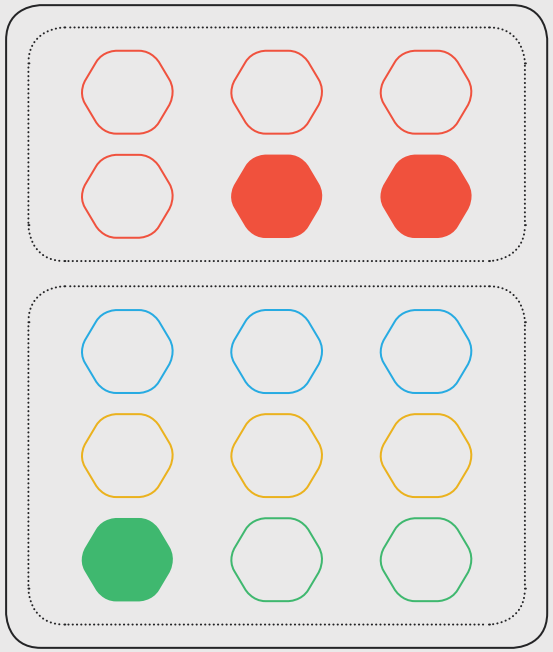
The first step of a roadmap for realizing bottom-up innovation within an operating business:

An MVP tooling designed for the business group Pon Equipment and Pon Power Solutions (part of Pon Holding)



Master thesis
Strategic Product Design
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Executive Summary:

The world around us is changing faster than ever before. Companies need to keep up with the fast pace of the rapidly changing business landscape to stay competitive. To achieve this, they have to find ways to continuously innovate and search for new opportunities.

The company Pon Holding believes that continuous innovation can be achieved by unleashing the ideas of employees in all their subsidiaries (so-called Operating Companies). This approach is called bottom-up innovation, where employees are considered in the front-line to witness (i) hurdles in current operating models, (ii) changes in customer demands, and (iii) trends in the market that can become (new) business opportunities. For Pon Holding, exploiting employees' ideas will allow the Operating Companies to rejuvenate current products and services and create new ones.

Pon (Holding) consists of 4 business groups, including Pon Equipment and Pon Power Solutions (PEPP). The business group PEPP has built the innovation lab "Area 52" to embed continuous innovation into the business group and its 8 Operating Companies. Their vision is that Operating Companies will become independent of Area 52 for innovation and are successfully able to realize bottom-up innovation. Unfortunately, Area 52 sees that (i) employees within Operating Companies are inhibited and prevented from working on ideas and that (ii) Operating Companies struggle to make innovation a priority and facilitate bottom-up innovation within their organizations.

Hence, the main purpose of this thesis is to explore and design how Operating Companies can support employees to innovate in a structured, consistent, and experimental manner during their daily work activities. Hereby, it offers PEPP a generic design ready for implementation and offers new perspectives to both the organization and today's literature gaps.

By conducting extensive interviews and observations, light is shed on the 15 factors within PEPP that affect innovative behavior among employees and the main hurdle of a lack of time is identified. Additionally, it revealed that bottom-up innovation takes place but is currently unfruitful. As a matter of fact, a handful of employees work on ideas in their personal time dealing with (i) a low success rate, (ii) high risks, and (iii) no compensating rewards. This low success rate is found to be vital to resolve since it (i) can be easily prevented by offering tooling and (ii) leads to fruitful results that sub consequently (iii) encourage this handful of employees to keep innovating and stimulate other employees to start engaging in bottom-up innovation.

Minimum tooling in the form of a crash course is designed, and ready for implementation within the existing structure of OpCo's. Offered by Area 52, the crash course equips employees with the necessary innovation expertise leading to higher the success rate of their ideas. A pilot with 12 participating employees found that the crash course (i) developed participants' innovation expertise (and thus organizational innovation capabilities), (ii) increased the success rate of ideas, and (iii) contributed to building an innovative-supportive climate. Despite its positive results, necessary conditions and recommended iterations require more attention to ensure the tooling can be implemented and bottom-up innovation will be realized.

Table of Contents:

Chapter 01 |

Introduction

In this chapter:

Figure 1. Pon Future of Mobility Experience Center (Van der Vlist, 2019)

1.1

The Context:

1.1.1 Business in the 21st Century

The world around us is changing faster than ever before. We all have to deal with political, social, technological, economic, and environmental changes. For companies, this means the business landscape is changing rapidly. In order to stay competitive, they need to keep up with the fast pace and pressure of market and customer demands. This requires them to explore new business opportunities that are relevant in this changing business landscape in addition to exploiting their current business models. Unfortunately, many companies find it difficult to continue exploiting current business models, while simultaneously adapting and responding to new opportunities and changing customer and market demands. This is due to the fact that most companies have prioritized the exploitation of their current business models and have organized all aspects of their organization to fit this purpose. As a result, they struggle to make exploration and continuous innovation part of their organization's priorities and DNA.

1.1.2 Business for Pon Holding

Pon Holding is one of the largest Dutch family-owned businesses and offers mobility products, services, and solutions in over 30 countries. Today, the company is a successful trading company with mobility expertise, market leadership, and over 7 billion in turnover (2018).

As a trading company, the company imports and sells products and additional services to business-to-business consumers. Additionally, the company is the owner of a portfolio consisting of over 90 subsidiaries - called Operating Companies or OpCo's. These OpCo's are independent entities that financially report to the Holding. In total 13.000 employees work for Pon Holding (*Pon, 2019*).

For Pon Holding and all Operating Companies, the business landscape is also changing at a rapid pace. A representation of possible future trends and concepts for mobility is demonstrated at Pon's Experience Center (shown in Figure 1).

The company has to deal with new technological developments, new environmental regulations and laws, the entry of start-ups that form competition, and new customer demands (such as the need for more digital and sustainable solutions). Until recently, Pon has primarily responded to these market and customer changes by investing in or buying start-ups, competitors, and other businesses.

Although Pon Holding saw growth as a business, paradoxically OpCo's experienced a decline in profit, competitive advantage, and long-term success. Most OpCo's have been found struggling to keep up with the fast-paced business landscape. They are unable to respond to opportunities and adapt to changes in market and customer demands. To make sure OpCo's in the portfolio of Pon Holding remain competitive and profitable, the Executive Board of Pon Holding calls for OpCo's to continuously innovate. Unfortunately, continuous innovation is easier said than done and the results remain unfruitful.

1.2

The Business Context:

A Simplified Organogram of the Business Group PEPP and its entities

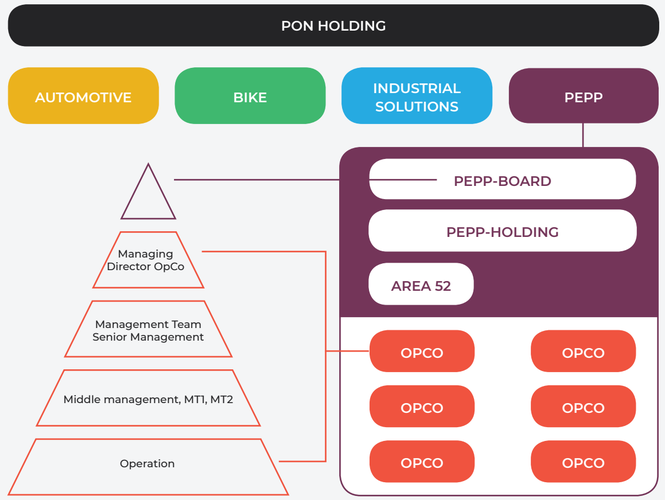

Figure 2. A Simplified Organogram of the Business Group PEPP and its entities

1.2.1 Context Overview

This thesis is written in collaboration with Area 52, the innovation lab of the business group Pon Equipment and Pon Power Solutions (PEPP). The business group PEPP is one of the four business groups of the company Pon Holding. This thesis focuses on the Operating Companies within the business group PEPP. One of the Operating Companies, PENL, is used during this thesis as a case study and pilot for the final design. Despite this, employees from all entities within the business group PEPP have partaken in this research. All mentioned entities will be elaborated upon in the next paragraphs. Also, a simplified organogram is shown in Figure 2.

1.2.2 The Company Pon Holding

As mentioned above, Pon Holding is one of the largest Dutch family-owned businesses. In 1895, Pon started as a small shop in Amersfoort owned by Mijndert Pon selling soap, tobacco and sewing machines. Today, the company consists of the four business groups which are Pon Automotive, Pon Bike, Pon Equipment, and Pon Power Solutions and Pon Industrial Solutions. Each business unit uses a delegated business model. This means that the business group holds a portfolio of OpCo's. These OpCo's are independent entities that are responsible for their own Profit and Loss and report to the Financial Holding.

All business groups except for Pon Bike are dealerships [6], where they import products from their Original Equipment Manufacturers' (OEMs) and sell these products and additional services to business-to-business consumers. For the Pon Automotive business group, their OEMs include, among others, Volkswagen, Audi, and Lamborghini. For the Pon Equipment and Pon Power Solutions group, their OEM is Caterpillar. As a trading company, the organization sustains its competitive advantage primarily by Mergers & Acquisitions - investing in, buying, and selling other businesses.

1.2.3 The Business Group PEPP

Pon Equipment and Pon Power Solutions (PEPP) is one of the four business groups of the company Pon Holding. The business group is (i) the Dutch official dealer of the OEM Caterpillar, that (ii) operates in both the Netherlands and Norway (iii) in the industries of construction, power, and maritime. The Power-part focuses on the selling of (ship) engines and generators, while the Equipment-part focuses on the selling of land cultivation products. A representation of the Power- and Equipment-part is shown in Figure 3a and 3b.

The business group PEPP consists of the Executive Board of PEPP, a PEPP-Holding, the innovation lab Area 52, and 8 OpCo's. These OpCo's are PENL, PENO, PPNL, PPNO, Bolier, Bakker Sliedrecht, Verachtert, Topec, and Sitech. These OpCo's vary in size (from 50 employees to 500), profitability, and resource availability, yet all hold employees of higher-aged and long tenures. In the business group, the Executive Board of PEPP and the innovation lab Area 52 demand the OpCo's to continuously innovate and try to offer the necessary support.

Figure 3a and 3b. A representation of Pon Power (top) and Pon Equipment (bottom) (Pon-Cat, 2018; Pon-Cat, 2019)

1.2.4 The Innovation Lab Area 52

As mentioned above, Area 52 is the innovation lab for the business group PEPP. Compared to the other business groups, PEPP is the only group with an innovation lab. The lab was founded in the summer of 2017, by three PEPP employees, to initiate new and disruptive business models. Today, it's purpose is to facilitate and initiate innovation in a structured and consistent way within the business group. The lab focuses its innovation efforts on Horizon 2, which are emerging opportunities for the Operating Companies, and Horizon 3, which is new business for the business group PEPP. These Horizons refer to the Three Horizons Model of McKinsey, shown in Figure 4 (*McKinsey, 2019*).

