Table 13 - Operationalization table

As example, question 1.3 *"How does innovation impact the probability of success in terms of developing and delivering new products and services?"* will create insights regarding the influence of applying CBP for Innovation Capability Area 1.

Data is collected at one point in time using a cross-sectional time horizon. Stakeholders are contacted to schedule a 90-minute appointment and sent the interview questions upfront. Interviews are recorded and transcribed using Microsoft Teams, and coded using ATLAS.TI.

3.2.4. Stakeholders' analysis

A stakeholder analysis is be conducted to determine which roles within the organization are important for collecting research data through purposive sampling.

The selection of stakeholders is chosen by the researcher and submitted to the expert for validation. Stakeholders were ranked based on the attributes 'Power', 'Legitimacy', and 'Urgency' of Mitchell et al. (1997) as listed in Table 15.

The RDAP scale of Clarkson (1995) is used to characterize primary stakeholders (Table 14). The scale consists of three elements: 'Scale', 'Strategy', and 'Behavior'. For the first element 'Scale', stakeholders can be divided into four approaches 'Reactive', 'Defensive', 'Accommodative', and 'Proactive'.

Scale	Strategy	Behaviour
Reactive	Deny responsibility	Do less then what is needed
Defensive	Admits responsibility, but has resistance	Do least needed
Accommodative	Accepts responsibility	Does what is needed
Pro-active	Anticipates on responsibility	Does more than is needed

Table 14 - RDAP scale (Clarkson, 1995)

Primary stakeholder characterizations:

If the stakeholder does not possess any of the three attributes, they cannot be counted as a project stakeholder.
Demanding stakeholders have an urgent claim but have no power or legitimate relationship. They can be irksome but not dangerous, so management can disregard them.
Discretionary stakeholders possess the attribute of legitimacy, but they do not have power or urgent claims. Although there is no pressure on managers to engage in an active relationship with such stakeholders, they can choose to do so.
Dormant stakeholders possess the power to impose their will, but they do not have any legitimate relationship or urgent claim, and thus their power remains unused
Dependent stakeholders possess urgent and legitimate claims, but no power. These stakeholders depend upon others for the power to carry out their will.
Dominant stakeholders are both powerful and legitimate. Their influence is assured, and the expectations of any dominant stakeholders will matter.
Dangerous stakeholders are not legitimate, but they possess power and urgency. They can be coercive and possibly violent; hence, they can be "dangerous".
Definitive stakeholders possess all the attributes. They will already be members of an organization's dominant coalition. When their claims are urgent, managers have a clear and immediate mandate to consider and give priority to that claim.

Table 15 – Eight stakeholder characterizations

This results in a final list of stakeholders (Table 16). Each stakeholder is assigned a unique number for identification purposes during the analysis of the data.

Nr.	Function	RDAP	Ranking - (Mitchell et al., 1997)
1	CEO	Pro-active	Power Legitimacy Urgency
2	Director Innovation & New Ventures	Accommodative	Power Legitimacy
3	Innovation Strategist	Accommodative	Legitimacy Urgency
4	Vice President Delivery Services	Defensive	Power Urgent
5	HR Business Partner	Pro-Active	Legitimacy Urgent
6	Sales Director	Reactive	Legitimacy Urgent
7	Product Director	Accommodative	Power Legitimacy Urgency
8	CFO	Defensive	Power Urgent
9	Go To Market Director	Accommodative	Legitimacy Urgency
10	Process analyst	Defensive	Urgency

Table 16 - Stakeholders' selection definition

The stakeholders are visually represented with their unique numbers on the stakeholder map of Mitchell et al. (1997) (Figure 11).

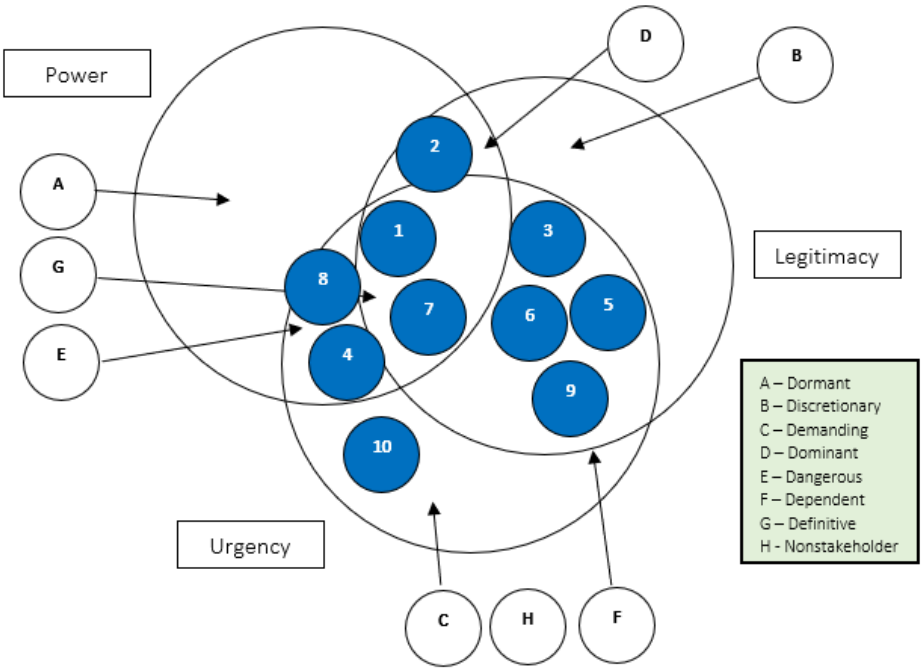


Figure 11 - Stakeholder map

Based on the stakeholder typology and the approach of Mitchell et al. (1997), it is decided to interview the CEO [1], Director of Innovation [2], HR Business Partner [5], Product Director [6], and Go To Market Director [9]. They all possess at least two attributes of Mitchell et al.'s (1997) stakeholder typology, and are either Pro-active or Accommodative on the RDAP scale of Clarkson (1995), therefore they are considered important within the case organization and strengthen the internal and external validity of the research.

In addition, these stakeholders are willing to contribute to the research, and they are employed in very different roles within the case organization so data is collected from different perspectives.

3.2.5. Expert feedback

Feedback regarding the conceptual model and data collection approach has been received from the expert. All stakeholders approved and agreed to their cooperation for the research. Based on the expert validation, the interview questions can be expanded to include additional questions. The feedback from the expert has resulted in the final list of interview questions.

3.3. Data analysis

The data analysis of the interviews and obtained documents, if any, is performed according to the step-by-step plan shown in Figure 12.

Figure 12 - Data analysis process

This roadmap is based on the 'Results of Research' roadmap (Doorewaard, Kil, & van de Ven, 2015) where this methodology is combined with thematic analysis through coding to create an inductive

approach with deductive elements. Coding develops a topic structure so that integral theory building and substantiation can occur (Saunders, 2009).

3.3.1. Coding

Coding consists of three phases: open coding, axial coding, and selective coding using ATLAS.TI.
With open coding, the specific pieces of text of the transcribed interviews are assigned a coding. Similar texts are assigned the same coding. With axial coding, connections between the coding are sought. When connections emerge, the coding can be assigned to main categories and subcategories. Then they are reordered hierarchically. Selective coding involves recognizing and creating connections between main categories. Based on the main categories, insights are generated. The results of the coding are analyzed and elaborated.

3.3.2. Document analysis

ATLAS.TI will be used to perform this analysis. This tool digitally records the data obtained and the data analysis carried out so that it is clear which data sources have been used and how this data has led to insights. The purpose is to ensure the internal validity of the research by applying the data collection principles 'Research database' and 'Chain of Evidence' as advised by Yin (2011).

3.4. Reflection regarding validity, reliability, and ethical aspects

With the chosen methods, scientifically sound research was designed to meet the most important quality requirement as generally assumed: validity (Gelderman, 2013). This chapter has already discussed trade-offs on the four quality criteria for case study research identified by Yin (2011): construct validity, internal validity, external validity and reliability. The following is an integral treatise on these four quality criteria, potential issues, and an explanation of the ethical issues regarding this research

3.4.1. Construct validity

The construct validity of the research method refers to the quality of the conceptualization/operationalization of the relevant concept and should underlie the data collection method (Gibbert, Ruigrok, & Wicki, 2008). This construct validity was achieved by applying Yin's data collection principles throughout data collection and analysis, and validated through expert feedback. Lastly, the research makes use of existing frameworks from Louw (2017), Aldea (2016) and Mitchell et al. (1997), ensuring a solid basis for research.

3.4.2. Internal validity

The internal validity of the research method refers to the validity of the logic by which the identified variables and relationships result from the results of data analysis in particular (Yin, 2011). Triangulation is applied through conducting semi-structured interviews and document analysis.

Stakeholder analysis has been conducted (chapter 3.2.3), and stakeholders are ranked and selected for data collection (Mitchell et al., 1997). Prior to the interviews, all stakeholders are separately briefed with an info session to better contextualize the interview questions. All respondents receive an info brochure (see Appendix 7.6).

Lastly, the risk of interpretation bias by the researcher during data collection is minimized by a feedback loop. After the interviews, the transcription of the interviews conducted is submitted to the respondents for validation.

3.4.3. External validity

External validity refers to the extent to which the results of the study can be generalized to other situations (Saunders, 2009). Stakeholder analysis is conducted (chapter 3.2.3), and stakeholders ranked and selected based on the existing models of Mitchell et al. (1997) and Clarkson (1995).

External validity in case studies can also be achieved through the rationale for the selection of the case(s) so that this context can be evaluated by readers of the study (Gibbert et al., 2008). For this study, an assumption was made that the case organization in question was a representative case for the phenomenon being studied. External validity is also increased by conducting literature research (chapter 2) to ensure generalization supported by theory.

3.4.4. Face validity

Respondents are selected based on their role and knowledge of the topic. An info session is foreseen to clarify the topics. This presentation takes place prior to the interviews and is communicated digitally (Appendix 7.6). A survey is sent to the respondents prior of the interview to form an initial view that will be further zoomed into during the semi-structured interviews. The interview is transcribed and presented to the respondent for review. The validated transcription is recorded anonymously in the study's database as an assurance of internal validation according to the data collection principle 'Research database' named by Yin (2011).

3.4.5. Reliability

For the reliability of a case study, replicability is an important factor (Gelderman, 2013) and should provide consistent results at different times and in different conditions (Saunders, 2009). In the previous chapter, the research is outlined step-by-step which makes it possible to conduct the same research again in the same setting to obtain the same results. In this perspective, the 'Chain of

Evidence' (Yin, 2011) throughout the research is vital to provide insight into this reliability after the research has been conducted. All respondents received the same questions and explanations regarding key terminology, and interviews were at a time and location perceived by the respondents as convenient.

3.4.6. Ethical aspects

Since the research includes data collection through semi-structured interviews with individuals and (confidential) documents of the case organization are analyzed, ethical aspects must be considered. In the context of research, ethics refer to the norms of conduct that guide behavior regarding the rights of those who become the subjects of the research or are affected by it (Saunders, 2009). Several ethical principles will be applied to this research:

- All personal data will be anonymized.
- Data collected will be kept confidential.
- Participants have the right to withdraw their participation at any time without consequences.

When using personal data, the rules of the General Data Protection Regulation (GDPR) will be followed.

4. Results

This chapter describes the results of the study, obtained through interviews and surveys. The section below describes how the interviews were conducted and processed. Five individuals were finally interviewed and selected based on the stakeholder analysis (see 3.2.4). Prior to the interview, they were asked to complete an online survey. Finally, the results are described for each thesis.

4.1. Data collection

4.1.1. Semi-structured interviews

As some respondents were living abroad, the interviews were conducted and recorded with Microsoft Teams. Five interviews of ninety minutes were conducted in October-November 2022. Four participants required more time to either answer all questions or get more clarification. Additional interview sessions were scheduled in December causing a delay of several weeks. During the actual interviews, it was determined that all respondents possessed sufficient domain and organizational knowledge. Prior agreement was sought from each participant for the recording of the interview and that anonymity would be guaranteed for the data collection. During the interviews, the structure described in Table 13 was followed.

4.1.2. Conduct the empirical research

The empirical research follows the five-step plan based on the 'Results of Research' roadmap (Doorewaard et al., 2015), as presented in Figure 12.

All interviews were digitally recorded, transcribed and validated by the respondents. None of the respondents suggested any changes. All agreed on the final version of the transcripts which were imported into ATLAS.ti.

In step one, open coding is used, and text fragments have been marked with codes per topic. These codes can be found in Appendix 7.13.2.

As a second step, axial coding is used, and the assigned codes were compared with each other. Codes relating to each other were added within an umbrella code or code group, resulting in twenty code groups. A code may belong to more than one code group.

In step three, selective coding is used to create networks with links and relations between topics. This enabled a better understanding of topics and their relations, and develops a topic structure for integral theory building (Saunders, 2009). Appendix 7.13.1 shows an example. A summary is created per thesis and respondent. The details of the text fragments and summaries are included in Appendix 7.7.

In step four, an overarching summary is made per thesis and for each source. This is where the respondents' summaries come together. These results per thesis are detailed in chapter 4.2. Because the respondents were not able to provide documents, only the interview and survey results were used.

4.2. Results by thesis statement

Four theses (chapter 2.5) are formulated to answer the central research question. This section elaborates on the results of the data collection, per thesis.