The Three Horizons Model of McKinsey

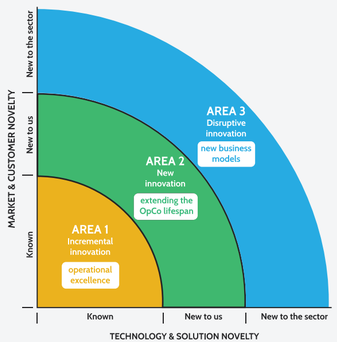

Figure 4. The Innovation Ambition Matrix based on the 3 Horizons Framework of McKinsey (Allman et al., 2012)

On Horizon 2, Area 52 facilitates ideas for innovation which are initiated by employees from the Operating Companies themselves. Ideas selected by an innovation board receive funding, (external partner) support and tools. For these projects, employees are responsible to validate, develop and implement the project back into the business, and Area 52 facilitates, supports and monitors the project. This way Area 52 aims to support the OpCo's in evolving their business models. On Horizon 3, Area 52 initiates new start-up ideas that can become new ventures.

The innovation lab is physically separated from the other OpCo's and is located in Delft. Currently, the team of Area 52 consists of 6 FTE, of which 3 innovation managers responsible for the lab and (currently) 3 entrepreneurs who lead the Horizon 3 projects. The team is given the support and freedom by the Executive Board of PEPP and directly reports to them.

1.2.5 The OpCo PENL

Pon Equipment Netherlands (PENL) is one of the OpCo's of the business group PEPP. PENL is the Dutch official importer of the OEM Caterpillar. The organization's business model is to offer business-to-business customers Caterpillar machines, service contracts, and parts. The company is located in Almere, holds over 300 employees and has just assigned a new Managing Director Dennis van Dijk.

PENL encounters difficulties to keep up with the fast-changing business environment. It currently faces reduced margins and scarcity in resources on its existing business model, leading to a decline in its profitability and competitive advantage. As a result, the company is looking for ways to evolve its current business models and look for new opportunities. In the past two years, the company has successfully implemented innovative service concepts such as "Arie Fix't" and "Pon Compact". Also, new initiates, such as the project Remote Assistance, are initiated by its employees.

1.3

Relevancy:

1.3.1 Scope

The scope of this thesis is to contribute to Area 52's goal to realize continuous innovation within the OpCo's of the business group PEPP. This goal is part of Area 52's vision to have embedded continuous innovation on Horizon 1, which is continuous improvement of OpCo's current business models, and Horizon 2 within the OpCo's. This way the lab will be able to solely focus on the creation of new business on Horizon 3. Achieving this goal will require the OpCo's to be self-responsible and capable to continuously improve and create emerging opportunities.

Bottom-up Approach

To realize continuous innovation within the OpCo's, Area 52 has explicitly chosen to focus on a bottom-up innovation approach. A bottom-up innovation approach focuses on the innovative capabilities of employees within OpCo's. It requires employees to exhibit innovative behavior and develop ideas that solve problems and higher efficiency - Horizon 1 - and respond to new opportunities and changes in the market or customer - Horizon 2. When these ideas are used by the OpCo's, these ideas can help evolve the organization 's current business models and create new ones.

Experimentation

The company Pon Holding has widely spread the message that OpCo's require to continuously innovate and obtain an experimentation-driven approach. The experimentation-driven approach is "an iterative exploration approach to search for optimal or satisfactory innovations based on tentative customer response" (*Hassi et al., 2014*). Consequently, Area 52 is currently adapting this methodology itself and exploring how innovative behavior among employees can adapt this experimentation-driven approach as well.

Area 52

Although this thesis focuses on the context of OpCo's, the findings should be considered relevant for Area 52. and the design should be related to its expertise and ambitions.

PENL

Lastly, for this thesis, the OpCo PENL is selected to conduct multiple case studies and test the final design. PENL is selected due to its interest in having a designed tooling and innovation processes. Consequently, it is continuously validated to what extent the findings can be generalized to all OpCo's within PEPP to ensure the transferability of the final design.

1.3.2 Initial Problem Statement

The goal of the Executive Board of PEPP is to have OpCo's unleash the innovative behavior among its employees and let employees conduct experiments to test their ideas. Ideally, this way OpCo's adapt to the changing business landscape and stay competitive. Over the past years, the Executive Board of PEPP tried to help OpCo's by setting up an innovation lab, offering OpCo's facilitation from Area 52, offering two innovation training programs for employees and managers, and allocate innovation budget that is available for every OpCo. Despite the first steps being taken, Area 52 acknowledges the struggles many of the OpCo's encounter regarding continuous innovation. Most Operating Companies have difficulty prioritizing innovation next to exploiting their current business models. As a consequence, they struggle to make time for innovation and depend upon Area 52's support to innovate on Horizon 1 and Horizon 2.

Additionally, Area 52 observes that OpCo's within PEPP are unable to foster, encourage and facilitate employees to develop ideas. The main problem they found and heard is that employees feel prevented and hindered to improve and innovate during their daily work activities. Top management of OpCo's are found to be unable to stimulate innovative behaviors and use ideas employees have. As a result, bottom-up innovation does not occur. Although Area 52 believes the top management of OpCo's are responsible to foster, encourage and facilitate innovative behavior among their employees, they see that a lack of expertise and priority on innovation make this task a bridge too far. Subsequently, Area 52 aims to explore how it can support the OpCo's in new ways to support them in realizing bottom-up innovation.

1.3.3 Research Questions

This thesis contributes to Area 52's objective of realizing bottom-up innovation with OpCo's of the business group PEPP. Hence, the research question this thesis aims to answer is:

1. ***"How can the organization support employees to improve and innovate in a structured, consistent, and experimental manner during their daily work activities?"***.

The respective sub-questions are:

2. How can employees contribute to innovation with an organization?
3. Which factors are identified to affect an employee's innovative behavior within an organization?
4. Which conditions are identified as necessary to realize an employee's innovative behavior?
5. Within the context of PEPP, what factors play a role in affecting employees' innovative behavior and how?
6. Within the context of PEPP, which conditions are necessary for employees to exhibit innovative behavior?
7. Within the context of PEPP, how can the necessary conditions that are absent be designed for?

1.3.4 Objectives

This thesis holds three objectives. The first objective of this thesis is to provide Area 52 with a better understanding of the problem they observed: within OpCo's employees are unable to innovate during their daily work. Hence, the first contribution of this thesis is to shed light on what prevents or hinders employees within OpCo's from improving and innovating during their daily work activities. Additionally, it aims to gain an understanding of the conditions and organizational support necessary to facilitate bottom-up innovation.

The second objective of this thesis is to positively challenge Area 52 in how it currently realizes bottom-up innovation within OpCo's. Area 52's main focus is on facilitating innovation on Horizon 2 and Horizon 3. According to Area 52, it's the top management of OpCO's that is responsible for realizing Horizon 1 innovation. Unfortunately, the initial problem statement shows that OpCo's are unable to realize Horizon 1 innovation. Hence, this thesis aims to explore the potential role Area 52 can have in facilitating Horizon 1 within the OpCo's, sub consequently contributing to its vision to become obsolete for OpCo's on Horizon 1 and Horizon 2.

Additionally, Area 52's approach to realizing continuous innovation is based on a bottom-up approach. The graduate student's personal belief is that a bottom-up approach requires and benefits from a top-down approach in (i) encouraging innovative behavior among employees, and in (ii) aligning innovative behavior among employees with the organization's long-term ambitions. Hence, this thesis aims to explore the potential benefits for Area 52 in applying a top-down approach as well.

The last objective is to answer this thesis' research question, subsequently providing new perspectives and practical insights to Area 52's goal to realize bottom-up innovation with the OpCo's. The delivered practical insights aim to include a validated design that (i) facilitates bottom-up innovation and (ii) is ready for implementation. Hereby this thesis simultaneously contributes to three existing gaps in today's literature of (i) our limited understanding of innovative behavior on an individual level, (ii) the effects and realization of a bottom-up innovation approach, and (iii) the adoption of successful experimentation practices in innovative behavior among employees.

1.4

The Double Diamond:

For this project, a double diamond process is used. For each of the four stages, specific design activities have been executed. An overview of the double diamond approach is shown in Figure 5.

1.4.1 Discover

The goal of the first phase is to gain an understanding of the approach of bottom-up innovation in theory and in practice at the OpCo's of PEPP. Another objective is to create an overview of factors shaping and affecting innovative behavior among employees from the theory and present in the context of OpCo's within PEPP. During this phase (i) an extensive literature study was performed, (ii) extensive qualitative interviews were conducted with over 30 employees from a variety of functions, levels and OpCo's, and (iii) a case study of the Horizon 2 innovation project "Remote Assistance" was conducted. This led to (i) a theoretical framework summarizing 15 factors that have been found in the literature to affect employees' innovative behavior and (ii) in-depth knowledge in the context of PEPP and of factors told, observed and experienced to affect employees' innovative behavior.

1.4.2 Define

The goal of the second phase is to deliver a final problem statement that summarizes the key hurdles and pain points inhibiting and preventing innovative behavior among employees. Additionally, another objective is to create a final design brief and determine the design direction this project will proceed with. The design direction entails the necessary conditions that ared found to facilitate employees to exhibit innovative behavior during their daily work activities. During this phase (i) validation interviews are conducted with managers and leaders to enrich and (in)validate the findings of personal and contextual factors found present in the context of PEPP, (ii) a conceptual model for Employee Innovation behavior is built, (iii) a problem analysis is executed and a final problem statement is formulated, (iv) potential design directions are explored and evaluated, and (v) a design direction is chosen.

1.4.3 Develop

The goal of the third phase is to develop, test and iterate the desired MVP tooling for employees. In addition, the implementation of the MVP tooling in an innovation process is explored and designed. During this phase, concepts are brainstormed individually, with Area 52 members, and with students during a Creative Facilitation Session. During this approach, an experimentation-driven approach is used to test the MVP tooling concepts and co-design it together with the participants. The result is a co-designed and validated final design concept of a crash course as MVP tooling.

1.4.4 Deliver

The goal of the last phase is to test the final concept of the crash course by setting up a pilot. In addition, the implementation after this graduation has been designed, validated and further co-created with the Horizon 2 coordinator of Area 52. During this phase, (i) the implementation plan for the final concept of a crash course is written and validated with the multiple options for responsible persons, training platforms and portfolios, (ii) the implementation plan is discussed and validated with Area 52, the Executive Board of PEPP, and the Digital Innovation Lab, and (iii) the crash course is prepared for handover.