The survey results are shown and briefly discussed, followed by a summary of the answers to the interview questions based on the insights gathered, and this for each thesis and respondent. Interview details can be found in Appendix 7.7. Some examples of the coding process are given in Appendix 7.13 to provide insight into the coding logic.

The responses refer to the respondents, Table 17 below shows which respondent holds which position within the organization and to which actor they belong according to the approach of Clarkson (1995) and Mitchell et al. (1997). The initial numbering as listed in Table 16 is maintained for consistency.

Nr.	Function	RDAP	Ranking - (Mitchell et al., 1997)
1	CEO	Pro-active	Power Legitimacy Urgency
2	Director Innovation & New Ventures	Accommodative	Power Legitimacy
5	HR Business Partner	Pro-Active	Legitimacy Urgent
7	Product Director	Accommodative	Power Legitimacy Urgency
9	Go To Market Director	Accommodative	Legitimacy Urgency

Table 17 - Selected stakeholders

4.2.1. Results Thesis 1

Thesis 1	**A fit between Innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.**
Survey question	Gaps between what we can do at the moment and what we should be able to do in the future in terms of innovation is addressed adequately
Survey question	Innovation capabilities are linked to their motivation (strategic goals) and implementation (resources, competencies, etc..) to build a strategic advantage
Survey question	Innovation impacts the probability of success in terms of developing and delivering new products and services
Survey question	Innovation practices and procedures that take ideas through concept, development, implementation, and eventually commercialization are defined in the organization.
Interview question	How are we addressing the most-important gaps between what we are able to do at the moment and what we should be able to do in the future in terms of innovation?
Interview question	To what extend are we defining the ways to link capabilities to their motivation (strategic goals) and their implementation (resources, competences, information, processes, etc.) to build a strategic advantage?
Interview question	How does innovation impact the probability of success in terms of developing and delivering new products and services?
Interview question	How are practices, procedures, activities, etc. that take ideas and/or opportunities through to concepts, then through development and

Table 18 - Thesis 1 questions

Survey summary report

Survey Questions	Results				
Gaps between what we can do at the moment and what we should be able to do in the future in terms of innovation is addressed adequately			2	3	
Innovation capabilities are linked to their motivation (strategic goals) and implementation (resources, competencies, etc..) to build a strategic advantage				4	1
Innovation impacts the probability of success in terms of developing and delivering new products and services			1	2	2
Innovation practices and procedures that take ideas through concept, development, implementation, and eventually commercialization are defined in the organization.		1	1	3	

1-5 = Number of respondents Strongly disagree Disagree Neutral Agree Strongly agree

Table 19 - Thesis 1 Survey results

The majority of respondents indicated innovation capabilities within the organization are linked to their motivation to create a strategic advantage. They also see sufficient maturity within their organization in managing the innovation gaps. There is less consensus on the impact of innovation on the success of product development. Remarkably, respondents 2 and 9 are extremely positive about this, both respondents are employed in Belgium and have a local focus on innovation. Respondent 7 works in a central role within the European organization and is less convinced. Finally, respondent 2 indicates that the organization is not mature in terms of practices for the development and commercialization of innovation. This can be explained by the fact that this respondent has to innovate for the local market with limited resources and budget, and has to integrate these new capabilities into the rigid operating model of the wider organization.

Interview summary (see 7.7.1)

Nr.	Summary
1	• The case organisation manages the innovation gap with an organization called New Ventures and Innovation (NV&I). • Scaling of innovation capabilities is dependent on merging and integrating with sistercompanies. • People make the difference in innovation, and governance costs should be balanced against cost.
2	• The innovation team is looking for a light-weight portfolio management system to enable the transition from innovation to commercialization. • Innovation strategy planning is part of an annual business planning to define priorities and investment areas, however innovation has its own time to market and needs flexibility, a dedicated small innovation team is created for the case organisation to accommodate this flexibility.
5	• The organization needs to look at ways to encourage innovation, such as providing investment and resources, and to create an environment where innovation is not only accepted but also rewarded. • Innovation is not structurally embedded in the organization. A separate Innovation team exists but is managed isolated with own priorities. Innovation outside of that team is ad-hoc and people driven.
7	• Innovation is necessary to automate existing services and differentiate from competitors. • Product management is used to manage innovation gaps, with roadmaps based on measurable benefits. • The case organisation faces challenges in clarifying strategic priorities, governance fragmentation, and quantifying and measuring innovation impact.
9	• Slow time to market and inability to launch new innovative services quickly, since the case organisation works in a complex multi-country environment with different, and disconnected, delivery organizations. • Inadequate resources and lack of visibility into the innovation capabilities of the different countries.

Figure 13 - Thesis 1 Summary interview

Conclusion

Innovation is a top-down decision, not implemented at all levels within the organization. The international context of the organization and many business divisions, each with their processes and governance, complicate the implementation of innovation capabilities. As a result, innovation portfolio management is not existing, and depends on personal ownership and accountability, resulting in a slow time to market and challenges to launch new innovative services quickly.

4.2.1. Results Thesis 2

Thesis 2	**The role of management and governance is of importance for creating an Innovation capability**
Survey question	Our innovation projects are aligned and not overlapping.
Survey question	Governance for innovation is not redundant, and the organizational structure is adequate.
Survey question	Skills, broad-based knowledge, and competency to innovate are adequate available
Survey question	Management requirements for innovation knowledge, competencies, and technology are defined
Interview question	Do we have overlapping innovation projects?
Interview question	To what extent we have redundant governance, or an inadequate organizational structure?
Interview question	To what extent do we have adequate skills, broad-based knowledge and competency to innovate?
Interview question	How are the associated management requirements for innovation knowledge, competencies, and technology defined ?

Table 20 - Thesis 2 questions

Survey summary report

Survey Questions	Results				
Our innovation projects are aligned and not overlapping.		1	3	1	
Governance for innovation is not redundant, and the organizational structure is adequate.		2	2	1	
Skills, broad-based knowledge, and competency to innovate are adequate available		2		3	
Management requirements for innovation knowledge, competencies, and technology are defined		1	3	1	

1-5 = Number of respondents Strongly disagree Disagree Neutral Agree Strongly agree

Table 21 - Thesis 2 Survey results

Most respondents have a neutral view on innovation skills and governance within the organization. Respondents 1 and 2, respectively the CEO and Director Innovation, are not convinced of the level of innovation skills and competences within the organization. An explanation could be that both respondents have an extensive background in innovation, and use a different quality standard. The same respondents indicate the capacity to scale will have to come from other divisions within the case organization , and these competencies are perceived to be not present. Finally, most respondents confirm management requirements for innovation are not defined, only respondent 5 is positive. This can be explained by the fact that respondent 5 has an HR role and requirements at the capability dimension of people do exist within the organization.

Interview summary (see 7.7.2)

Nr.	Summary
1	• There is potential to leverage the local innovation capabilities by creating a bridge between the case organisation's NV&I department and sister companies. • This will allow the case organisation to gain access to the global network of it's subsidiaries and benefit from their expertise and capabilities, help to scale the innovation capabilities of the case organisation and ensure successful integration with the rest of the business units.
2	• The NV&I team is not investing in new technology, nor making use of existing resources. • Being more competitive is currently solved by hiring more people instead of building out an innovation capability and its life-cycle management • Governance for life-cycle management would be beneficial to implement but cannot be too rigid or costly.
5	• Lack of clear view on all innovation projects in the organization • Building innovation skills is part of every personal development plan • No innovation capabilities defined, but leadership defines the innovative culture • Current innovation initiatives lack insight on the impact on the organization • Innovation process is not well defined, lacks an innovation roadmap
7	• The case organisation needs to create an innovation culture, which will require collaboration and knowledge sharing. • It needs to be stressed that innovation is everyone's responsibility, not just the NV&I. • In order to ensure a successful innovation process, the case organisation needs to create a structure and governance model that supports innovation, and provide the necessary resources and incentives.
9	• Lack of end-to-end portfolio visibility across the case organisation • Overlap of innovation projects on global level • There is less overlap of projects at regional level • Fragmented governance layers exist • The above impacts the case organisation's ability to leverage synergies and innovate quicker

Figure 14 - Thesis 2 Summary interview

Conclusion

The interview results are consistent with the survey. Governance is considered important by all respondents for managing an innovation capability. There is a lack of clarity about the ongoing innovation projects and capabilities, resulting in initiatives being launched by different divisions without validation for overlap, or reuse of capabilities. The case organization deliberately chooses to locally invest and implement an innovation team, under board of director supervision, while waiting for a more mature innovation strategy from the parent company.

4.2.2. Results Thesis 3

Thesis 3	**CBP will significantly contribute to product and process innovation which in turn contributes to increased competitiveness.**
Survey question	Our innovation projects are aligned and not overlapping.
Survey question	The focus on innovation capabilities and its main competitive advantage is clearly defined
Survey question	Investment priorities for innovation capabilities (people, processes, tools) are defined.
Survey question	Performance levels of implemented innovation capabilities are defined and measured to meet business outcomes.
Interview question	How is innovation being defined as important for the firm's success?
Interview question	Should the focus for innovation capabilities be a strategic differentiation or lower costs, what is the main competitive advantage?
Interview question	Who do we want to invest more or less in innovation capabilities (people, processes, tools)?
Interview question	How are performance levels of implemented capabilities defined and compare to expected level required to meet business outcomes (increased competitiveness).

Table 22 - Thesis 3 questions

Survey summary report

Survey Questions	Results				
The importance of innovation for the firm's success is clearly defined.				4	1
The focus on innovation capabilities and its main competitive advantage is clearly defined			2	3	
Investment priorities for innovation capabilities (people, processes, tools) are defined.	1	1	3		
Performance levels of implemented innovation capabilities are defined and measured to meet business outcomes.		1	1	3	

1-5 = Number of respondents Strongly disagree Disagree Neutral Agree Strongly agree

Table 23 - Thesis 3 Survey results

On one hand, the importance of innovation is endorsed by all respondents and is well-defined. On the other hand, the survey shows that it is unclear how investment priorities should be determined, what the success criteria of innovation are, and how to effectively measure them. Respondent 1 (CEO) is the most sceptic.

Interview summary (see 7.7.3)

Nr.	Summary
1	• Innovation is seen as an enabler of new business models, products and services. • Data-driven approaches, such as machine learning and AI, will be used to drive innovation. • The case organisation's innovation capabilities are currently undefined • It's main challenge is to integrate regional and global innovation capabilities
2	• Invest in skilled people for innovation is important • Priority for innovation is competitive differentiation • People are considered the most important assets and investment priorities • There is a minimal investment in innovation processes and tools
5	• There is no clear definition of what innovation means and how to measure it, however the skills for innovation are clear and well defined. • The regional innovation departments like NV&I are very siloed and operate independently from each other and from the corporate structure.
7	• Innovation is essential for organizational success, but not clearly defined in terms of KPI's and requirements. • The focus is on competitive differentiation and process efficiency/cost optimization • Investment is done in people, processes, and tools, with people as the highest priority • Performance measured is done on revenue, cost, and customer satisfaction. Innovation capabilities are not measured
9	• The case organisation incorporates customer feedback into the innovation process and prioritizes projects that align with customer needs. • The case organisation focuses on new business models and technologies to create new services and opportunities. • Partnerships are important to leverage technology and market access, generate new opportunities and develop innovative solutions. • Competitive differentiation is the focus for innovation since it adds value for customers. • People skills are important for innovation, but processes and tools must also be improved. • External KPI's are used to measure the impact of innovation, such as CSAT and win rate/ revenue increase

Figure 15 - Thesis 3 Summary interview

Conclusion

The results of the interview follow those of the survey. Innovation is considered important by all respondents and well-defined as a competitive differentiator. But the way the case organization sets up and manages its capability to innovate is not clearly defined. There is ambiguity about whether to monitor innovation as a capability. Most respondents see more benefit in measuring people's innovation skills, and monitoring revenue and cost instead of monitoring performance at the capability level. This is not perceived as valuable.

4.2.3. Results Thesis 4

Thesis 4	**Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation**
Survey question	Innovation capability life-cycle in terms of design, road mapping, migration planning, and feasibility is adequately implemented in the organization.
Survey question	Industry standards are needed to set investment priorities for innovation capabilities that deliver the most value to the enterprise.
Survey question	Industry standards are being leveraged by the company
Survey question	Innovation capabilities are reviewed and assessed through life-cycle management
Interview question	How is the innovation capability life-cycle managed in terms of design, road mapping, migration planning, and feasibility?
Interview question	Do we need to incorporate industry standards in order to set the right investment priorities that would deliver the most value to the enterprise?
Interview question	Are we driving towards adapting or leveraging industry standards?
Interview question	How does the enterprise review and assess how capabilities have been implemented with respect to people, procedural steps, and asset usage?