A Visualisation of the Double Diamond Process that is applied during this Thesis

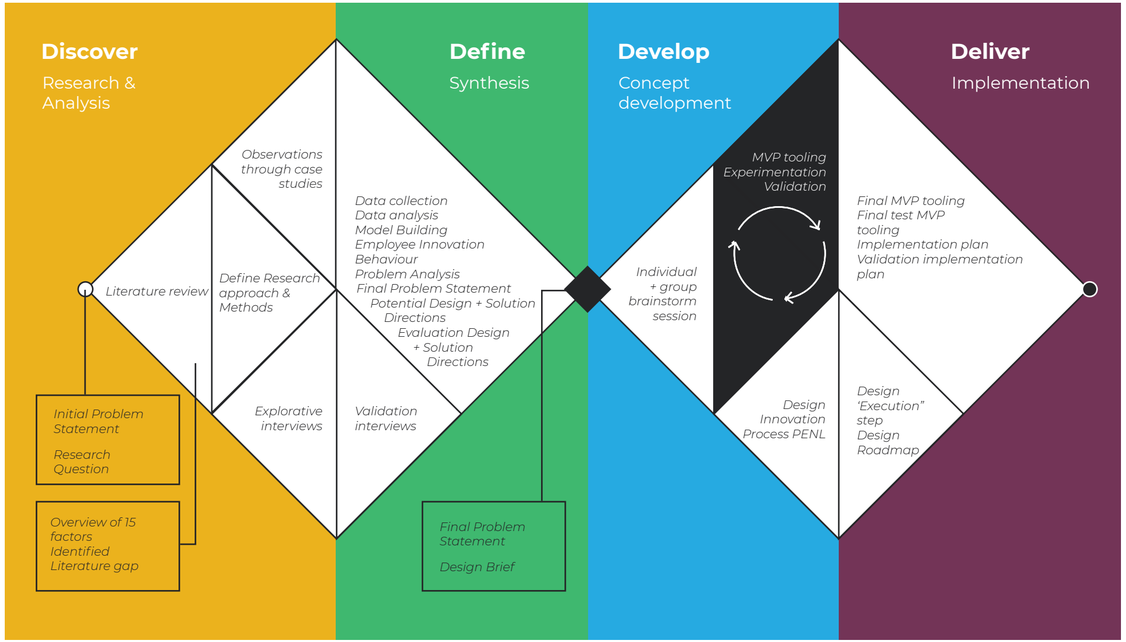

Figure 5. An overview of the Double Diamond Process used for this thesis

Chapter 02 |

Theoretical Background

In this chapter:

2.1

Theoretical Approach:

The goal of the theoretical background is (i) to collect the factors and conditions from the literature that are found to affect innovative behavior among employees and (ii) summarize these into a theoretical framework. Hence, the literature review is aimed to answer sub-questions 2, 3 and 4. Additionally, the literature review elaborates on the literature gaps this thesis aims to contribute to.

The sub-questions are:

2. How can employees contribute to innovation with an organization?
3. Which factors are identified to affect an employee's innovative behavior within an organization?
4. Which conditions are identified as necessary to realize an employee's innovative behavior?

2.2

Continuous Innovation:

2.2.1 The Need for Continuous Innovation

Today's business environments are considered turbulent and uncertain. The markets' and industries' businesses face rapid changes, fuelled by, among other forces, globalization, digitalization, changing consumer behavior, and the entry of newcomers. Companies witness their existing business models and operations risk losing their competitive advantage or, even worse, becoming obsolete (*Hemerling et al., 2015*). As a consequence, companies are urged to continuously innovate to adapt, renew, and reinvent their business to meet changing customer and market demands (*Nunes & Breene, 2011*). Both scholars and 93% of over 500 interviewed executives in a survey from Accenture, believe that organizations' ability to continuously innovates is a key driver for long-term business success (*Koetzier & Alon, 2013; Hon, 2012; Gautschi, 2001; Jaiswal, 2015; Hauser, Tellis & Griffin, 2006; Kester et al, 2011*).

2.2.2 Exploitation and Exploration

Today's business environment requires companies to simultaneously develop today's and tomorrow's competitive advantage (*Ireland et al., 2009*). This requires them to be able to both exploit (optimize current business model's operations through continuous improvement) and explore (look beyond its "core" and create new business opportunities by developing new

The Innovation Matrix & Archetypes

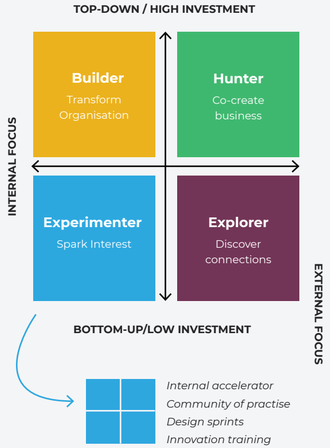

Figure 6. The Innovation Archetypes and Matrix (Board of Innovation, 2015)

knowledge, capabilities, and competencies)(*Hobcraft, 2016*). By both exploiting and exploring, a balanced innovation portfolio focussed on horizon 1 (current business), horizon 2 (emerging opportunities) and horizon 3 (new business) can be built (*McKinsey, 2019*).

2.3

Corporate Entrepreneurship:

2.3.1 Corporate Entrepreneurship

A company's ability to explore and create new business is greatly dependent on its Corporate Entrepreneurship (CE) (*Kuratko, 2014; Ireland et al., 2009; Dess et al., 2003*). CE can be distinguished into four types of manifestations, of which most companies pursue multiple types.

The first distinction is the internal or external orientation of CE. This is the x-axis of the matrix shown in Figure 6. External orientation is known as corporate venturing, where the company creates, adds value or invests in new business (*Covin & Miles, 2007*). Internal orientation is known as strategic entrepreneurship and entails all entrepreneurial activities that do not necessarily create new business (*Ireland et al., 2003*), but also contribute to (i) developing an innovation culture, processes, and structures, (ii) improving its value chain, (iii) exploiting new business opportunities, and (iv) creating new business (*Dess et al., 2003*).

The second distinction is the top-down or bottom-up approach of CE. This is the y-axis of the matrix shown in Figure 6. A top-down approach, known as a CE Strategy, is a vision-directed organization-wide reliance on entrepreneurial behavior that continuously and purposefully rejuvenates the existing businesses and renews itself by recognizing and exploiting new business opportunities (*Ireland et al., 2009; Cooper, 2000*). On the other hand, a bottom-up approach, also known as intrapreneurship, is pursued by unleashing the innovative capabilities of front-line employees (*Rigtering & Weitzel, 2013*). Whereas a top-down approach requires redefining its mission and values (*Anderson et al., 2014; Zhou, 2019*), bottom-up starts with the employees, processes, and informal ways of working, aiming to identify the barriers to innovation and fixing them one by one (*Nieminen, 2019*).

In the context of PEPP and the research question, CE focusses on a bottom-up approach. This approach is associated with the archetype of "Experimenter". The Experimenter is a company that innovates internally by focussing its attention on internal actions, such as innovation training and design sprints (*Board of Innovation, 2015*).

2.3.2 A Bottom-up Approach

A bottom-up approach starts with employees who generate ideas and take responsibility to further develop them (*Rigterig & Weitzel, 2013*). The presence of generated and developed ideas is assumed to encourage other employees to also generate and develop ideas in their own work. When the company successfully uses and develops these ideas, it continuously adjusts itself to changing customer and market needs and responds to opportunities. As a result, the company is able to adapt, grow, and remain relevant and competitive (*Shelley at al., 2004*).

2.3.3 Employee's Innovative Behavior

The foundation of a bottom-up approach is employees engaging in (i) creative, (ii) innovative and (iii) intrapreneurial behavior (*Kuratko et al., 2014*). According to *Carmeli (2006)*, employees' innovative behavior is the foundation of any high-performance organization. Creative behavior is the generation of new ideas for products, services, practices & procedures (*Shalley & Gilson, 2004*). Creativity is the first step necessary to innovate (*West & Far, 1990; Shalley et al., 2004*). Creativity can be distinguished into two types of behavior, either in the context of (i) problem-solving and (ii) novel ideas. Although both types are considered necessary, creativity as problem-solving is considered more common, accessible and applicable for most employees (*Dillielo, 2006*). In fact, the ability of problem-solving to recognize and address problems is considered a key driver in creating a company's competitive advantage (*Reiter-Palmon & Illies, 2004*).

Secondly, innovative behavior is the successful implementation of these ideas (*Amabile, 1996; Mumford & Gustafson, 1988*). This behavior is a complex and multi-stage process including (i) recognizing a problem, (ii) generating an idea and solution, (iii) promoting and building support for the idea and solution, and (iv) producing an applicable prototype or model for implementation (*Scott & Bruce, 1994*).

At last, intrapreneurial behavior is an employee's ability to be (i) innovative, (ii) proactive, and (iii) risk-taking. In addition to generating ideas and implementing a solution, it entails an employee's display of perseverance, initiative, and proactiveness to take the lead in introducing and implementing innovations, shaping environmental conditions, and/or challenge the status quo (*Frese et al., 1997; Bosma et al., 2012*).

2.3.4 The Challenges

Unfortunately, most companies struggle to realize bottom-up innovation as it requires the facilitation of both exploitation and exploration.

The first problem most companies encounter is that they try to use exploitative processes for exploration. These exploitative processes make use of planning-driven approaches that are inappropriate for the exploration of new business. As a consequence, employees who exhibit innovative behavior and have to take risks, be flexible, and decide in uncertain circumstances, bump into the limitations and organizational hurdles, among others, of exploitative processes, organizational inertia, bureaucracy, and the resistance of co-workers. Few employees are able to deal with these hurdles by themselves, and most quit due to the risks involved (e.g. potential damage to career) or leave the company to start their own companies.
To create processes suitable for innovative behavior, companies require to facilitate both a planning-driven and experimentation-driven approach. An experimentation-driven approach is "an iterative exploration approach to search for optimal or satisfactory innovations based on tentative customer response, shown in Figure 7 (*Hassi et al., 2014*). Being able to facilitate this approach is one of the essential requirements (*Hassi et al., 2014; Thomske, 2011*) and is considered a key driver for generating novel ideas and entirely new business models (*McGrath & MacMilan, 2009*). Additionally, it is found to accelerate innovation, reduce resources, and increase the company's chances of success (*Humble et al., 2014; Owens & Fernadez, 2014; Ries, 2017; Ries & Euchner, 2013*).