Table 24 - Thesis 4 questions

Survey summary report

Survey Questions	Results				
Innovation capability life-cycle in terms of design, road mapping, migration planning, and feasibility is adequately implemented in the organization.	1	2		2	
Industry standards are needed to set investment priorities for innovation capabilities that deliver the most value to the enterprise.			3	2	
Industry standards are being leveraged by the company		1	3	1	
Innovation capabilities are reviewed and assessed through life-cycle management	1	1	2	1	

1-5 = Number of respondents Strongly disagree Disagree Neutral Agree Strongly agree

Table 25- Thesis 4 Survey results

A contrast exists regarding the presence or absence of an innovation capability life-cycle. Respondents 7 and 9 are positive, in contrast to the other respondents. Respondent 1 is negative. An explanation for this could be that respondents 7 and 9 hold a position that defines innovation as product innovation for existing products. The other respondents have a broader view on innovation including product management for new products as well as process innovation. The need for industry standards is tentatively confirmed. For most respondents, it is unclear if these exist within the wider organization. Finally, the opinions regarding the existence of life cycle management are very diverse. An explanation can be that the respondents have a different definition and perception of innovation, its capabilities as well as its life cycle management.

Interview summary (see 7.7.4)

Nr.	Summary
1	• No capability lifecycle management exists for innovation • Industry standards are tested and improved • Strict governance is needed for the case organisation when applying standards • No existing governance model to log discussions and decissions
2	• Innovation capability life cycle is managed within the NVI team. This team mainly focusses on people, and less on processes and tools, to innovate. • Management is aware that an innovation capability life cycle needs to be created to define what is needed, in order to scale new services and solutions. • The main challenge for the case organisation is to coordinate the different innovation activities, better define the value of innovation and create a system in which innovation teams can have an effect on the organization.
5	• It is important to create an environment and culture that encourages innovation, where people can experiment and take risks. • A reward and recognition system should be implemented to recognize and reward employees for their innovative ideas. • Decisions need to be documented, stored centrally, and available for stakeholders in the organization if we want to further invest in a certain capability.
7	• The case organisation does not have a single innovation platform or tool that is used throughout the organization. This is mainly due to the complex structure and lack of transparency across the organisation. • The current strategy for innovation is focused on creating a culture of innovation within the organisation, rather than a centralized platform or tool. This is done through training and workshops, as well as by encouraging collaboration between departments.
9	• Central product management teams manage innovation life cycle for standard products and services. • Divisions are not aligned, resulting in slow iterations and long innovation cycles. • Industry frameworks could help, but need to be adaptable to the case organisation's business context. • Its unclear if the case organisation uses industry standards and reaps benefits from them. • Capabilities are reviewed during yearly portfolio management cycle, but no defined metrics or KPI's exist. • Knowledge and all the artifacts related to innovation are spread around different departments. There is no holistic overview of all the innovation artifacts that have been created in the past.

Figure 16 - Thesis 4 Summary interview

Conclusion

The results of the interview follow those of the survey. There is no end-to-end capability overview, life-cycle remains limited to project scope with no governance for lifecycle management, all respondents indicated this is a problem. Innovation starts from scratch, due to the lack of a central repository with innovation capability artifacts. Industry standards would need to be adaptable to the needs of the case organization and its business context.

4.2.4. Summary of results

The results of the theses contribute to answering the research question. The main results are summarized in this section.

#	Thesis	Argumentation
1	A fit between Innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.	
Results	Due to the decentralized organizational structure, it is important to translate the innovation strategy into tactical and operational activities throughout the organization and leverage existing innovation capabilities. Due to the multinational context, and siloed organizational structure, the organization is unable to leverage existing innovation capabilities from the broader organization. The case organization addresses these shortcomings by building local innovation capabilities to address local business needs, however, this organizational model is not scalable due to its very limited capacity for developing and launching new products and services.	
Conclusion	The thesis is confirmed	

Table 26 - Result thesis 1

#	Thesis	Argumentation
2	The role of management and governance is of importance for creating an Innovation Capability	
Results	The fragmented way in which the organization handles innovation has led to disjointed innovation capabilities within regional and central business divisions. The case organization manages innovation capabilities as projects, this is considered flexible but also inefficient due to the lack of life-cycle management of the developed capabilities. For this reason, the case organization has placed the innovation organization under the direct supervision of the board of directors, for governance and management support on a regional level.	
Conclusion	The thesis is confirmed	

Table 27 - Result thesis 2

#	Thesis	Argumentation
3	CBP will significantly contribute to product and process innovation which in turn contributes to increased competitiveness.	
Results	Innovation is regarded as a competitive differentiator. The impact of CBP on innovation resulting in increased competitiveness is questioned. The organization does not consider defining and measuring the capability as a whole. It is too complex and costly, and existing KPIs from the business are preferred, such as people management and financial performance.	
Conclusion	The thesis is partially confirmed.	

Table 28 - Result thesis 3

#	Thesis	Argumentation
4	Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation	
Results	All respondents agree Industry frameworks could help better structure how to manage innovation capabilities in terms of investment priorities, business priorities, life-cycle management, and repository for all innovation capability artifacts. An important caveat mentioned by all respondents is that a framework would need to be adaptable to the case organization's needs and allow flexibility and requires an unambiguous definition of capability requirements and performance indicators. Something of which there is no consensus among respondents.	
Conclusion	The thesis is confirmed	

Table 29 - Result thesis 4

5. Discussion, conclusions and recommendations

5.1. Discussion – reflection

The study confirms that CBP supports the shaping of an innovation domain. The implementation of innovation implies a complex process of harmonization between strategy, business processes, organization, and incorporation of capabilities (Baker & Sinkula, 2002; Hamel, 1996; Stjernholm, 2000; Van Zyl, 2006). CBP can support this by providing a methodology and structure to holistically align the different initiatives regarding innovation, as well as the resulting capabilities and their life-cycle management, with the company's innovation strategy. For this purpose, Aldea (2016) has designed a framework with a focus on managing capabilities through activities executed in successive cycles.

In addition, the innovation capability maturity framework of Louw (2017) was used for its overview of consolidated innovation capability requirements, and a stakeholder analysis has been conducted in which stakeholders are ranked using the models of Clarkson (1995) and Mitchell et al. (1997).

The use of these three frameworks led to the design of the conceptual model in Section 2.5. The operationalization of the study builds on Aldea (2016) CBP framework in which four theses are formulated where CBP influences the shaping of an innovation domain.

The operationalization (Figure 8) provides a structure for data collection. Semi-structured interviews were used during data collection. The survey supports validating the results from the interviews.

5.1.1. Construct validity

To increase construct validity, the concepts of the study were reviewed by an independent expert. In addition, triangulation was used by conducting interviews and document analysis. During the interviews and feedback loops, respondents were asked several times to provide relevant documents. Unfortunately, no respondent complied or was able to provide documents. From the results of the interviews, it seems that no such documents were available. However, the survey results did contribute to triangulation and thus increased construct validity.

5.1.2. Internal validity

Internal validity was increased by validating the survey data and verifying the insights (Yin, 2011). Peer-review articles were used as much as possible for the literature review. In doing so, the results were analyzed consistently. A stakeholder analysis determined which roles within the organization are important for collecting research data through purposive sampling. Two iterations were performed for stakeholder [5] (HR Business Partner) specifically related to the HR growth model developed in the case organization that required more probing to better understand its context. The results of the interviews were transcribed, summarized, and validated by all respondents. This verifies that the interview results were interpreted correctly, reducing possible interpretation bias by the researcher.

5.1.3. External validity

External validity means that the theory should be generalizable (Saunders, 2009). Because the research takes place within a single case study, external validity is difficult to achieve. By selecting stakeholders who were well informed about broad innovation developments taking place within the organization, and describing all the steps during the research, an attempt is made to increase generalizability and meet external validity. External validity in case studies is also achieved through the rationale for the selection of the case(s) so that this context can be evaluated by readers of the study (Gibbert et al., 2008). For this study, an assumption was made that the case organization in question was a representative case of the phenomenon being studied.

5.1.4. Face validity

It is important that respondents clearly understand the meaning of the topics and knowledge domains covered during the interview. An info session, with presentation and info brochure, was given before the interviews to clarify these topics with the opportunity for questioning, and communicate digitally (Appendix 7.6). A survey was sent to the respondents prior of the interview to form an initial insight that was used further during the semi-structured interviews. This ensures impression validity.

5.1.5. Reliability

Reliability refers to the consistency of a study (Gelderman, 2013). It should provide consistent results at different times and in different conditions. Therefore, control questions were asked during the interviews. This verified that the respondent understood and answered the questions consistently. All respondents received the same questions and explanations regarding key terminology and interviews were at a time and location perceived by the respondents as convenient. All steps, descriptions, and results related to the development of the final results are available in Appendix 7. This creates the “Chain of Evidence” (Yin, 2017) to provide insight into this reliability after the research has been conducted.

5.1.6. Ethical aspects

Ethical aspects as described in section 3.4.6 were considered during the study. This included communicating to each respondent via email before the interview to explain what the research and interview entailed. All five stakeholders eventually participated in the survey and interviews.

5.2. Conclusions

The main research question was, “Can capability-based planning shape an innovation domain architecture in support of an organization’s innovation strategy?”. To answer this question, a theoretical model was created to research if CBP can shape the creation of an innovation domain by managing innovation capabilities.

Based on the theoretical research, the following theses are expected to be confirmed by the empirical research:

1. A fit between innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.
2. The role of management and governance is of importance for creating an innovation capability.
3. CBP contributes to product and process innovation which in turn contributes to increased competitiveness.
4. Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation.

The results of the theses and answer to the main research question is listed below.

Thesis	Confirmed	Score
1	Yes	+
2	Yes	+
3	Partially Yes	+/-
4	Yes	+
Main Question	Partially	++++/-

Figure 17 - Final conclusion

This research was able to confirm three theses, one thesis was partially confirmed. Thereby we can conclude this research partially confirms CBP can shape an innovation domain architecture in support of an organization's innovation strategy, since the impact of CBP on innovation resulting in increased competitiveness remains questioned.

This means companies can further explore the implementation of CBP to share the same understanding regarding the definition of innovation capabilities, which ones are relevant for the innovation strategy, how these relate to the business model of the organization, and what changes need to be made to these innovation capabilities to create the most value.

There were no clearly defined innovation capabilities in the case organization. It was empirically observed that the organization invested in the setup of a local innovation department, and recently started integrating with other business units within the larger corporate structure to find synergies. The development of unified competencies, processes, and tooling is still in the conceptual phase and innovation develops rather organically. This empirical observation was addressed in more detail in the reflection and recommendations for follow-up research.

The case organization is hampered in scaling up its capabilities to innovate and lacks an overview of innovation initiatives, both at a regional and international level. This is especially important because strategic direction between the different business entities related to innovation is not existing, or as one respondent (CEO) put it:

"The question is how do we plan to scale? In terms of acquisitions or mergers, how do we plan the integration of the capabilities? So, the main story is, yes, we build it in a separate organization. Yes, we're going to merge. Yes, we're going to do acquisitions. How do we integrate them into our value chain so that they produce the maximum value, that aspect we haven't covered yet.There is no capability lifecycle management for innovation. "

5.2.1. Link with literature

The respondents indicated that innovation capabilities are important for the case organization's success and should be managed as strategic business capabilities, supported by executive stakeholders. This is in line with the findings of Assink (2006), Liao et al. (2009), and (Nwachukwu & Chladkova, 2019).

Most respondents agree that CBP could be used to improve the setting of investment priorities that would deliver the most value to the case organization, and can bring the needed steering. This is in line with the findings of Aldea (2016) and (Fassin, 2009). However, the definition of value, and how to link CBP with increased competitiveness remains questioned.

When an organization is aware of its innovation capabilities requirements as listed by Louw (2017), and the necessary governance models are implemented, it can respond more efficiently on market opportunities and make investment decisions that bring the most value to the business accordingly. This is in line with the definition of Baker and Sinkula (2002), Hamel (1996) and Van Zyl (2006) around innovation strategy, and can partially be achieved with the implementation of CBP which, through its inherent life cycle management function, governs the various innovation capabilities of the organization which can form the basis for an innovation domain.

5.3. Recommendations for practice

The research reveals a picture of an organization that fully recognizes the importance of innovation. At the same time, it can be empirically observed that the organization is searching to give direction to investment priorities related to innovation, and find synergies with existing innovation capabilities. The research shows that innovation starts with formulating an innovation strategy and building innovation capabilities. It is therefore important to embed these activities structurally in the organization, since it is essential to know which innovations exist and which developments are on the roadmap.

Implementing a siloed innovation department in the regional organization can be an meaningfulll contribution in the short term to the regional capability to innovate quickly, but will unnecessarily complicate scaling up for the long term. It is therefore recommended for organizations to establish both a short-term and a long-term innovation vision, of which the life-cycle management of innovation capabilities is a significant part, to ensure leveraging synergies and innovation capabilities within the broader organization more efficiently.

It is also recommended to establish requirements for innovation capabilities as well as how to unambiguously measure performance. Lastly, it's essential to carefully record and communicate all elements of the innovation capabilities as well as the roadmap within the entire organization.

5.4. Recommendations for further research

This research examined the influence of CBP on the shaping of an innovation domain. A single case study was conducted, based on the concept of "capabilities," on the theoretically assumed intersection and the suspicion that a relationship exists between both knowledge domains innovation strategy and CBP. This study helped to collect the empirical research findings. Firstly, given that this is a single case study based on a time-bound scope, the study examined a specific period at an organization. To get a better understanding of the shaping of an innovation domain, and the extent to which CBP contributes, further longitudinal research is recommended.