An Experimentation-Driven Approach

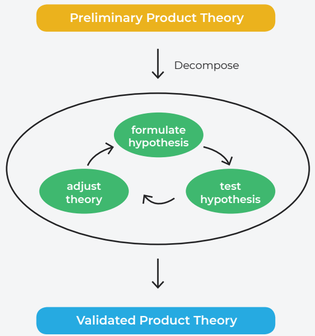

Figure 7. A Corporate Innovation Process based on Experimentation (Hampel, 2019)

Secondly, most companies that pursue both exploitation and exploration struggle with the two-cultures problem, since exploration requires an ethos paradoxical to exploitation. As a matter of fact, bottom-up innovation makes use of new ways of working, thinking, processes, capabilities and conditions. However, most companies fail to make the existing business embrace this new ethos, resulting in a clash of cultures (*Garvin & Levesque, 2006*). For comapnies to embrace this new ethos, changes need to take place on all levels of the organization (*Kuratko et al., 2011; Shalley et al., 2004*). This calls for an organizational transformational (*Hemerling et al., 2015*). Unfortunately, these trajectories are continuous and long-term and less than 30% of them succeed (*De la Bouterière et al., 2018*). The main reason companies fail in transforming their organisation and embracing this new ethos is due to their inability to accept change and their inflexibility. From research conducted by DXC Technology, only 7% of the interviewed executives believe their organizations are extremely open to change (*DXC technology, 2017*).

2.4 Theoretical Framework:

2.4.1 Encouraging Innovative behavior

Existing literature in innovation, creativity, and intrapreneurship has been focussed on the key question of "*What fosters, encourages and predicts employees' innovative behavior in the workplace*?". Numerous studies from various disciplines of creativity, design, innovation management, change management and leadership have tried to identify factors and construct comprehensive models to provide answers to what makes employees innovate (e.g. *Shalley & Gilson,*

Theoretical Framework of the 15 Personal and Contextual Factors

Figure 8. The theoretical framework of 15 personal and contextual factors

2004; Sun et al., 2012; Wang et al., 2013; Wang et al., 2014; Gumusluoglu & Ilsev, 2009). Yet, there remains a consistent gap in the literature on the broad variety of factors and its interactions to answer to the factors that shape, mediate and predict an employee's innovative behavior (*Jaiswal & Dhar, 2015*). For now, the only constant is that employees' innovative behavior is shaped by a broad variety of factors unique to each company and employee (*Mumford et al., 2002*).

2.4.2 An Overview of Factors

The theoretical framework is a summary of the 15 factors agreed upon by most scholars to affect employees' innovative behaviour. The theoretical framework is shown in Figure 8.

Factors are categorized into (i) personal factors and (ii) contextual factors (*Çerne et al., 2013; Wang et al., 2014*). Personal factors are characteristics of an employee that shape his or her behavior and take place on an individual-level (*Shalley & Gilson, 2014; Sun et al., 2012*). In contrast, contextual factors are characteristics of the work environment that are not part of an employee (*Shalley et al., 2004; Amabile et al., 1996; Deci & Ryan, 1985; Axtell et al., 2000; Hornsby et al., 1999*). Contextual factors take place on a managerial level (being at the hands of managers) and on an organizational level (managed on a level of the entire organization (*Hassi et al., 2014*). In total, 7 personal factors and 8 contextual factors are included in the theoretical framework. Each factor will be elaborated upon in the next paragraphs.

2.4.3 Personal Factors

The 7 personal factors that on an individual level influence employees' innovative behavior are:

Intrinsic Motivation (1)
Intrinsic motivation is the extent to which an employee is excited about a specific work activity and engages in this by virtue of the activity itself (*Utman, 1997*).

Personality & Cognitive Style (2)
Personality & cognitive styles are traits and abilities that affect the effectiveness and display of certain behaviors.

Attitude (3)
Attitude is an employee's perspective towards change and his resistance/fear or openness to this (*Hassi et al., 2014*).

Creative Self-efficacy (4)
Creative self-efficacy is the extent to which an employee believes in his/her ability to produce creative outcomes (*Tierney & Famer, 2011*).

Skills & Abilities (5)
Skills and abilities – or one's "creative potential" – is an individual's competencies affecting the mobilization of creative output (*Hilton, 1970; Dillielo, 2006*). Required skills entail (a) domain-relevant expertise, (b) creatively-relevant skills and processes, and (iii)intrinsic task motivation (1).

Self-Leadership (6)
Self-leadership is a process through which an employee is able to navigate, motivate, and lead himself towards achieving defined expectations and innovation outcomes (*Neck & Manz, 1992*).

Intrapreneurial behavior (7)
Intrapreneurial behavior is an employee's ability to recognize opportunities and lead the generation, introduction, and implementation of ideas (*West & Farr, 1990; Bosma et al., 2012*).

↘ How these 7 personal factors affect employees' innovative behavior is elaborated upon in Appendix A.

Different Types of Leadership

Figure 9. Leadership styles (Hemerling, 2015)

2.4.4 Contextual Factors Managerial Level

The 2 contextual factors that on a managerial level influence employees' innovative behavior are:

Transformational Leadership (8)
Transformational leadership is a style where leaders focus on change and vision rather than supervision, monitoring, and control (*Avolio, 1994*). As opposed to traditional and delegated styles, transformational leaders are directive (defining a vision & setting strategic priorities) and inclusive (involving, mobilizing and empowering employees). An overview of the 4 leadership styles is shown in Figure 9.

Supervisory leadership (9)
Supervisory leadership is the leadership exhibited by management layers who directly supervise employees. It is found that supervisory leadership to a great extent determines an employee's perception of the innovative-supportive climate (*Scott & Bruce, 1994; Wang et al., 2014*) and him/her exhibition of innovative behavior (*Bass & Avolio, 1994*).

↘ How these 2 contextual factors on managerial level affect employees' innovative behavior is elaborated upon in Appendix B.

2.4.5 Contextual Factors Organizational Level

The 6 contextual factors that on an organizational level influence employees' innovative behavior are categorized in the organization's innovative-supportive climate and supporting structures and practices.

Innovative-supportive Climate (10)
An innovative-supportive climate is an employee's perception on how the shared attitudes, behaviors and feelings characterizing the work environment foster and encourage creative and innovative behavior (*Hassi et al., 2014; Gundry et al., 2015; Jaiswal & Dhar, 2015; De Jong & Den Hartog, 2007; Khalili, 2016; Ren & Zhang, 2015*).

Supporting Structures & Practises
Innovative supporting structures and practices are tooling, processes, mechanisms, and (in)formal ways of working that design the work environment that subsequently establishes an innovative-supportive and facilitates innovative behavior on an (i) organizational, (ii) managerial, and (iii) individual level (*Hassi et al., 2014; Çerne et al., 2013; Dillielo, 2006*). Supporting structures & practices are found to be vital elements to promote an innovative-supportive environment since it reflects management's commitment to innovation (*Hunter et al., 2007; Tseng, 2019*). Without it, the climate cannot be considered innovative-supportive and innovative outcomes are unlikely to happen (*Reiter-Palmon & Illis, 2004*). Supporting structures and practices are distinguished into 5 contextual factors which are:

Job Design (11)
A job design that supports innovative behavior (i) considers creativity as a standard of its description (*Rigtering & Weitzel, 2013*), and (ii) includes daily tasks and activities that require idea generation, knowledge-sharing, and creative problem-solving (*Dillielo, 2006; Pitta, 2009; West &Farr, 1990*).

Resource-Allocation (12)
Resource-allocation is the availability of time, budget, network, and tooling, that employees can spend on creativity and access during the development and implementation of ideas.

Creative Processes (13)
Creative processes are the tooling, structure, and guidance that support the development and implementation of ideas. These processes are aimed to (i) reduce risks and uncertainty, and (ii) help employees overcome the organizational hurdles (such as inertia and bureaucracy)(*Imran & Anis-ul-Haque, 2011; Rigtering & Weitzel, 2013*).

Reward & Incentive Mechanisms (14)
Reward and incentive mechanisms give (i) adequate rewarding/recognition to positively reinforce employees who exhibit innovative behavior and (ii) encourage employees through goals, responsibilities, and incentives to adopt innovative behavior (*Hassi et al., 2012*).

Collaboration & Communication Flows (15)
In general, organizations that have flatter hierarchies and facilitate (i) social interaction, (ii) information-sharing, (i) (multidisciplinary) teamwork and collaboration, and (iv) free communication (shown as broad and diffuse information flows) (*Srivastava & Agrawal, 2010*) are found to have higher chances of successfully developing and implementing ideas (*Bird & Schjoedt, 2017; Miles & Covin, 2002; Zahra & Filatochtev, 2004*).

↘ How these 6 contextual factors on an organizational level affect employees' innovative behavior is elaborated upon in Appendix C.

2.5

Conclusion:

2.4.6 Interactions

Although the 15 factors are described as independent constructs, interactions between personal and contextual factors have been witnessed. Unfortunately, due to the uniqueness of each context and individual, there seems to be little agreement upon the validity and strength of these interactions (*Wang et al., 2013; Wang & Rode, 2010; Shalley et al, 2004*). Despite this, most scholars seem to agree that contextual factors affect an employee's innovative behavior by interacting with the personal factor of "intrinsic motivation" (*Amabile, 1996; Deci & Ryan, 1985; Shalley et al., 2004*).

↘ The witnessed interactions that most scholars agree with are elaborated upon in Appendix D.

2.5.1 Answering the Sub-questions

In conclusion, the 4 sub-questions formulated to conduct this literature are answered in the following ways:

2. How can employees contribute to innovation with an organization?

The innovation strategy where employees contribute to the innovation of a company is called intrapreneurship or a bottom-up innovation approach. A bottom-up innovation approach focuses on the innovative behaviours of employees and its ways to foster and encourage it.

3. Which factors are identified to affect an employee's innovative behavior within an organization?

Bottom-up innovation is shaped by a variety of factors. The theoretical framework (shown in Figure 8) summarizes 15 factors that have been found to significantly affect innovative behavior among employees. These factors can affect an employee's innovative behavior on an individual level – the personal factors – or on a managerial or organizational level – the contextual factors. By means of this theoretical framework, factors affecting bottom-up innovation within the OpCo's of PEPP can be plotted.

4. Which conditions are identified as necessary to realize an employee's innovative behavior?

The theoretical framework summarizes the current understanding of factors affecting an employee's innovative behavior. Unfortunately, there remains a consistent gap in the literature which factors mediate and moderate this behavior since they differ per organization and individual (*Jaiswal & Dhar, 2015*). Therefore, scholars call first for further research on personal and contextual factors that might be responsible for affecting employees' innovative behavior (*Shalley et al., 2004; Jaiswal, 2015*). Additionally, further research is opted to describe contextual conditions under which innovative behavior among employees can be fostered and encouraged (*Rigtering & Weitzel, 2013*).

2.5.2 Addressed Literature Gaps

This thesis aims to contribute to today's literature gaps on our limited understanding of (1) intrapreneurial behavior on an individual level, (2) the bottom-up innovation approach and its practical implications, and (3) the adoption of an experimentation-driven approach in innovative behavior among employees and within the organization.