Secondly, in the context of the current case organization, the research has not been used to analyze the effects of CBP on the individual dimensions of an innovation capability being people, processes, and tools. Follow-up studies and research on the required performance indicators and effectiveness of CBP on this capability dimensions is recommended. The framework of Louw (2017), Figure 3, could be a good framework to use for research.

Thirdly, the maturity of the organization concerning innovation and life-cycle management of innovation capabilities is still relatively premature, and relevant documentation was not existing. It is recommended to test the research within an organization that has a higher maturity level in terms of innovation capabilities and a repository of artifacts to increase construct validity.

Lastly, organizations can employ CBP without EA and vice versa. However, integrating the two paradigms can yield greater results and could be a domain for further research.

6. Reflection

This research, conducted over one year, focuses on the role of CBP in the shaping of an innovation architecture domain, and within an organization for which the researcher was working during the theoretical literature review. The researcher experienced the entire research track as educational but also intensive. It was a path with a steep learning curve, with challenges to formulate the research question clearly, and to combine the knowledge domains of CBP and innovation strategy. Multiple reviews and iterations with the thesis supervisor, who provide excellent guidance, were necessary to refine the research question.

Innovation is among the researcher's areas of interest as well as professional responsibilities. Within the case organization, a new focus on innovation had emerged for two years, with the need to manage these activities and complexity in a way that would allow future scalability. Therefore, there was much willingness to participate in the research.

In conclusion, the researcher experienced the research as very insightful. It helped the researcher to learn work in a structured way as well as more accurately formulate conclusions and expectations. The researcher hopes the case organization will apply the recommendations in practice and starts implementing CBP. Finally, the researcher hopes this research has created new insights that can lead to further theory-building at the intersection of both knowledge domains.

7. Appendix

7.1. Innovation Capability Framework Detailed

Innovation Capability Construct	Organisational Construct	Internal				External
		Strategy & Objectives	Function & Processes	Organisation & Management	Data & Information	Customers & Suppliers
Innovation Process	Explore & Converge	IP/SO1 - Scanning & exploring for latent opportunities	IP/FP1 - Identifying opportunities IP/FP2 - Developing concepts	IP/OM1 - Contextualising opportunities & concepts	IP.KC/DI1 - Capturing, storing & retrieving data & information IP.KC/DI2 - Formal & informal internal networking & collaboration	IP/CS1 - Understanding the market
	Portfolio Management	IP/SO2 - Balancing the innovation portfolio IP/SO3 - Using fundamental principles to guide process & make decisions	IP/FP3 - Testing, screening & prioritising opportunities & concepts	IP/OM2 - Planning & coordinating the innovation portfolio IP/OM3 - Allocating resources appropriately	IP.KC/DI2 - Formal & informal external networking & collaboration	IP/CS2 - Involving customers & suppliers in the innovation process
	Consolidate & Exploit		IP/FP4 - Substantiating, implementing & exploiting opportunities	IP/OM4 - Using appropriate project management techniques		
	Process Control & Risk Management		IP/FP5 - Identifying and planning for key decision points	IP/OM5 - Reducing uncertainty & mitigating risk		
Knowledge & Competency	Discover	KC/SO1 - Establishing knowledge, competency & technology development & acquisition strategy KC/SO2 - Establishing intellectual property management & sharing policy	KC/FP1 - Continuous research	KC/OM1 - Managing tacit knowledge		KC/CS3 - Ensuring supplier competency & technology supports requirements
	Absorb & Consolidate		KC/FP2 - Identifying & extracting relevant information	KC/OM2 - Managing intellectual property		
	Core Competency & Technology		KC/FP3 - Developing & acquiring the required competencies & technologies	KC/OM3 - Managing core competency & technology		
Organisational Support	Innovation Strategy & Leadership	OS/SO1 - Developing & conveying innovation strategy & objectives	OS/FP1 - Championing & encouraging innovation	OS/OM1 - Meta-Innovation	OS/DI1 - Communication & the flow of information	
	Structure & Infrastructure	OS/SO2 - Organisational values & policies	OS/FP2 - Infrastructure, systems & tools to support process & management requirements OS/FP3 - Organisational practices & procedures	OS/OM2 - Creating cross-functional & multidisciplinary teams OS/OM3 - Developing flexible & adaptable organisational structure & infrastructure		
	Environment & Climate			OS/OM4 - Motivating, rewarding & celebrating success		
	Resources & Measurement	OS/SO3 - Investment in innovation & sourcing of capital	OS/FP4 - Providing the necessary resources *(Resource slack, focussed resources)* OS/FP5 - Measuring innovation	OS/OM5 - Hiring & aligning people's values & skills with organisation & task OS/OM6 - Benchmarking innovation		

Table 30 - Innovation Capability Framework Detailed

7.2. CBP Generic Activities

Framework	CBP Generic Activities (GA)	CBP Activities	CBP Expected outcomes
CBP Generic Activities Framework	Map	Capability map	Identify, describe, and relate the capabilities of the organization. This may be done at different levels of aggregation/decomposition. Link capabilities to their motivation (strategic goals) and their implementation (resources, competences, information, processes, etc. as
		Capability architecture	
		Capability motivation	
	Analyze	Capability metrics	Identify relevant metrics/KPIs (derived from strategic objectives) and score these metrics. Identify under/over-performing capabilities and missing capabilities . Identify capabilities that exist in different parts of the organization but might have different names which are actually the same thing.
		Capability heat map	
		Capability gaps	
	Plan	Planning scenarios	Plan increments over time and allocate resources. This requires collaboration with strategy management (sponsor, decision-maker), PPM (focus on definition of projects, portfolios, resources), and EA (focus on design, road mapping, migration planning, feasibility). Monitor and control the planning. Similar to the planning of increments, this activity also requires collaboration with strategy management, PPM, and EA.
		Capability increments	
		Capability roadmaps	
	Improve	Capability realization	Identify performance level of implemented capabilities and compare to expected level required to meet outcome. Review and assess how capabilities have been implemented with respect to people, procedural steps, and asset usage.
		Capability monitoring	
		Capability evaluation	
Innovation Capabillity Framework			We research how CBP can shape an innovation domain architecture in support of an organization's innovation strategy.

Table 31 – CBP activities

7.3. Innovation Capabilities areas

Framework	Innovation Capability Areas	Innovation Capability Constructs (ICC)	Organisational Constructs	ICC Nr.	Description
Innovation Capabillity Framework	Innovation Processes	• Explore & Converge • Portfolio Management • Consolidate & Exploit • Process Control & Risk Management	Strategy & Objectives Function & Processes Organisation & Management Data & Information Customers & Suppliers	1	The practices, procedures, activities, etc. that take ideas and/or opportunities through to concepts, then through development and implementation, and eventually to a stage of commercialisation and operation (which may include continuous refinement and optimisation). Basically, it refers to the complete innovation lifecycle.
	Knowledge & competency	• Discover & Absorb • Consolidate • Core Competency & Technology	Strategy & Objectives Function & Processes Organisation & Management Data & Information Customers & Suppliers	2	The innovation process requires both specific and broad-based knowledge and competency, whether already within the organisation or still to be developed or acquired. Also included are the associated management requirements for knowledge, competencies, and technology.
	Organisational support	• Innovation Strategy & Leadership • Structure & Infrastructure • Environment & Climate • Resources & Measurement	Strategy & Objectives Function & Processes Organisation & Management Data & Information Customers & Suppliers	3	The structures, resources, measures, infrastructure, strategy, policies, leadership, etc. that are needed to support the process and the knowledge and competency requirements for innovation.
CBP Generic Activities Framework		CBP strategy		1, 2 and 3	We research how CBP can shape an innovation domain architecture in support of an

Table 32 - Innovation Capabilities areas

The architecture of Louw's model (Figure 3) consists of three fundamental areas of innovation capability and can be represented as a layered set of circles depicting the hierarchical nature of the relation between the areas (Figure 18).

Figure 18 - Innovation Capability Areas hierarchy

The first dimension of this framework, the Innovation Capability Construct, uses two levels to describe organizational innovation capability. The highest-level components are Innovation Capability Areas and the second-level components are Innovation Capability Construct Items.
The 'organizational construct' defined on the x-axis of the framework ensures that the fundamental aspects of an organization are addressed by the content of the model.

7.4. Open coding example

50 Jeff De Graef

51 Thanks Kristof, clear example of how innovation impacts the probability of success for the new products and services within NTT. So thanks for that. I'm moving on to the 4th question. How arepractices or procedures, that take ideas and opportunities through concepts and then through development, implementation and eventually commercialization operations. How are those practices or procedures defined in the organization?

52 Kristof Schraepen [C]

53 These practices and procedures and activity, actually they're less defined than one would hope for in the big organization. So still they pop up as small opportunities. We have to guide them well. We have to find time in the organization to take them on as a project. We have to push a project team to continue working on them. We have to foresee the milestones for the project team and it's not always clearhow that structuring is done well, while it is clear, but it's not always as professional as I would hope it's to be. It becomes a bit because these projects that we are dealing with, they typically don't follow a predefined path. So we don't have the concept of an innovation funnel yet. Of course the concept exists, the innovation funnel exists, but there is no project management office managing that innovation. So the team is too small to have this kind of administration and the organization in our corporate practices, so we define the project in a bit of an ad hoc way.

54 And that means that it typically slows down. You have to speed it up, slows down, have to speed it up. So keeping the tempo is quite difficult and keeping the belief that the things that we are doing, the things that we are working with is worth it. That's always a hard part for the innovation because there's no proven points of well, we need to continue the effort. This is the delivery that we should get to the delivery point, that is not always clear. So typical in a classical project methodology, well, in the process there is the risk that we lose faith that's the difficulty with the prototype projects, they are novelties. And and it hurts to inject these novelties into an organization that is not really expecting them so. What I mean by that, not really expecting them. There are not practices or procedures or activities which are predefined to host these innovation novelties. So you have to push them in. And that typically hurts a bit in the process because the classical process is not well suited to host them.

55 Jeff De Graef

56 OK. Yeah. So if I understand you correctly, Kristof, the capability to innovate is more on an ad hoc basis within your team. But indeed you have the people for it, but the processes to innovate and to bring ideas or opportunities in the market quicker to development through prototyping through commercialization and eventually into operations. Is something that is for the moment at NTT not in place or not well aligned, and it's done on an ad hoc basis. And what impact does that have done on the speed and quality of developing and delivering new products and services?

57 Kristof Schraepen [C]

58 Well, it typically puts a strain on the entry point in our funnel , because you expect a lot of the people working there and you expect them to do everything else that comes afterwards as well. But they're focusing on innovations and they typically lose interest when it the new innovation needs to be pushed into the bigger organization, since this implies the rules and the procedures that are needed for a big organization. But there is a gap. I see a gap between well, the start of our innovation funnel, the middle of the funnel and the end of the funnel.

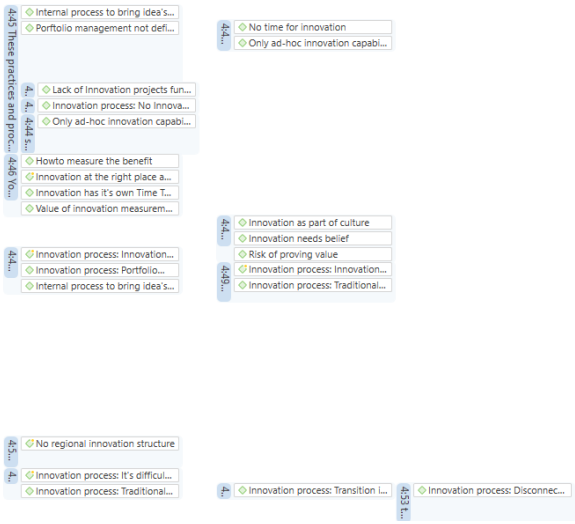


Figure 19 - Open coding example

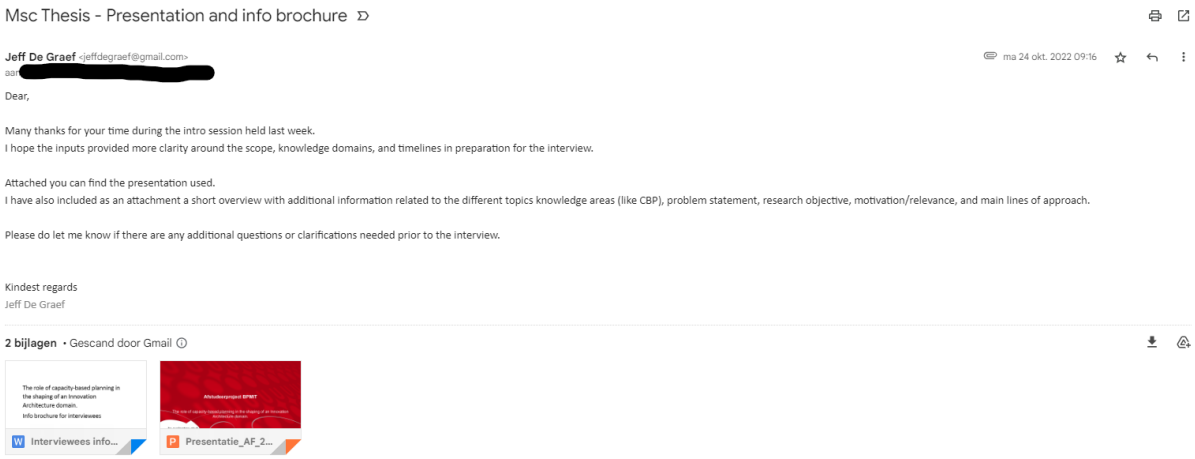
7.5. CBP mappings to interview questions