First Literature Gap

First of all, little research has shed light on the process of innovative behavior on the individual level of an employee. The question of what happens when an employee has a creative thought or idea, and when and under which conditions does he or she choose to behave innovatively rather than stick to routine behaviors remains unanswered (*Shalley et al., 2004*).

In addition, most studies remain ambiguous about the necessary personal factors, such as skills, abilities, and behaviors, required for innovative behavior (*Rightering & Weitzel, 2013*). In the pursuit for employees to adapt an experimentation-driven approach, the necessary personal factors, such as creative-self-efficacy and skills and practices need to be understood (*Hassi et al., 2014*).

Furthermore, researchers have just recently begun to explore how contextual factors affect the individual level (*Holt et al., 2007; Rutherford & Holt, 2007; Zampetakis et al., 2009*). However, if and how the existing theory on an organizational level can be generalized to an individual level (*Righering & Weitzel, 2013*) and with what personal factors contextual factors interact requires further research. By focusing this thesis on the individual level, in-depth knowledge can be gained on constructs of innovative behavior, the decision-making process, required personal factors, the contextual conditions, and the relevant interactions.

Second Literature Gap

Secondly, most studies have primarily focused on the effects of a top-down approach. Unfortunately, few researchers have explored the requirements and effects of a bottom-up approach. Whether and if employees are able to change and design factors to help them exhibit innovative behavior is unaddressed. Additionally, existing research considers a single perspective on either a top-down or bottom-up approach and hybrid models are not researched.

Furthermore, existing research is found too theoretical and inapplicable (D*ess et al., 2003, Rightering & Weitzel, 2013*). In most studies, scholars have advised and provided leaders with conceptual models and one-sentence suggestions on how to design contextual factors. For example, numerous studies agree and propose the design of training programs to enhance employee's personal skills, such as self-leadership, creative self-efficacy, and skills and abilities (e.g. *Jaiswal, 2015; Wong & Pang, 2003; Avolio, 1999; Bass & Riggio, 2006; Tourish et al., 2010*). In the absence of practical guidelines, case studies, best practices, and design requirements and recommendations, this thesis aims to offer practical insights and a final design to facilitate bottom-up innovation that is tested and ready to be implemented.

Third Literature Gap

Lastly, recently one study - (*Hampel et al., 2019*) - has investigated an experimentation-driven approach in companies. While there is an increasing interest among managers in experimentation and practitioners' urge for its adoption in companies, little attention is paid to this topic by scholars yet. As a consequence, questions on the conditions under which experimentation can be adapted, how it can be successfully carried out, and the challenges faced remain unanswered. Hence, this thesis aims to provide new perspectives and practical insights on how experimentation can be adopted in companies and the innovative behaviors of their employees.

Chapter 03 |

Methodology

In this chapter:

3.1

Empirical Research:

3.1.1 Research Objectives

The objective of the empirical research is to gain a better understanding of (i) the existing factors and hurdles that inhibit and prevent employees within OpCo's to exhibit innovative behavior in their daily work, (ii) the necessary conditions under which employees choose to exhibit innovative behavior, and (iii) the reasons why these necessary conditions are absent.

By means of the theoretical framework from the literature (shown in Figure 8), the following sub-questions are answered:

5. Within the context of PEPP, what factors play a role in affecting employees' innovative behavior and how?
6. Within the context of PEPP, which conditions are necessary for employees to exhibit innovative behavior?
7. Within the context of PEPP, how can the necessary conditions that are absent be designed for?

The answers to the abovementioned sub-questions will pinpoint the problem and solution areas for this project to proceed with.

In addition, the empirical research aims to shed light on (iv) the process of innovative behavior among employees within OpCo's and their decision-making to choose to exhibit innovative behavior, (v) the factors that directly impact their innovative behavior, and (vi) the extent to which factors can be controlled by the employee. With the absence of an existing theoretical framework in this field, a grounded theory approach is used (*Birks & Millis, 2015*). The goal of this grounded theory approach is to create a conceptual model of factors affecting employees' innovative behavior on an individual level.

Lastly, regarding the adaptation of experimentation in innovative behavior, the empirical research aims to explore (vii) the potential purposes and applications of conducting experiments, (viii) the necessary skills and practices employees require to experiment, and (ix) additional factors and conditions that affect and enable practises of experimentation within the organization.

3.1.2 Qualitative Research

Due to the complex and subjective nature of understanding innovative behavior among employees, the empirical research uses a qualitative research approach. For this qualitative research approach, the techniques of interviews and observations are applied. As a result, explicit and observable knowledge is collected. The overview of the qualitative research techniques is shown in Figure 10.

An overview of the Qualitative Research Techniques

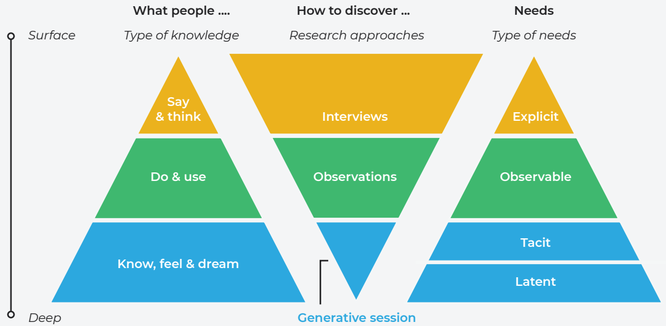

Figure 10. An overview of the qualitative research techniques (Sanders & Stappers, 2012)

(Operating) company	Number of interviews	Type of interview participants	Prior innovation experience
PENL, PENO, Bolier, PPNL, SITECH (= operating companies), PEPP group, Area 52 (= units PEPP group), Datalab (= unit Pon), New Craft (= external design consultancy)	32	PEPP-board executive, Pon board executive, Management Team, Manager level 1, Middle manager, Team lead, team member, business analyst, senior data scientist, product manager, interim, business developer, trainee of Service & Parts, Technical Support, Finance, Field and Operations, IT, Communication, Marketing, and Business Improvement	Digital Impact Program (DIP), Digital Impact Program in a Day (DIP in a day), Area 2 project Remote Assistance, Project Engenius, Pon Management Dagen

Table 1. Case Sample and Collected Data interviews

3.2

Interviews:

During empirical research, interviews are used to gain an understanding of what employees say and think are factors that affect their innovative behavior and/or that of other employees. Through this technique, primarily explicit knowledge is collected.

3.2.1 Sample

The population used for the interviews is based on recommendations of Area 52 members. In total, 32 interview participants are interviewed. An overview of the case samples can be found in Table 1.

The interview participants have purposely been selected on three criteria of (i) a variety of OpCo's (PEPP, Pon and external), (ii) a variety of types of interview participants and functions, and (iii) employees' prior experience with innovation or experimentation. By interviewing employees from a variety of OpCo's, the delegated business model is taken into account and the extent to which factors are OpCo-specific or shared among the business group PEPP is analyzed. Similarly, a variety of types of interview participants and functions investigates whether factors are layer- or function-specific or shared across layers and functions. Employees' prior experience with innovation or experimentation allows the interviews to recall and reflect upon their own experiences, being able to more accurately identify factors affecting their behavior.

3.2.2 Data Collection

Over a period of 6 weeks, all 32 participants are interviewed either for an (i) exploration or (ii) validation interview. Both interviews make use of a semi-structured interview approach. This approach allows guiding the interview participants through specific topics while accepting spontaneous questions and input from the interviewee. The 2 interview guides are set up according to the guidelines of Patton (*2002*).

Exploration interviews
The first type of semi-structured interviews are "explorative" and are conducted with 22 interview participants. The interviewees are both employees and managers, last between 1 - 1.5 hours and take place face-to-face or via call. The objective of this interview is to identify explicit factors employees mention to be affected by when exhibiting innovative behavior. Hence, the interview guide discusses the following topics: description current job (i), experience with innovation training (if applicable) (ii), the current role of innovation and experimentation in your job (iii), the definition of innovation and experimentation (iv), barriers and challenges encountered when innovating and/or experimenting (v), and desired way of innovating and experimenting and required changes (vi).

↘ The interview guide for exploration interviews can be found in Appendix E.

Validation interviews
When data is collected iteratively, specific factors have become saturated or emphasized as barriers or opportunities (*Ness, 2015*). Once a number of saturated, and opportunity and missing factors are identified, exploration interviews are replaced by validation interviews. The factors found to be satured and offering design opportunties are: climate, strategy, purpose, perceived workload, leadership, and management support.

In total, 10 interviews are held with Management Team members, Managing Directors, and PEPP-board executives. These interviews last between 40 minutes - 1.5 hours and take place face-to-face or via call. The objective of the validation interviews is to (in)validate and enrich factors that are saturated or identified as problems, opportunities or gaps.

The interview guide discusses the following topics: description current job (i), key learning innovation day/ training (if applicable) (ii), the current role of innovation and experimentation in OpCo (iii), the definition of innovation and experimentation (iv), organizational or cultural challenges encountered when innovating and/or experimenting (v), company strategy and purpose challenge encountered (vi), workload challenge encountered (vii), leadership and management support challenge encountered (viii).

↘ The interview guide for validation interviews can be found in Appendix F.

Conducted interviews are voice-recorded, of which a number of interviews are fully transcribed and for others important notes are documented.

↘ The key information is documented in an Excel spreadsheet which can be found in Appendix G.

(Operating) company	Number of interviews	Type of interview participants	Prior innovation experience
PENL, PENO, Bolier, PPNL, SITECH (= operating companies), PEPP group, Area 52 (= units PEPP group), Datalab (= unit Pon), New Craft (= external design consultancy)	32	PEPP-board executive, Pon board executive, Management Team, Manager level 1, Middle manager, Team lead, team member, business analyst, senior data scientist, product manager, interim, business developer, trainee of Service & Parts, Technical Support, Finance, Field and Operations, IT, Communication, Marketing, and Business Improvement	Digital Impact Program (DIP), Digital Impact Program in a Day (DIP in a day), Area 2 project Remote Assistance, Project Engenius, Pon Management Dagen

Table 1. Case Sample and Collected Data interviews

3.3

Observations:

The observations are used to observe employees' innovative behavior in the work environment to (i) enrich, contextualize and (in)validate interview findings with the researcher's observations, and (ii) identify potential new factors that are not addressed in the interviews and/or that are witnessed by the researcher. The interviews are complemented since observations are generally less subject to reactivity issues (*Maxwell, 2005*).