Theses	Nr.	Question	Linked CBP Capabilities
A fit between Innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.			
1	1.1	How are we addressing the most-important gaps between what we are able to do at the moment and what we should be able to do in the future in terms of innovation?	All
1	1.2	To what extend are we defining the ways to link capabilities to their motivation (strategic goals) and their implementation (resources, competences, information, processes, etc.) to build a strategic advantage?	Capability map Capability motivation
1	1.3	How does innovation impact the probability of success in terms of developing and delivering new products and services?	Capability motivation
1	1.4	How are practices, procedures, activities, etc. that take ideas and/or opportunities through to concepts, then through development and implementation, and eventually to a stage of commercialization and operations being defined in the organization?	All
The role of management and governance is of importance for creating an Innovation capability			
2	2.1	Do we have overlapping innovation projects?	Capability heat map Capability roadmaps
2	2.2	To what extent we have redundant governance, or an inadequate organizational structure?	Capability architecture Capability roadmaps
2	2.3	To what extent do we have adequate skills, broad-based knowledge and competency to innovate?	Capability realization
2	2.4	How are the associated management requirements for innovation knowledge, competencies, and technology defined ?	Capability metrics
CBP will significantly contribute to product and process innovation which in turn contributes to increased competitiveness.			
3	3.1	How is innovation being defined as important for the firm's success?	Capability motivation
3	3.2	Should the focus for innovation capabilities be a strategic differentiation or lower costs, what is the main competitive advantage?	Capability motivation Capability monitoring
3	3.3	Who do we want to invest more or less in innovation capabilities (people, processes, tools)?	Planning scenarios Capability increments Capability roadmaps

3	3.4	How are performance levels of implemented capabilities defined and compare to expected level required to meet business outcomes (increased competitiveness).	Capability monitoring Capability evaluation
Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation.			
4	4.1	How is the innovation capability life-cycle managed in terms of design, road mapping, migration planning, and feasibility?	Planning scenarios Capability increments Capability roadmaps
4	4.2	Do we need to incorporate industry standards in order to set the right investment priorities that would deliver the most value to the enterprise?	All
4	4.3	Are we driving towards adapting or leveraging industry standards?	All
4	4.4	How does the enterprise review and assess how capabilities have been implemented with respect to people, procedural steps, and asset usage?	Capability monitoring Capability evaluation

Table 33 - CBP mappings to interview questions

7.6. Presentation and info brochure



Msc Thesis - Presentation and info brochure

Jeff De Graef <jeffdegraef@gmail.com> ma 24 okt. 2022 09:16

aan [redacted]

Dear,

Many thanks for your time during the intro session held last week.
I hope the inputs provided more clarity around the scope, knowledge domains, and timelines in preparation for the interview.

Attached you can find the presentation used.
I have also included as an attachment a short overview with additional information related to the different topics knowledge areas (like CBP), problem statement, research objective, motivation/relevance, and main lines of approach.

Please do let me know if there are any additional questions or clarifications needed prior to the interview.

Kindest regards
Jeff De Graef

2 bijlagen • Gescand door Gmail

The role of capacity-based planning in the shaping of an Innovation Architecture domain.
Info brochure for interviewees

Interviewees info...

Afstudeerproject BPMT

Presentatie_AF_2...

Figure 20 - Presentation and info brochure

7.7. Interview summaries

7.7.1. Summary thesis 1

Nr.	Summary
1	• The current innovation gap is managed by a separate organization New Ventures and Innovation (NV&I). By trial and error, they build and test innovation capabilities before the case organization scales them. • Scaling is dependent on merging and integrating with her sister company, to integrate the value chain and its capabilities end to end. There is currently no plan for this, and this limits the abilities of the case organization to innovate its portfolio, processes, and with customers. • The New Ventures & Innovation (NV&I) organization reports directly to the executive committee to ensure executive support and is included in early budget planning. However, due to the velocity of innovation, it's currently a challenge to wait a whole year for budget, and priority setting related to innovation capabilities and their life-cycle. • Innovation enables the organization to build new services quickly, and in an agile way to remain competitive in the market. Innovation portfolio management is not existing and depends on personal ownership and accountability within the NV&I team. People make the difference and governance cost should be balanced versus cost. • Quote: "innovation has a low probability of success. But on the other hand. Without innovation, you will not develop new products. So in that sense, yes, the only chance of increasing probability of success is by innovating."
2	• Innovation strategy planning is part of an annual business planning to define priorities and investment areas, however, innovation has its own time to market and needs flexibility, a dedicated small innovation team is created for the case organization to accommodate this flexibility. • The case organization has a multinational complexity, the innovation team works ah-hoc and isolated, in an agile way on local opportunities. • Process and product innovation come from the case organization's central organization, however competitive differentiation needs to come from this local team. • Capability definitions are not in place and Innovation KPIs are linked to sales targets. • Due to this multi-country organization and context, no portfolio management function in place lists all innovation capabilities. • The company is unable to transition innovation prototypes toward the standard portfolio and operating model of the company. Tools and processes are not streamlined and integrated to facilitate end-to-end portfolio management.
5	• Innovation is not structurally embedded in the organization. A separate Innovation team exists but is managed and isolated with its priorities. Innovation outside of that team is ad-hoc and people driven. • The organization does not invest enough time for people to innovate, as they need to focus on operational tasks first.

	• A new HR competence model is put in place to support a growth mindset and help transform the existing skills of co-workers in line with company strategy and business needs. This competence model includes innovation skills and is defined and measured as part of people management governance. • Innovation needs management support to make it an integral part of company culture, for the moment this support is not structurally in place.
7	• Innovation is seen as needed for the automatization of existing services as a means of differentiation. • Innovation gaps are managed through product management by road map development and should be based on measurable benefits (continued relevance in the market, increase in revenue), prioritization from the countries, and also a business case. • Different organizations within the case organization are innovating, strategic priorities are unclear, and governance is fragmented resulting in challenges to quantify and measure the impact of innovation on the delivery of new products and services.
9	• The main goal to innovate is to improve the existing portfolio of products and services and make service delivery more efficient. • There is no clear process and structure to drive roadmap discussion on innovation capabilities investments in a structural way across the whole organization. • A product management function is in place for the standard portfolio, but most innovation happens ad-hoc and is triggered and owned by individuals. • There is no existing framework or process in place to qualify investments, manage improvements and measure the outcome of innovation capabilities. • Slow time to market and inability to launch new innovative services quickly, since the case organization works in a complex multi-country environment with different, and disconnected, delivery organizations.

Table 34 - Summary interview thesis 1

7.7.2. Summary thesis 2

Nr.	Summary
1	• Innovation initiatives and projects overlap at the case organization's global level due to the multinational context of the organization. Capabilities can be built in parallel by multiple divisions without any transparency. • The case organization has good visibility on the local innovation capabilities, as they are managed within the NV&I department which reports to the executive committee. This ensures the local organization manages and controls the innovation projects. • Within the innovation capability of the case organization, people skills are rated high and sufficient to cope with the current requirements of both local customers and businesses. There are concerns about how to scale this innovation capability and integrate it with the rest of the case organization's business units. Leveraging the process and tooling capabilities of her sister company, one of the many subsidiaries, will be necessary to scale the innovation capabilities.
2	• Within the case organization there are overlapping projects, which are not synchronized and governed properly both within and outside of the case organization.

	• The innovation team of the case organization, and its innovation capability, are disconnected from the rest of the organization and business functions. The HR growth model for example does not apply to their team members, and portfolio management activities from product management teams are not connected to the innovation team. • Being more competitive is currently solved by hiring more people instead of building out an innovation capability and its life-cycle management. • Innovation is people driven, done reactively triggered by an external opportunity, and typically owned by a single individual, governed by project management. • Governance for life-cycle management would be beneficial to implement but cannot be too rigid or costly. • The innovation team reports to the executive committee but is unable to integrate their investment priorities into one cohesive plan and governance that integrates them with the rest of the business.
5	• There is no clear view of all innovation projects in the organization, hence no ability to detect overlap. • Building innovation skills is part of every personal development plan, supported by an HR growth model and governed through people management. The input for required innovation skills needed comes from different parts of the organization and is not well structured. • There are no innovation capabilities defined, leadership defines the innovative culture.
7	• There is less innovation project overlap and an effort to reduce overlaps and minimize competing products • There needs to be management support and governance in creating innovation, for the moment this is predominantly done ad hoc. • The case organization is putting in place a governance model across the organization since the existing governance lacks maturity and is fragmented across different parts of the organization. • Every country has innovation skills in some form, but these are not structured and systematically managed as capabilities that can be used by other business units to innovate. • Innovation capabilities are not defined, resulting in the case organization does not specifically develops for innovation competencies. People are trained with a focus on technology competencies needed for the business, but the case organization does not structurally train for innovation.
9	• Innovation projects overlap on the case organization 's global level due to it's international structure and different business divisions. Different countries could be investing in similar initiatives and capabilities. There is no end-to-end Innovation portfolio available that lists all activities and capabilities within the broader organization. • At the regional level, there is less overlap as the organization has visibility on most of the innovation initiatives, although via fragmented governance layers. • This lack of portfolio management cross-business division negatively impacts the case organization's ability to leverage synergies and innovate more quickly.

Table 35 - Summary interview thesis 2

7.7.3. Summary thesis 3

Nr.	Summary
1	• Innovation is incorporated in the case organization's strategic plan for 2023 and beyond, accelerated by the merger with other subsidiaries to remain competitive and contribute to the company's success. • The case organization innovates to differentiate. • Leveraging the innovation capabilities of other subsidiaries will be critical for scaling and require significant investment in processes and tools. Both investment areas have priority. • Innovation capabilities within the case organization are not defined, the performance of the people within the Innovation department of the case organization is measured on more traditional KPIs like billability and revenue targets, there are no KPIs that define innovation capability performance. • The main challenge will be to align and integrate the regional Innovation capability, which is people driven, with the innovation capabilities of central/global delivery organizations and affiliates.
2	• Innovation needs to happen but is mainly done by hiring skilled people as the investment is considered less expensive versus implementing and managing a rigid process and tooling. Another justification for this priority investment is a perception that people equal the ability to engage in ad-hoc initiatives and projects with flexibility and speed. • The New Ventures and Innovation (NV&I) team is created for this purpose and is considered the first version of the case organization's innovation capability. • The NV&I team is isolated, and the products and services they build are not scalable nor integrated into the wider portfolio and operating model of the company. It is not possible to define success since desired performance levels and associated KPIs are only vaguely defined and not structurally measured. • The main driver for innovation is competitive differentiation, however, the impact of the NV&I team is currently limited to providing new consultancy portfolio items. • People are considered to be the most important assets, investment priorities are likewise. However, people cannot function without a minimum of processes and tools for innovation.
5	• The importance of innovation and its definition are unclear. • However, services designed by the case organization's global service divisions are innovative as they constantly evolve and extended with either new functionality or more efficient service delivery. • The regional innovation department and organizational structure is disconnected and works ad-hoc and opportunity based on small innovation projects. • The case organization's innovation strategy is more clearly articulated at regional Japan level (where the case organization is headquartered and has their home market) and not efficiently cascaded throughout the rest of the organization. This is due to the multinational complexity and fragmented organizational design of the case organization and all its subsidiaries. • Innovation skills are mainly managed locally by the case organization as these are created to organize and manage the people, while the innovation processes and tooling needed to innovate are managed by several the case organization's central service divisions. This causes misalignment as people, processes and tools are not managed as one single innovation capability.

	• People skills for innovation are defined in the case organization's HR growth model and measured.
7	• Innovation is important for the organization, but it's not clearly defined how it contributes to the success of the business. There is the expectation that all services the case organization offers have a road map that will help remain relevant to market requirements by being innovative. • The primary focus of Innovation capabilities is on competitive differentiation, and secondly on process efficiency and cost optimization of service delivery. • Investments in people, processes, and tools are needed, but people should have a higher priority in terms of investments. • The performance of the delivery organization, which leverages innovation capabilities, is measured on revenue, cost, and customer satisfaction targets. The innovation capabilities themselves are not clearly defined and consequently not measured.
9	• The importance of innovation, for the case organization, is very high. Without innovation, the case organization in general, not in Belgium only, will not stay relevant in the market. • The case organization has an R&D organization in Japan with a focus on product innovation and inventions. • The current portfolio of services is evaluated regularly via the product management function, to evolve and innovate the portfolio offerings and remain competitive. • Competitive differentiation is the focus of innovation since it adds value for customers. • Innovation is also built into the service delivery organization, to be more efficient and cost-effective. These capabilities to innovate are not managed by the case organization but through the regional entity of Japan and the central delivery organizations. • People skills have priority but need to be part of an innovation capability that includes processes and tools. Improving the processes and tools could implicate a de-investment in people's capacity but not in skills. • Innovation capability is not defined and measured in great detail, the organization mainly uses external KPIs like CSAT (Customer satisfaction) and win rate/ revenue increase as KPIs to determine the impact of innovation.

Table 36 - Summary interview thesis 3

7.7.4. Summary thesis 4

Nr.	Summary
1	• There is no capability lifecycle management for innovation. • Innovation happens through a kickoff and business case, where the NV&I team manages the project, but life cycle management is not existing. That's a process that does not exist for the innovation. It exists in other areas of the business. For innovation, lifecycle management is purely people-driven, it's not lifecycle management. • Industry standards have been tested and improved so many times. Implementing them, and being very strict with governance will benefit the case organization. They are driving towards standards, but not at the speed that is needed.

	• Innovation capability definitions and reviews are only done from a people management perspective, but not from an end-to-end capability perspective. These discussions are not logged using a governance board.
2	• Innovation capability life cycle is managed as a team, within the NV&I team. This team mainly focuses on people, and less on processes and tools to innovate. • Industry standards would need to be applied since innovation is currently done ad-hoc and a person is taking ownership. The case organization does don't truly assess the value for the company nor thoroughly qualify what would be the best investment option for the company. • Some forms of standardization are used throughout the organization, within the product management function, but the impression is these standards are not used properly and their full potential is not used, the case organization does not benefit from what a standard has to offer. • Hesitation to apply standards because they could limit creativity, however, the case organization is aware that they will accelerate the delivery power of the organization for new services and solutions. • The case organization has teams in place and they do great work, but the coordination, synchronization, end delivery, et cetera is not measured constantly. The value of innovation is hard to define and measure.
5	• The innovation capability life cycle is not managed. Most innovation starts from scratch, without leveraging existing capabilities. • A minimum structure should be implemented to manage the innovation capability life cycle but should allow flexibility, agility, and benefits should be greater than the costs. • Decisions need to be documented, stored centrally, and available for stakeholders in the organization if we want to further invest in a certain capability. • There is no need to measure capability implementation levels since the most important component of innovation is people and the case organization does not want to measure implementation for people, but performance levels should be measured.
7	• The case organization does not have a definition of innovation capability, therefore cannot improve it systematically. This could be in place at the case organization on a global level but no details are available. • The case organization did many large mergers & acquisitions, and the priorities currently are around standardizing portfolios and processes across all the integrated companies. These acquisitions are all very strategic, there is an assumption of Innovation capabilities defined and governed on a global level however unclarity how to integrate these capabilities with the existing ones. • Portfolio management is a standard within the organization but is implemented and managed per service division or business unit with little transparency. Product innovation happens, as a result, isolated without the ability for other departments to leverage the innovation capabilities used.
9	• The innovation life cycle for standard products and services is managed by the central product management teams, but there are several divisions and they are not working aligned. Iterations go slow, and it takes too much time to build innovations into our services. • Industry frameworks could help better structure how the case organization manages innovation capabilities, but the concern is that the standard would need to be adaptable to the needs of the case organization and its business context.

	• It's unsure if and how the case organization uses industry standards, and if they reap the benefits or not. • Capabilities are reviewed as part of the yearly portfolio management cycle, but not based on defined metrics or KPIs. • Knowledge and all the artifacts around innovation are spread around different people, and different departments. So there is no holistic overview of all the innovation artifacts that have been created in the past.

Table 37 - Summary interview thesis 4

7.8. Survey questions

Sectie 1 van 5

Msc Survey

This survey serves the research by increasing the research construct validity through triangulation and is structured around four theses expected to be proven with the research. Four survey questions per theses are listed.

E-mailadres *

Geldig e-mailadres

Dit formulier verzamelt e-mailadressen. Instellingen wijzigen

Sectie 2 van 5

Survey - Thesis 1 sectie

Thesis 1: A fit between Innovation strategy and CBP is critical for speed and quality in developing and delivering new products and services.

Gaps between what we can do at the moment and what we should be able to do in the future in terms of innovation is addressed adequately *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Innovation capabilities are linked to their motivation (strategic goals) and implementation (resources, competencies, etc..) to build a strategic advantage *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Innovation impacts the probability of success in terms of developing and delivering new products and services *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Innovation practices and procedures that take ideas through concept, development, implementation, and eventually commercialization are defined in the organization. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Sectie 3 van 5

Msc Survey - Thesis 2

Thesis 2: The role of management and governance is of importance for creating an Innovation capability

Our innovation projects are aligned and not overlapping. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Governance for innovation is not redundant, and the organizational structure is adequate. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Skills, broad-based knowledge, and competency to innovate are adequate available *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Management requirements for innovation knowledge, competencies, and technology are defined *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Sectie 4 van 5

Msc Survey - Thesis 3

Thesis 3: CBP will significantly contribute to product and process innovation which in turn contributes to increased competitiveness.

The importance of innovation for the firm's success is clearly defined. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The focus on innovation capabilities and its main competitive advantage is clearly defined *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Investment priorities for innovation capabilities (people, processes, tools) are defined. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Performance levels of implemented innovation capabilities are defined and measured to meet business outcomes. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Sectie 5 van 5

Msc Survey - Thesis 4

Thesis 4: Planning the required innovation improvements (over time) through a defined series of innovation capabilities will help to shape a domain architecture for innovation

Innovation capability life-cycle in terms of design, road mapping, migration planning, and feasibility is adequately implemented in the organization. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Industry standards are needed to set investment priorities for innovation capabilities that deliver the most value to the enterprise. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Industry standards are being leveraged by the company *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Innovation capabilities are reviewed and assessed through life-cycle management *

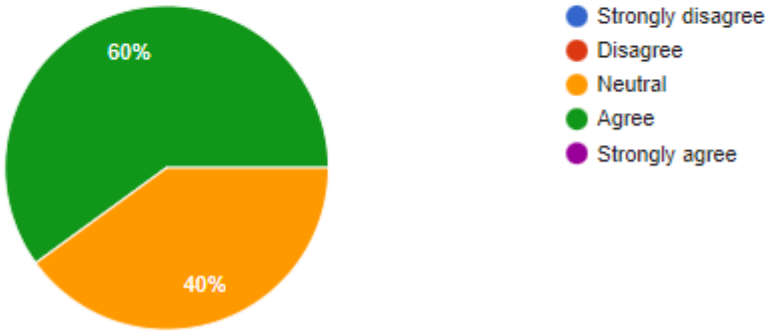
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

7.9. Survey results

Survey - Thesis 1 sectie

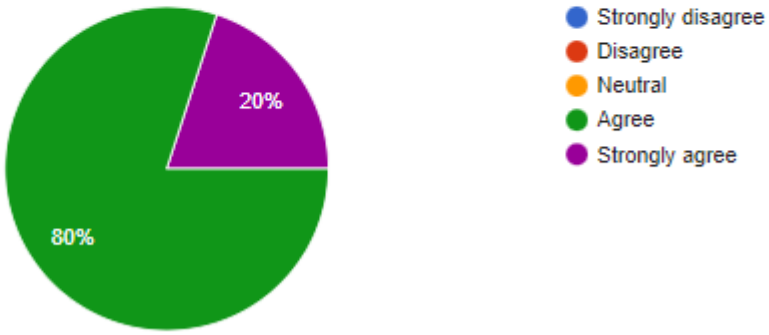
Gaps between what we can do at the moment and what we should be able to do in the future in terms of innovation is addressed adequately

5 antwoorden



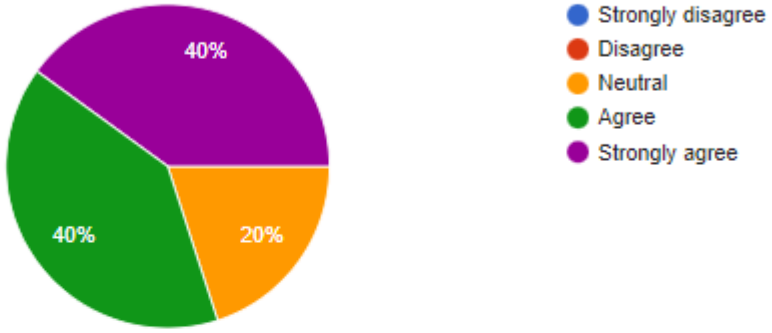
Innovation capabilities are linked to their motivation (strategic goals) and implementation (resources, competencies, etc..) to build a strategic advantage

5 antwoorden



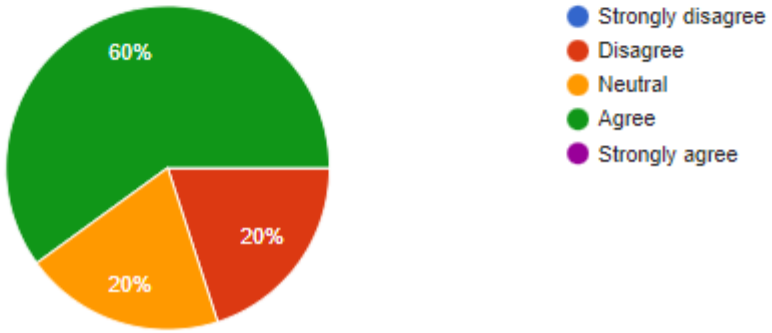
Innovation impacts the probability of success in terms of developing and delivering new products and services

5 antwoorden



Innovation practices and procedures that take ideas through concept, development, implementation, and eventually commercialization are defined in the organization.

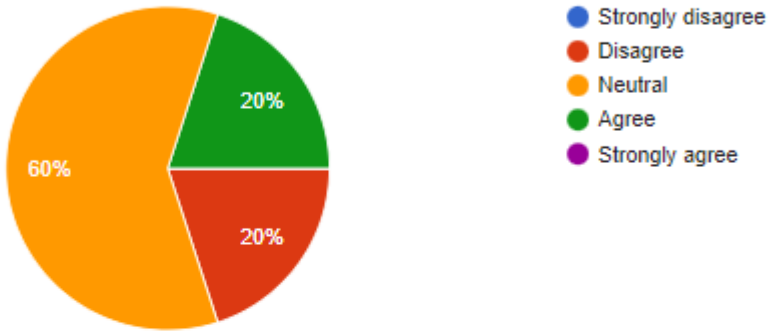
5 antwoorden



Msc Survey - Thesis 2

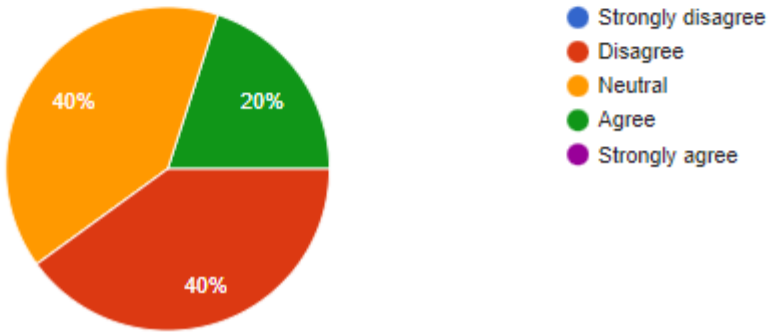
Our innovation projects are aligned and not overlapping.

5 antwoorden



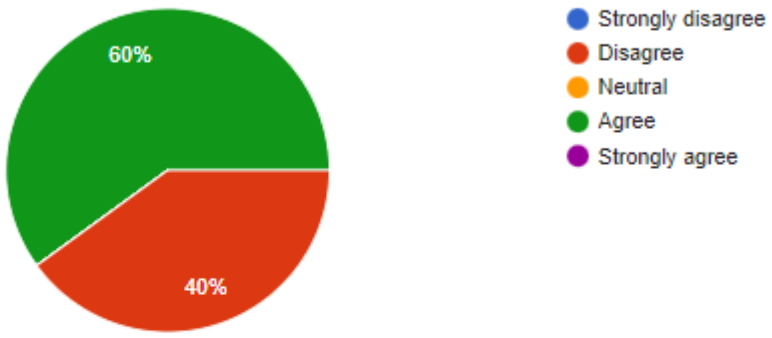
Governance for innovation is not redundant, and the organizational structure is adequate.

5 antwoorden



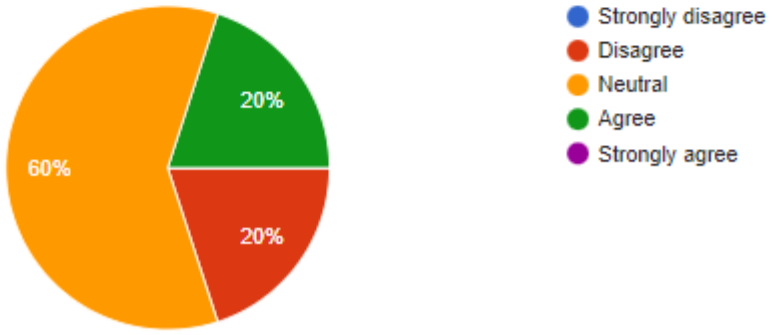
Skills, broad-based knowledge, and competency to innovate are adequate available

5 antwoorden



Management requirements for innovation knowledge, competencies, and technology are defined

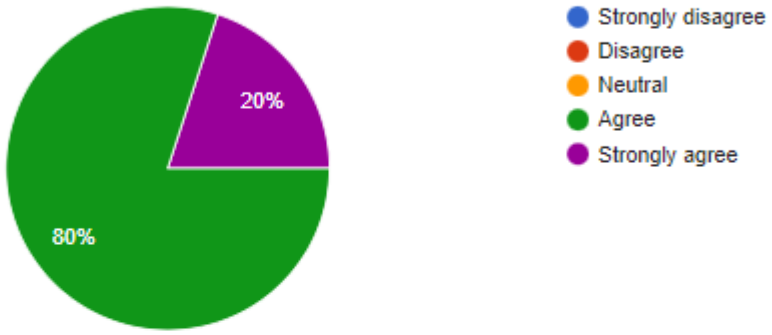
5 antwoorden



Msc Survey - Thesis 3

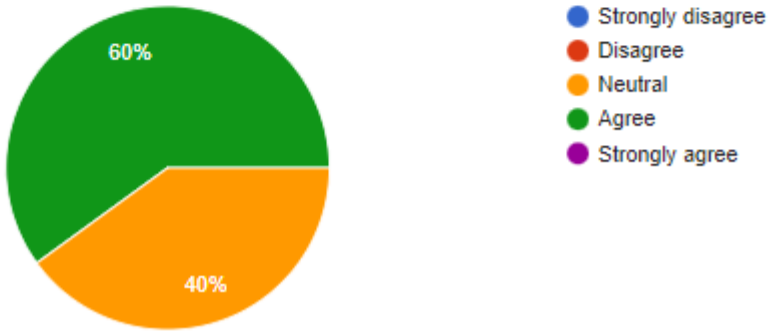
The importance of innovation for the firm's success is clearly defined.