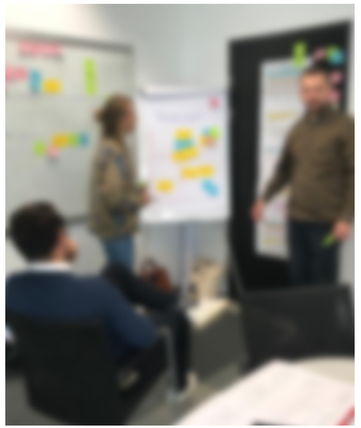

Figure 11. A representation of the work sessions for case study 1 "Remote Assistance"

3.3.1 Samples

The findings of the observations are derived from three official case studies. The first and main case study called the project "Remote Assistance" has been designed for the sake of this thesis by the researcher. The two other case studies are activities initiated by other internal or external parties. Additionally, by working at the organization 1 or 2 times per week, a fly-on-the-wall approach is applied (*IBM, 2001*). An overview of the case samples can be found in Table 2.

Case study 1: Project Remote Assistance
Remote Assistance is a concept pitched by two PENL middle managers in September 2019 to Area 52. As a result, an innovation project was started in which the researcher could design the setup. The objective of the case study is twofold by (i) facilitating the employees to set up a pilot for a remote service proposition according to an experimentation-driven approach, and (ii) observing the affecting factors and necessary conditions for employees to exhibit innovative behavior and to conduct experiments when innovating. Hence, the researcher facilitated the project for 13 weeks and helped the employees to conduct experiments and set up a pilot for a remote service proposition. A representation of the work sessions is shown in Figure 11.

Case study 2: Experimentation training
The second case study is a 2-day training on experimentation hosted by external consultant and organized by Area 52. The training focused on teaching a digital experimentation-approach and applying the consultant's designed MVP experiment canvas. During the training, the applicability of the canvas and the discussions on how to adapt the experimentation approach in OpCo's were collected.

Case study 3: "Experimenteren kan je leren"
The third case study is "De Movement" activity "Experimenteren kan je leren" and is organized by Area 52. The activity focused on teaching 10 Movement members and 3 product owners to set up experiments according to Bram's designed MVP experiment canvas. In 3 sessions (of each 2 to 4 hours), 3 groups worked on

Sample	Number of sessions	Number of observed participants	Details case study
Area 2 project Remote Assistance	10	2 (middle managers)	Work session, every wednesday, 2 hours, PENL context
Experimentation course	2	9 (Area 52 members, intrapreneurs Area 3 projects)	2-day training, MVP canvas, external party
Movement activity	1	10 (Area 52 members, Movement members)	Brainstorm session MVP canvas

Table 2. Case Sample and Collected Data interviews

designing and conducting experiments for 3 current innovation projects (Arie fix't, Engenius, and the Pon Locator App). During the evaluation of the activity, (i) learnings, (ii) feedback on the canvas and approach, (iii) potential future applications, and (iv) conditions discussed necessary to adapt the experimentation approach in future innovation projects were collected.

3.3.2 Data Collection

Throughout the case studies and continuous observations, behaviors, quotes, and insights were documented and discussed. For case study 1, a reflection was written after every work session and its insights were discussed with the two PENL employees.

The key information is documented in an Excel spreadsheet which can be found in Appendix G.

3.4

Data Analysis:

The collected data (shown in Table 1 and 2) resulted in 32 semi-structured interviews equaling 34 hours of recorded material and 40 pages of documentation; and 13 meeting observations equaling 50 hours of meeting time. The collected data was analyzed according to the coding procedure of generating (i) initial codes, (ii) focused codes, and (iii) axial codes (*Glaser & Strauss, 1967*).

The first step of analyzing the data entailed the coding of lines and parts of the text. A representation of the first step is shown in Figure 12.

Afterward, the codes were first plotted on the theoretical framework (shown in Figure 8) and clustered according to the 15 factors. Clustering the factors multiple times resulted in the emergence of PEPP-specific categories and the adaption or elimination of existing categories of the theoretical framework.

In the end, a PEPP-specific theoretical framework was built consisting of 15 factors subdivided into 6 categories. Through axial coding, the properties and dimensions of these 6 final categories were specified. Additionally, relationships between 3 categories were defined, which resulted in a conceptual model of Employee Innovation Behavior (*Charmaz, 2006*). Other relationships were witnessed but call for further research.

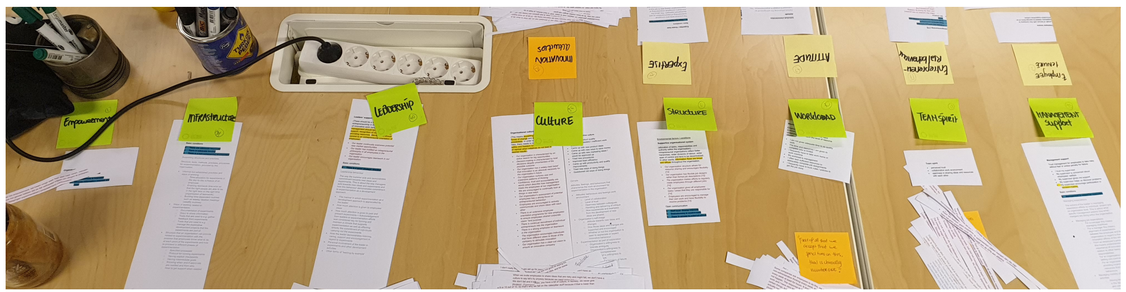

Figure 12. Representation of the data analysis

Chapter 04 |

Findings

The empirical research shed light on 5 key findings which will be elaborated upon in this chapter.

In this chapter:

4.1

Factors within PEPP:

4.1.1 A PEPP Theoretical Framework

Regarding empirical research, the first finding is an overview of personal and contextual factors that affect innovative behavior among employees within the OpCo's of the business group PEPP. As a result, a theoretical framework for the business group PEPP is built. The result of the theoretical framework is shown in Figure 13.

Despite a great number of factors being distracted from the literature, the factors are specified to the context of the business group PEPP and , additionally, new factors are found. This PEPP-specific framework consists of 15 factors subdivided into 5 categories. The first two categories of the framework entail the personal factors, while category 3 -5 consists of the contextual factors.

The categories and respective factors are:

- Innovation Ambition: (1) Attitude, (2) Creative Confidence, (2) Intrinsic Motivation
- Innovation Capabilities: (4) Creative Mindset, (5) Know-How & Practise, (6) Self-Leadership
- Innovation Climate: (7) Innovation-Supportive Practises, (8) Support & Incentives, (9) External & Customer Orientation
- Innovation Leadership: (10) Transformational Leadership, (11) Shared Vision, and (12) Innovation Portfolio
- Organizational Support: (13) organizational Structure, (14) innovation mechanisms (14), and (15) organizational Boundaries

4.1.2 A Conceptual Model

The second key finding of the conducted research and applied grounded theory approach is the building of a conceptual model of Employee Innovation behavior. The model is shown in Figure 14.

The model proposes a three-stage process to describe the steps employees undertake when exhibiting innovative behavior. The first stage of "Innovation Ambition" determines whether an employee is interested in engaging in innovative behavior. Secondly, "Innovation Capabilities" describes the innovation expertise, such as mindset, knowledge, skills, and experience, the employee can make use of to mobilize its innovation efforts. Lastly, "Innovation Behavior" is the outcome of the employee's exhibited innovative behavior, such as solving a problem in a creating way or generating a (novel) idea.

Furthermore, the model suggests that a sequence of the 3 above mentioned categories. As a matter of fact, it proposes that employees require "Innovation Ambition" before pursuing "Innovation Capabilities". Only when an employee's "Innovation Ambition" and "Innovation Capabilities" are both present, "Innovation behavior" is believed to be realized.

Additionally, for each stage of the model, personal factors have been identified that reveal the decision-making upon which an employee chooses to behave

A PEPP-specific Theoretical Framework of 15 personal and contextual Factors

Figure 13. A PEPP-specific Theoretical Framework for based on the findings from the Empirical Research

innovatively. The strength and presence of each personal factor differ per employee. Hence, the presence of all 6 personal factors is presumed to lead towards the successful development of ideas.

4.1.3 The Target Group

The third finding of the conducted research is the required personal factors and necessary contextual conditions found among employees under which they choose to exhibit innovative behavior.

Although between employees a great variety was found, a specific group of employees is identified for requiring minimum conditions. Employees that have (i) a positive attitude, (ii) a high level of intrinsic motivation, and (iii) are working on self-initiated ideas are found to (i) require minimal conditions to exhibit innovative behavior, and (ii) are less influenced by contextual factors (by trying to overcome or change them). Hence, this group of employees is the target group for the final design. A representation of the target group and respective personal and contextual factors is seen in Figure 15.

Every OpCo is found to have a small group of employees that fit within the characteristics of the target group. These are employees who are members of Area 52's community "De Movement", but also individuals who have not yet been recognized.

The Conceptual Model of Employee Innovation Behavior

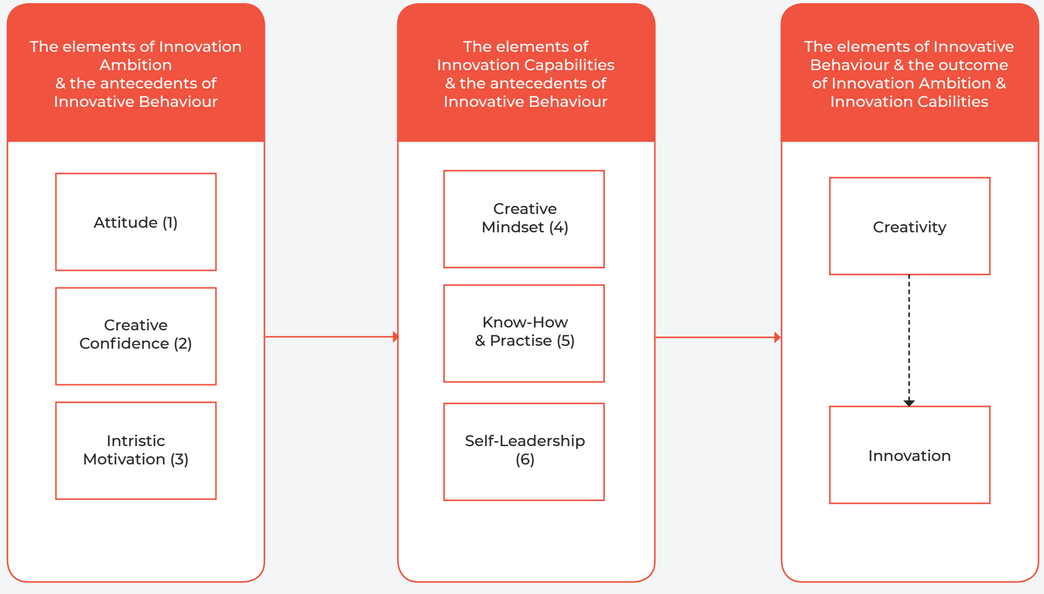

Figure 14. The Conceptual Model of Employee Innovation Behavior

Personal Factors:

For this section, the personal factors are described on how they affect the target group - employees that are intrinsically motivated and work on self-initiated ideas - to exhibit innovative behavior.