5 antwoorden



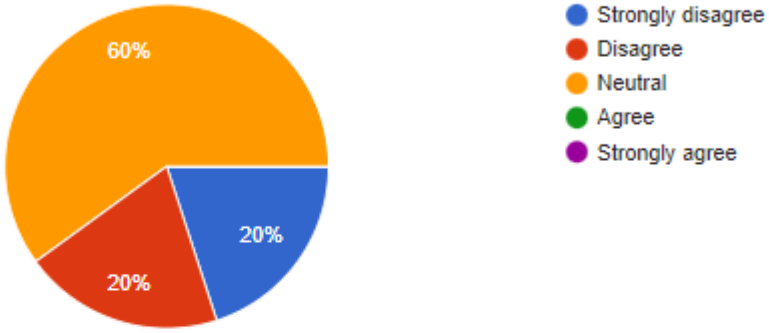
The focus on innovation capabilities and its main competitive advantage is clearly defined

5 antwoorden



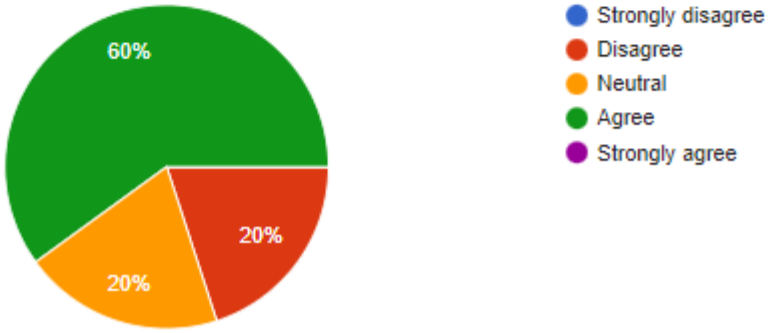
Investment priorities for innovation capabilities (people, processes, tools) are defined.

5 antwoorden



Performance levels of implemented innovation capabilities are defined and measured to meet business outcomes.

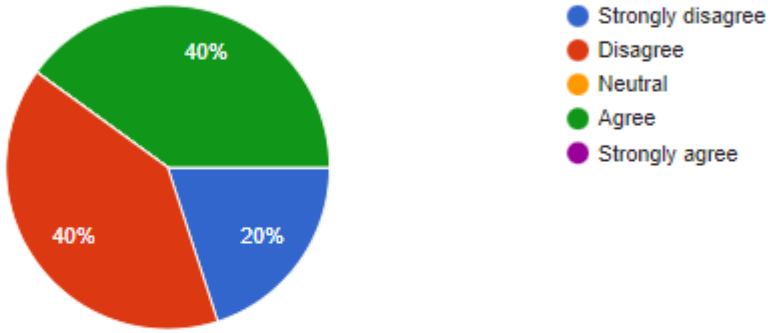
5 antwoorden



Msc Survey - Thesis 4

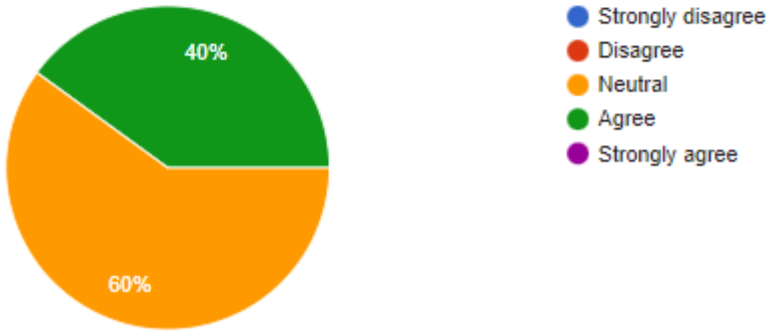
Innovation capability life-cycle in terms of design, road mapping, migration planning, and feasibility is adequately implemented in the organization.

5 antwoorden



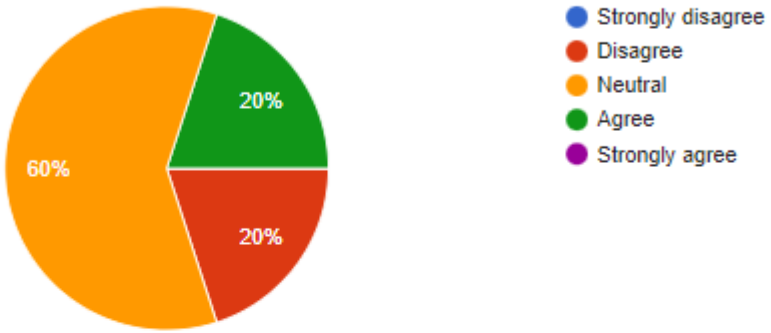
Industry standards are needed to set investment priorities for innovation capabilities that deliver the most value to the enterprise.

5 antwoorden



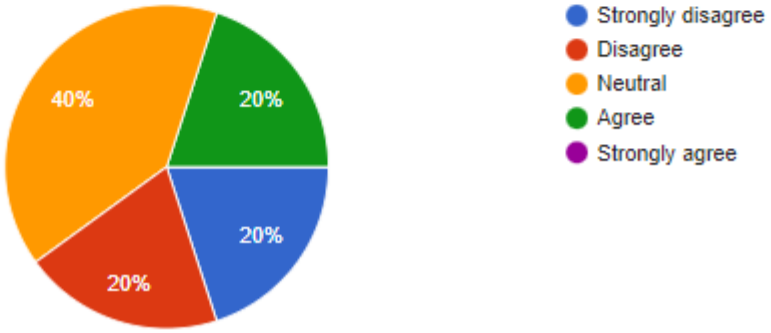
Industry standards are being leveraged by the company

5 antwoorden



Innovation capabilities are reviewed and assessed through life-cycle management

5 antwoorden



7.10. Survey analysis

Timestamp	Respondent	Function	Gaps between w	Innovation capat	Innovation impac	Innovation practi	Our innovation p	Governance for i	Skills, broad-bas	Management req	The importance (	The focus on inn
10/28/2022 14:38:15	5	HR Business Partner	Neutral	Agree	Agree	Agree	Neutral	Neutral	Agree	Agree	Agree	Agree
10/31/2022 17:07:17	2	Director Innovation & New Ventures	Agree	Strongly agree	Strongly agree	Disagree	Neutral	Agree	Disagree	Neutral	Agree	Neutral
11/4/2022 7:30:52	7	Product Director	Agree	Agree	Neutral	Neutral	Agree	Neutral	Agree	Neutral	Agree	Agree
11/7/2022 9:13:02	1	CEO	Neutral	Agree	Agree	Agree	Neutral	Disagree	Disagree	Disagree	Strongly agree	Agree
11/7/2022 12:42:38	9	Go To Market Director	Agree	Agree	Strongly agree	Agree	Disagree	Disagree	Agree	Neutral	Agree	Neutral

Points (See table below)											
	3	4	4	4	3	3	4	4	4	4
	4	5	5	2	3	4	2	3	4	3
	4	4	3	3	4	3	4	3	4	4
	3	4	4	4	3	2	2	2	5	4
	4	4	5	4	2	2	4	3	4	3

	Gaps between w	Innovation capat	Innovation impac	Innovation practi	Our innovation p	Governance for i	Skills, broad-bas	Management req	The importance (	The focus on inn
Total	18	21	21	17	15	14	16	15	21	18
Normalisation on scale from 0 to 1	0,67	1,00	1,00	0,56	0,33	0,22	0,44	0,33	1,00	0,67

Points	
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

Investment priori	Performance lev	Innovation capat	Industry standard	Industry standard	Innovation capab
Neutral	Agree	Disagree	Neutral	Neutral	Neutral
Neutral	Agree	Disagree	Agree	Agree	Neutral
Neutral	Neutral	Agree	Neutral	Neutral	Agree
Strongly disagree	Disagree	Strongly disagree	Neutral	Neutral	Strongly disagree
Disagree	Agree	Agree	Agree	Disagree	Disagree
3	4	2	3	3	3
3	4	2	4	4	3
3	3	4	3	3	4
1	2	1	3	3	1
2	4	4	4	2	2

Investment priori	Performance lev	Innovation capat	Industry standard	Industry standard	Innovation capab
12	17	13	17	15	13
0,00	0,56	0,11	0,56	0,33	0,11

7.11. Interviews

To be obtained from the researcher.

7.12. Transcripts

To be obtained from the researcher.

7.13. Coding scheme

7.13.1. Code groups

Code Groups	
[CBP Generic Activity - Analyze]	(3)
[CBP Generic Activity - Improve]	(3)
[CBP Generic Activity - Map]	(3)
[CBP Generic Activity - Plan]	(3)
[Innovation Capability Areas]	(3)
Ad-Hoc innovation	(25)
Agility	(7)
Automation	(4)
Budget cycle	(8)
Business benefits	(13)
Business case	(12)
Business context	(29)
Capability Governance	(43)
Competitive differentiation	(16)
Culture	(7)
Impact measurement	(12)
Industry standard	(8)
Life-cycle management	(31)
Organizational design	(14)
People driven	(29)
Performance measurement	(22)
Portfoliomanagement	(34)
Repository	(3)
Scaling	(4)
Time for Innovation	(4)
Time to market	(6)

Figure 21 - Code groups

7.13.2. Coding scheme example: Portfoliomanagement

Name	Grounded	Density	Groups
Capability map needed	1	2	[Capability Governance] [Portfoliomanagement]
Clustered small strategic objectives	1	1	[Ad-Hoc innovation] [Portfoliomanagement]
Difficulty to prioritize	7	3	[Capability Governance] [Portfoliomanagement]
Disconnected portfolio management	4	6	[Business context] [Portfoliomanagement]
Documentation repository not existing	3	5	[Ad-Hoc innovation] [Portfoliomanagement]
Fragmented Governance	9	8	[Business context] [Capability Governance] [Portfoliomanagement]
Improvement happens case by case	5	7	[Ad-Hoc innovation] [Capability Governance] [Life-cycle management] [P
Innovation capabilities not listed in portfolio	1	2	[Portfoliomanagement]
Innovation capability needs integration in value chain	7	2	[Business context] [Portfoliomanagement]
Innovation funnel needs processes and tools	1	3	[Business context] [Portfoliomanagement]
Innovation has a different business model	2	2	[Business context] [Portfoliomanagement]
Innovation is not a separate domain	2	3	[Business context] [Portfoliomanagement]
Innovation is part of company vision	2	2	[Business context] [Portfoliomanagement]
Innovation portfolio cadence is different	1	7	[Life-cycle management] [Portfoliomanagement] [Time to market]
Innovation portfolio is not existing	1	2	[Portfoliomanagement]
Innovation portfolio not consolidated and uniform	13	3	[Business context] [Portfoliomanagement]
Innovation project overlap	1	5	[Budget cycle] [Portfoliomanagement]
Integrating capabilities	1	1	[Portfoliomanagement]
Integration and allignment company divisions is difficult	1	5	[Business context] [Portfoliomanagement]
It's difficult to onboard prototypes solution into the organisatons standard...	5	3	[Life-cycle management] [Portfoliomanagement]
multiple portfolio governance exist	14	1	[Capability Governance] [Portfoliomanagement]
No flexibility to respond to opportunities	1	1	[Portfoliomanagement]
No governance for capabilities, only for projects	2	2	[Capability Governance] [Portfoliomanagement]
No Innovation project management function	1	2	[Life-cycle management] [Portfoliomanagement]
No view on innovation skills in the organisation	3	1	[Portfoliomanagement]
No view on what organisation does	2	3	[Business context] [Portfoliomanagement]
Only traditional portfoliomanagement has life cycle	1	1	[Portfoliomanagement]
Portfolio management for standard services	2	1	[Business context] [Portfoliomanagement]
Portfolio management improvement	8	6	[Business context] [Organizational design] [Portfoliomanagement]
Product management function is in place	5	6	[Business context] [Life-cycle management] [Portfoliomanagement]
Structure needed for roadmap development	20	2	[Business context] [Life-cycle management] [Portfoliomanagement]
Struggle to integrate people innovation skills in capability	4	11	[Ad-Hoc innovation] [Capability Governance] [Life-cycle management] [P
Traditional business model needs integration with innovation	7	2	[Business context] [Portfoliomanagement]
Transition innovation prototype to the organisation operating model is no...	2	8	[Capability Governance] [Life-cycle management] [Portfoliomanagement]

Figure 22 - Coding scheme example: Portfoliomanagement

7.13.3. Networks overview

Name	Degree
Ad-Hoc innovation	26
Agility	8
Automation	5
Budget cycle	9
Business benefits	14
Business case	13
Business context	30
Capability Governai	42
Competitive differe	17
Culture	8
Impact measureme	13
Industry standard	9
Life-cycle manager	32
Organizational desi	15
People driven	30
Performance meas	23
Portfoliomanagem	35
Scaling	5
Time for Innovatior	5
Time to market	7

Figure 23 - Networks overview

7.13.1. Networks example: Business Case

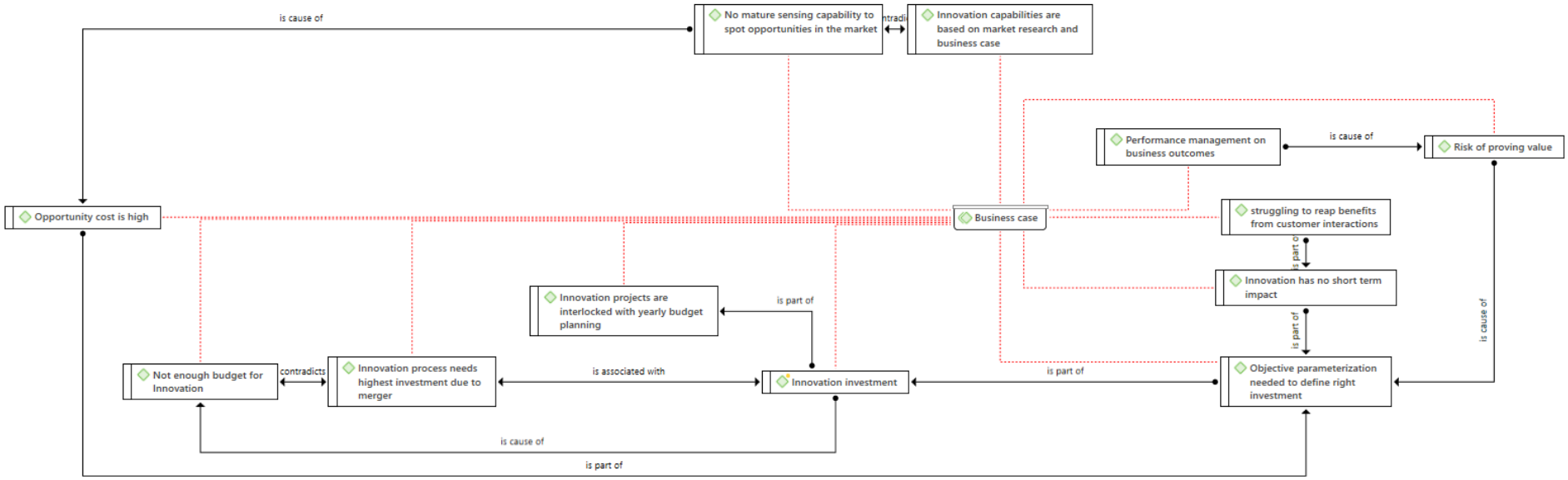


Figure 24 - Networks example: Business Case

7.14. Search results

Search action	Sub question	Search terms	Presence search terms in publication	Where in article	Publication Date	Nr of citates	Date of search	Nr of found articles + search URL
1.1	1.	"Innovation strategy" Definition	all words	anywhere	n.a.	n.a.	April 03th 2022	75.100
1.2	1.	"Innovation strategy" Definition	all words	anywhere	after 2017	n.a.	April 03th 2022	17.700
1.3	1.	"Innovation strategy"	Sub-set	in title	after 2017	n.a.	April 03th 2022	1.160
1.4	1.	"Innovation strategy"	Sub-set	in title	after 2017	>=5	April 03th 2022	162
1.5	**1.**	**"Innovation strategy"**	**Sub-set**	**in title**	**after 2017**	**>=20**	**April 03th 2022**	**68**
2.1	2.	"Capabilities Innovation"	Sub-set	anywhere	n.a.	n.a.	April 10th 2022	3.120.000
2.2	2.	"Capabilities Innovation"	Sub-set	anywhere	after 2010	n.a.	April 10th 2022	1.340.000
2.3	2.	"Capabilities Innovation"	Sub-set	in title	after 2010	n.a.	April 10th 2022	2.700
2.4	**2.**	**"Capabilities Innovation"**	**Sub-set**	**in title**	**after 2010**	**>=20**	**April 10th 2022**	**59**
2.5	2.	"Capabilities Innovation"	Sub-set	in title	after 2010	>=50	April 03th 2022	28
3.1	3.	"Capability-based planning" Characteristics	all words	anywhere	n.a.	n.a.	April 10th 2022	805
3.2	3.	"Capability-based planning" Characteristics	all words	anywhere	after 2010	n.a.	April 10th 2022	544
3.3	3.	"Capability-based planning"	Sub-set	in title	after 2010	n.a.	April 10th 2022	55
3.4	**3.**	**"Capability-based planning"**	**Sub-set**	**in title**	**after 2010**	**>=3**	**April 10th 2022**	**22**
3.5	3.	"Capability-based planning"	Sub-set	in title	after 2010	>=10	April 03th 2022	6
4.1	4.	"Stakeholder Identification"	all words	anywhere	n.a.	n.a.	April 10th 2022	25.200
4.2	4.	"Stakeholder Identification"	all words	anywhere	after 2010	n.a.	April 10th 2022	16.700
4.3	4.	"Stakeholder Identification"	all words	in title	after 2010	n.a.	April 10th 2022	142
4.4	**4.**	**"Stakeholder Identification"**	**all words**	**in title**	**after 2010**	**>=5**	**April 10th 2022**	**33**
5.5	4.	"Stakeholder Identification"	all words	in title	after 2010	>=30	April 03th 2022	14

Figure 25 - Search results

8. References

Aldea, A. (2016). Capability-Based Planning: The Link Between Strategy and Enterprise Architecture. Open Group. https://publications.opengroup.org/w16c.

Ashurst, C., Freer, A., Ekdahl, J., & Gibbons, C. (2012). Exploring IT-enabled innovation: A new paradigm? *International Journal of Information Management, 32*(4), 326-336.

Assink, M. (2006). Inhibitors of disruptive innovation capability: a conceptual model. *European journal of innovation management*.

Baker, W. E., & Sinkula, J. M. (2002). Market orientation, learning orientation and product innovation: delving into the organization's black box. *Journal of market-focused management, 5*(1), 5-23.

Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of business research, 67*(1), 2891-2902.

CEB. (2013). *Enterprise Architecture Leadership Council: The Architect's Business Capabilities Handbook*.

Cepeda, G., & Martin, D. (2005). A review of case studies publishing in Management Decision 2003-2004: Guides and criteria for achieving quality in qualitative research. *Management Decision*.

Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review, 20*(1), 92-117.

De Marez, L. (2006). *Diffusie van ICT-innovaties: accurater gebruikersinzicht voor betere introductiestrategieën.* Ghent University,

Dijkman, M. (2014). *De aansluiting van enterprise-architectuur op productinnovatie binnen organisaties.* Open Universiteit,

Doorewaard, H., Kil, A., & van de Ven, A. (2015). Praktijkgericht kwalitatief onderzoek. *Een praktische handleiding. Amsterdam: Boom Lemma uitgevers*.

Ernst, D. (2010). Upgrading through innovation in a small network economy: insights from Taiwan's IT industry. *Economics of Innovation and New Technology, 19*(4), 295-324.

Fassin, Y. (2009). The stakeholder model refined. *Journal of business ethics, 84*(1), 113-135.

Friedman, A. L., & Miles, S. (2002). Developing stakeholder theory. *Journal of management studies, 39*(1), 1-21.

Gelderman, C. J. (2013). *Premaster Managementwetenschappen.* Open Universiteit,

Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What passes as a rigorous case study? *Strategic management journal, 29*(13), 1465-1474.

Gong, Y., & Janssen, M. (2019). The value of and myths about enterprise architecture. *International Journal of Information Management, 46*, 1-9.

Greefhorst, D. (2009). Een volgende stap in de ontwikkeling van architectuur.

Greefhorst, D., & Proper, E. (2011). The role of enterprise architecture. In *Architecture principles* (pp. 7-29): Springer.

Hamel, G. (1996). *Strategy as revolution*: Harvard Business Review Nova York.

Hanelt, A., Busse, S., & Kolbe, L. M. (2017). Driving business transformation toward sustainability: exploring the impact of supporting IS on the performance contribution of eco-innovations. *Information Systems Journal, 27*(4), 463-502.

Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: progress along a developmental path. In (Vol. 7, pp. 91-102): Sage publications Sage UK: London, England.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management science, 52*(11), 1661-1674.

Kranz, J. J., Hanelt, A., & Kolbe, L. M. (2016). Understanding the influence of absorptive capacity and ambidexterity on the process of business model change–the case of on-premise and cloud-computing software. *Information Systems Journal, 26*(5), 477-517.

Lange, M., & Mendling, J. (2011). *An experts' perspective on enterprise architecture goals, framework adoption and benefit assessment.* Paper presented at the 2011 IEEE 15th International Enterprise Distributed Object Computing Conference Workshops.

Lankhorst, M. (2009). *Enterprise architecture at work* (Vol. 352): Springer.

Lapalme, J., Gerber, A., Van der Merwe, A., Zachman, J., De Vries, M., & Hinkelmann, K. (2016). Exploring the future of enterprise architecture: A Zachman perspective. *Computers in Industry, 79*, 103-113.

Lavie, D., Stettner, U., & Tushman, M. L. (2010). Exploration and exploitation within and across organizations. *Academy of Management annals, 4*(1), 109-155.

Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: a dynamic capabilities approach. *International journal of innovation management, 5*(03), 377-400.

Lendel, V., & Varmus, M. (2011). Creation and implementation of the innovation strategy in the enterprise. *Economics and management, 16*(1), 819-826.

Liao, J., Kickul, J. R., & Ma, H. (2009). Organizational dynamic capability and innovation: An empirical examination of internet firms. *Journal of small business management, 47*(3), 263-286.

Louw, L. (2017). Architecting the enterprise towards enhanced innovation capability. *South African Journal of Industrial Engineering, 28*(4), 50-65. doi:doi:10.7166/28-4-1628

Mikloš, J. (2012). A meta-model for the spatial capability architecture. *J. Theor. Appl. Inf. Technol, 43*, 301-305.

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management review, 22*(4), 853-886.

Nwachukwu, C., & Chladkova, H. (2019). FIRM RESOURCES, STRATEGIC ANALYSIS CAPABILITY AND STRATEGIC PERFORMANCE: ORGANISATIONAL STRUCTURE AS MODERATOR. *International Journal for Quality Research, 13*(1).

Papazoglou, A. (2014). *Capability-based planning with TOGAF® and ArchiMate®.* University of Twente,

Pisano, G. P. (2015). You need an innovation strategy. *Harvard business review, 93*(6), 44-54.

Saunders, M. (2009). *Research methods for business students*: Pearson education.

Schiller, C., Winters, M., Hanson, H. M., & Ashe, M. C. (2013). A framework for stakeholder identification in concept mapping and health research: a novel process and its application to older adult mobility and the built environment. *BMC public health, 13*(1), 1-9.

Stjernholm, A. (2000). New Dimensions of Innovation Management. In.

Tamm, T., Seddon, P. B., Shanks, G., & Reynolds, P. (2011). How does enterprise architecture add value to organisations? *Communications of the association for information systems, 28*(1), 10.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal, 28*(13), 1319-1350.

The Open Group. (2018). TOGAF® Standard, Version 9.2. Retrieved from https://pubs.opengroup.org/architecture/togaf9-doc/arch/index.html

Thomond, P., & Lettice, F. (2002). *Disruptive innovation explored.* Paper presented at the Cranfield University, Cranfield, England. Presented at: 9th IPSE International Conference on Concurrent Engineering: Research and Applications (CE2002).

Tidd, J. (2001). Innovation management in context: environment, organization and performance. *International journal of management reviews, 3*(3), 169-183.

Ulrich, W., & Rosen, M. (2011). The business capability map: the" rosetta stone" of business/it alignment. *Cutter Consortium, Enterprise Architecture, 24*(4).

Van Zyl, H. (2006). *Innovation models and the front-end of product innovation.* Stellenbosch: University of Stellenbosch,

Verschuren, P., & Doorewaard, H. Het ontwerpen van een onderzoek. In: Designing a research project](Den Haag 2007). III.

Weiss, S., Aier, S., & Winter, R. (2013). *Institutionalization and the effectiveness of enterprise architecture management*.

Yin, R. K. (2011). *Applications of case study research*: sage.

Zhou, S. S., Zhou, A. J., Feng, J., & Jiang, S. (2019). Dynamic capabilities and organizational performance: The mediating role of innovation. *Journal of Management & Organization, 25*(5), 731-747.