The full overview of the personal factors can be found in Appendix H (Category Innovation Ambition) and Appendix I (Category Innovation Capabilities).

Figure 15. A representation of the target group and respective personal and contextual factors

4.2.1 Category Innovation Ambition

The first category of the Employee Innovation Model is “Innovation Ambition”. Innovation ambition is an employee’s perspective on creativity and innovation and his/her interest in engaging in innovative behavior. Innovation ambition is a cluster that consists of the following 3 personal factors:

(1) Attitude

Attitude is an employee’s opinion towards change and newness, and his ability or fear to step out of his comfort zone, trying new things, and seeking challenges. The overall attitude within OpCo’s is perceived as negative by the target group. As a consequence, the target group does not feel comfortable or is reserved in expressing their positive attitudes explicitly. Also, they believe they are discouraged to act innovatively due to the lack of solidarity and support from co-workers, supervisors and top management. Support provided by the community “De Movement” is experienced positively, yet all believe a change of attitude and support from within OpCo’s is needed to make them thrive at innovation.

> “Ik probeer ondanks de werkdruk mijzelf te verbeteren en dingen anders te doen en collega’s hierin uit te dagen”
>
> “Wanneer iemand iets nieuws wilt proberen wordt er meteen gezegd: “Dit hebben we al geprobeerd en werkt toch niet”

(2) Creative Confidence

Creative confidence is an employee’s ability, assertiveness, and positive self-esteem to take initiative and face challenges. Although many employees in the target group are working in specialized functions of sales, finance, and engineering, they all believe there is great potential to apply creativity in their jobs. Unfortunately, most employees in the target group are not trained in innovation. Despite the target group’s awareness that their skills and capabilities in innovation are limited, they do not believe this inhibits or discourages them from exhibiting innovative behavior.

Instead, they pinpoint 3 obstacles they feel affected by, which are (i) finding room to exhibit innovative behavior, (ii) dealing with the little support from their supervisors or top management, and (iii) dealing with peer pressure and negative judgment when exhibiting innovative behavior. All employees have witnessed or faced peer pressure, judgment, disapproval, and lack of support from coworkers and supervisors that have discouraged them to share ideas and/or work on them.

> “Als iemand iets nieuws zegt of er iets nieuws wordt geïntroduceerd dan zijn mensen vaak sceptisch.”
>
> “Ik heb een safe space en een manager die mij het vertrouwen geeft om te falen. Hij zegt we moeten gewoon een keer gaan vieren als je een fout maakt. Hij is een sparringpartner en stimuleert experimenteren.”

Only two employees mentioned how support, trust, and empowerment from their supervisors helped them gain creative confidence and encouraged them to innovate.

(3) Intrinsic Motivation

Intrinsic motivation is an employee’s motivation and inner drive to be involved in a creative task. A distinctive characteristic of the target group is that all employees express a high level of intrinsic motivation. Employees within the target group are found to have an inner drive to work on a higher purpose, make an impact and/or to pursue personal growth. Also, in contrast to other employees, they are witnessed to have a higher awareness of the importance of innovation and are able to think more long-term. Unfortunately, every employee in the target group can recall upon experience(s) of their intrinsic motivation being ignored, not making an impact, or even being hindered or stopped by decision-making from supervisors and top management. As a result, although intrinsically motivated, most have become reserved and demand external approval, commitment, and trust from supervisors and top management before exhibiting innovative behavior.

> “Door bezig te zijn met verandering en innovatie ben ik mezelf aan het ontwikkelen. We doen daar binnen PEPP nog te weinig mee.”
>
> “Uiteindelijk blijven we maar een beetje hobbyen zonder dat er echt iets verandert, er tijd voor wordt gemaakt of het belangrijk wordt gevonden.”

4.2.2 Category Innovation Capabilities

The second category of the Employee Innovation Model is “Innovation Capabilities”. Innovation capabilities are an employee’s mindset, knowledge, skills, and experience he/she has within innovation, such as his/her know-how of methodologies and corresponding tooling, and the ability to apply this to the generation, development, and implementation of ideas. Innovation capabilities is a cluster that consists of the following 3 personal factors:

(4) Creative Mindset

The creative mindset is an employee’s ability to engage in activities of critical-, customer-centric, and explorative thinking. All of the employees from the target group have a natural tendency to engage in critical thinking and think from a customer perspective. Unfortunately, only a handful of employees have been formally trained on how to obtain these behaviors through innovation training programs, such as the Digital Impact Program (DIP). Although the abilities for most of the employees in customer-centric and explorative thinking are limited, they believe this does not inhibit or discourage them to exhibit innovative behavior.

Instead, the target group believes their innovative behavior is affected by (i) the lack of creative room required in their tasks, (ii) the lack of encouragement to apply creative thinking by supervisors, and (iii) the inability to implement customer-thinking by interacting with customers. First of all, all employees pinpoint that most daily tasks do not require creative thinking and, if applicable, do not hold any time and space to do it. Also, they observe that supervisors do not ask for innovative behavior, sometimes even ignoring it, as it is not part of the job description. Lastly, employees struggle to think more customer-centric as they have limited contact with and/or information about the customer and are rejected by key accountants and sales representatives to contact customers.

> “Ik heb geen taken waarin ik wordt verwacht na te denken over nieuwe ideeën of manieren hoe we het anders kunnen doen.”
>
> “Er is geen mentale headspace om na te denken”

(5) Know-How & Practise

The know-how & practice is an employee’s understanding of required innovation expertise and methodologies and his/her current skills and experience in innovation. The target group has identified (i) the lack of skills and (ii) the opportunities to apply the skills in their daily work as the two main obstacles to exhibit innovative behavior. First of all, only a handful of employees from the target group is equipped with know-how, skills, tooling, and experience in innovation from participating in the DIP program. In contrast, most employees working on self-initiating ideas have little knowledge, awareness, skills, and experience in innovation. As a matter of fact, they currently develop their ideas through trial-and-error and wild guessing. Secondly, all employees pinpoint that, even if they have or would have the know-how, they are unable to practice and apply it to their own tasks. This is because (i) tasks do not hold the room for creativity and innovation, and

(ii) co-workers or supervisors do not understand or might even disapprove of applying it. Lastly, the target group feels inhibited by the organization's demand to build a business case for your idea at the start due to (i) their lack of knowledge to build a business case and (ii) prioritization of other tasks believed more important, such as talking to customers or building a solution.

> "Om een idee uit te werken heb ik een vriendin gevraagd hoe ik dit het beste kon aanpakken. Samen met haar heb ik een klantreis gemaakt. Nu weet ik hoe ik een klantreis moet maken."
>
> "Als jij er niet was, dan waren we met ons idee ergens in een hokje gaan zitten om het proberen te gaan uit te werken. Waarschijnlijk hadden we een oplossing gebouwd om te presenteren."

(6, 7) Self-Leadership and Intrapreneurial behavior
Employees with self-leadership and intrapreneurial behavior are daring, opportunity-seeking, risk-taking and comfortable with taking initiative and decisions. All employees of the target group are willing to seek opportunities and take initiative. Unfortunately, employees have identified the obstacles of (i) tasks requiring little self-directedness and decision-making, (ii) the organization 's focus on acute and explicit customer problems, (iii) the negative risks it involves, and (iv) the lack of supervisory and top management in appreciating self-leadership. First of all, employees pinpoint that tasks require little self-directedness and decision-making. Most tasks rely on routines and procedures that are controlled by the supervisor. For suggestions or changes, employees have to ask for approval. Secondly, employees find it hard to prioritize innovation as it is not an acute and explicit problem, subsequently unable to make time for innovation during their work. Thirdly, employees experience that there are currently only risks involved when displaying self-leadership. They feel that making decisions on behalf of the supervisor or pursuing an idea without approval is inappropriate and might even damage their careers. Lastly, employees believe that self-leadership is not appreciated by supervisors and top management since it is often ignored and not rewarded.

> "Om aan een idee te werken heb je altijd goedkeuring nodig van je manager."
>
> "Veel Ideeën worden door directe managers beoordeeld en bepaald dat deze niet door gaan. Je moet het gewoon gaan doen en laten zien dat het een goed idee is."

4.3

Contextual Conditions:

The above mentioned personal factors are complemented by contextual factors. Based on the target group, 5 key contextual conditions have been identified that are believed to support and encourage them to exhibit innovative behavior.

↘ The full overview of the contextual factors can be found in Appendix J.

These 5 contextual conditions are:

(a) Allocated work time to innovation
First of all, the target group calls for the structural allocation of work-time for innovation activities. For the target group to develop their ideas or think about innovation, they require available time in their schedule or in assigned tasks. This innovation work-time should not be a one-off exercise, but part of their weekly routine, without resulting in overwork, additional overtime or career damage.

(b) Available Innovation Resources
In addition to time, employees require a supporting structure that is offered by the organization to facilitate them in the development of self-initiated ideas. Tooling, an (innovation) process, and available support and budget are considered essential for the target group to develop both their ideas and skillset.

(c) A (Future) Focus
Furthermore, the target group requires some framework provided by top management that describes the innovation ambitions, targets or future-vision of the OpCo. This framework shows that top management has committed to innovation and helps them to (i) justify spending work time on innovation, (ii) prioritize innovation in relation to other activities, and (iii) assess how their self-initiated ideas fit with the OpCo's innovation ambitions.

(d) Compensating Rewards & Recognition
Moreover, the target group requires compensating rewards and recognition to continue taking risks and dealing with obstacles, and peer pressure. Also, they believe innovative behavior should be recognized as more than one's personal investment and should be valued accordingly.

(e) Top Management Support
Lastly, the target group calls for top management and supervisors to take responsibility for creating an innovative-supportive climate. Whereas most innovative behaviors from the target group have been ignored or unsupportive, they believe the success of ideas and innovative behavior is greatly dependent upon how the supervisor and top management offer necessary resources, recognize their behavior, accept and embrace failure, and put a stop to peer pressure.

4.4

Experimentation:

The last key finding of the empirical research is the potential application of experimentation as an approach within the innovative behavior among employees. In the organization 's current decision-making and innovation process, there have been 2 identified areas in which experimentation can add value.

First of all, ideas from employees are assessed by supervisors and managers on their own intuition and assumptions, rather than being fact-checked and based on customer insights. As a consequence, supervisors, and managers hold the subjective power to determine whether an idea is "good". Additionally, customers are rarely involved in the decision-making and development of an idea.

Hence, an experimentation-driven approach can help employees to involve employees, collect their insights, and fact-check assumptions and intuition. As a result, employees can (i) build a more objective argumentation for an idea's right to exist and (ii) are able to present and discuss this argumentation to convince supervisors and top management. In fact, experimentation as an approach to validate assumptions and intuition can be used in every decision-making process.

Secondly, the development of ideas is not supported by standardized processes and not based on existing innovation processes, principles, and methodologies. Most employees develop ideas by trial-and-error, best guessing, and tend to focus solely on building a solution. As outcomes, they (i) get stuck convincing supervisors or top management to offer the necessary resources to build a solution or (ii) fail because they find out their idea is not working, desired by customers, or creating business. Consequently, the development of ideas is unstructured and inefficient. As a matter of fact, none of the employees assessed the opportunity ground for their idea, interviewed customers, or tested their idea by building a prototype.

When employees can apply an experimentation-driven approach, they will be able to work according to a standardized process of experimentation, which is (i) more lean, and (ii) helps employees test their idea already in an early stage to validate its desirability, feasibility and viability, subsequently increasing the idea's success rate.

Chapter 05 |

Design Brief

In this chapter:

5.1

Final Problem Statement:

The findings from the conducted research provide a new perspective on the initial problem that was observed by Area 52. The initial problem focuses on the observation that employees within OpCo's are prevented or hindered to improve and innovate during their daily work activities.

The findings of the empirical research identified =multiple problems that explain why employees within OpCo's currently do not or are unable to improve and innovate during their daily work. By conducting a problem analysis, the key hurdle that prevents, stops, discourages employees to exhibit innovative innovation is found among all OpCo's. Figure 16 shows a simplification of the problem analysis. The consequences of this key hurdle and respective pain points experienced by the target group are discussed in the next paragraphs.

5.1.1 The Main Hurdle

Within all OpCo's, the main reason why employees are unwilling or unable to exhibit innovative innovation is the lack of time. Almost all employees face already great difficulty to finish their assigned tasks and solve all acute customer problems. Most employees experience a constant modus of fire-fighting, which is "the spending time on problems that need to be dealt with quickly, instead of working in a calm, planned way" (*Cambridge, 2020*). As a result, they have to work overtime on a daily basis to get tasks done. Hence, for most employees innovation means extra time and headspace, which they just don't have. Within OpCo's, time spent on innovation is either additional overtime or one's own leisure time. As a result, most employees are unwilling to endure additional overtime or do not want to sacrifice their own leisure time and are thus - fair to say - reluctant to exhibit innovative behavior.

"Ja hoor, ik mag zeker aan verbetering en vernieuwing doen ... maar dan wel als al mijn andere werkzaamheden af zijn."

"Binnen onze organisatie is innoveren een hobby dat werknemers maar in hun vrije tijd moeten doen en waar vooral geen tijd en budget voor vrij moet worden gemaakt. Managers kunnen wel zeggen, "Leuk ga maar doen!", maar dat betekent niks. Je moet zelf maar zie hoe je de tijd vindt om bezig te zijn met innovatie. "

Fortunately, this main hurdle of time scarcity does not stop all employees from exhibiting innovative behavior. Numerous employees recall having reported ideas for improvement and innovation to their supervisor(s) or other stakeholders. Unfortunately, most supervisors, dealing with the same lack of time, have either ignored these ideas, discarded them due to time constraints, or tried to act upon it to later find them shelved due to these same time constraints.

The Problem Analysis: The main hurdle, consequence, and respective pain points

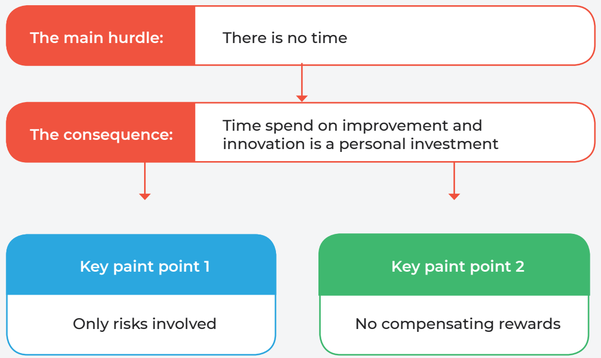

Figure 16a. The conclusion of the problem analysis is the main hurdle and its consequences

5.1.2 The Consequence

Thus, most employees are inhibited to exhibit innovative behavior due to the lack of time. Some employees have tried to propose ideas for improvement and innovation. Unfortunately, most of these ideas get immediately discarded by their supervisors or a responsible person due to time constraints.

In a few cases, supervisors or responsible persons encourage employees to further explore the idea. Unfortunately, this encouragement only signals approval, implying that it's the employee's self-responsibility to further develop their self-initiated idea. As a matter of fact, employees who are told that they can work on their self-initiated ideas are left all by themselves. They are required to figure out (i) how to develop their idea and (ii) how to free up time while finishing all their assigned tasks while not receiving any additional support from their supervisor(s) nor the organization. This lack of support, resources, and required expertise in innovation are what causes most employees to give up on their ideas right away.

Fortunately, a very small group of employees is intrinsically motivated to work on their idea and is not set back by the lack of time, support, resources, and required expertise on innovation. This handful of employees accept that time spent on their idea is a personal investment that they have to work on their ideas (i) voluntarily, (ii) on top of their existing workload and assigned tasks, and (iii) in their own time.

Every OpCo holds a number of these employees that have self-initiated ideas and work on them as a side

project or hobby voluntarily, on top of their existing workload, and either in their overtime or in their leisure time (such as the weekends). Unfortunately, noone has been able to reorganize their schedules successfully to work on their idea during work time. Instead, while working on these ideas in their personal time, they continuously bear the burden of the risks involved and the lack of compensating rewards and recognition. It's these two pain points that discourage, withhold, or even make them quit to work on their self-initiated ideas.

5.1.3 The Pain Points

As above mentioned, employees who spend personal time on self-initiated ideas face two key pain points that discourage, withhold them, or make them quit. The first pain point is that spending time on self-initiated ideas does only involve risks. The second pain point is that employees dealing with these risks miss the recognition and rewards that compensate for the risks involved.

Pain Point 1: Risks only
Employees who work on self-initiated ideas have to deal with a three-fold of risks involved which are (i) potential career damage, (ii) possible overwork and (iii) the risk of failing. First of all, (i) employees who spend their personal time on ideas are constantly pressured and reminded by their supervisor(s) and their environment to not let it affect their current job performance and might facing peer pressure and criticism, needing to put off their side project, coming short in their current job expectations, facing a discourse with their supervisor(s), facing a poor assessment or in the worst case receive dismissal. Also, (iii) employees working on self-initiated ideas have limited resources available that minimize their success rate. With no dedicated innovation resources (such as tooling, time, and budget) available for self-initiated ideas, a lot of trial-and-error takes place, where employees get stuck, feel discouraged after unsuccessful attempts or stop and believe they failed.

Pain Point 2: No compensating rewards
A second pain point employees experience is the lack of rewards and recognition to compensate for the risks they take. When working on their idea, the risks involved discourage employees or even make them quit. Besides personal growth, most employees feel that spending personal time on innovation holds no benefits and only drawbacks of (i) career damage, (ii) overwork, and (iii) failure. Additionally, they point out that other behaviors, such as reaching targets or closing a deal, are incentivized and rewarded. Although these employees are not driven by external motivation at first, they do depend upon being recognized.

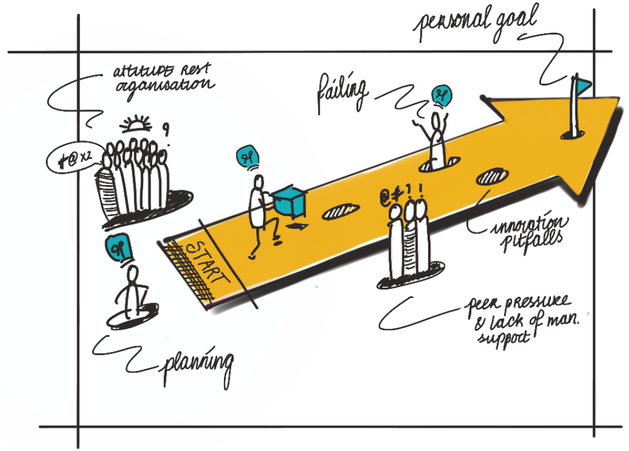

Figure 16b. A visualization of the problem analysis is the main hurdle and its consequences

5.1.4 The Final Problem Statement

To conclude, the final problem statement of this thesis is: "The lack of time effectuates employees to spend time on improvement and innovation as a personal investment. Employees that work on self-initiated ideas in their own personal time have a minimal chance of success, while facing high risks of potential career damage, overwork, and failure, and not becoming compensated for taking these risks through rewarding and recognition".

5.1.5 The Final Target Group

In chapter 4 (paragraph 4.2.3 Target Group) the target group is already described. Based on the problem analysis, the target group is found to spend personal time on innovation and experience the pain points.

↘ All characteristics of the target group are elaborated upon in Appendix K.

5.2

Possible Design Directions:

The pain points experienced by the target group result in two design directions which are (i) lowering the risks employees face when working on self-initiated ideas and (ii) offering compensating rewards to encourage employees to continue working on self-initiated ideas. An overview of the possible design and solution directions is shown in Figure 17.

5.2.1 Design Direction 1

The first design direction aims to lower the risks employees face when working on self-initiated ideas. There are two types of risks that can be lowered which are (a) the risk of employees being able to meet the expectations of their existing job while spending time on their self-initiated idea or (b) the risk of falling due to the low chance of success for realizing self-initiated ideas. These two types of risks result in two solution directions which are (1a) time to innovate and (1b) a higher success rate.

5.2.2 Design Direction 2

The second design direction aims to design the mechanisms of reward and recognition to encourage employees to work on their self-initiated ideas. There are two types of rewards and recognition which are (2a) compensating rewards and (2b) motivational boosters.

↘ Examples for each of the solution direction can be found in Appendix L.

The Design & Solutions Directions

Figure 17. An Overview of the Design Directions

5.3

Final Design Direction:

5.3.1 A Roadmap of Bottom-up Innovation

For this thesis, two design directions and 4 solution directions have been explored. The solution directions are (1a) time to innovate, (1b) a higher success rate, (2a) reward mechanisms, and (2b) motivational boosters. Each solution direction is found vital to support the target group in working on self-initiated ideas. Hence, all 4 solutions are part of a roadmap to realize bottom-up innovation within the OpCo's of PEPP.

5.3.2 The First Step of the Roadmap

Based on an evaluation of all four solution directions, the first step of the roadmap and the focus for this thesis is solution direction (1b): a higher success rate. The objective of the direction of this solution is to offer employees the necessary tooling that can support them in successfully developing their self-initiated ideas, and higher their success rate. In this thesis, tooling means an instrument or a way that supports employees to take certain steps in developing their self-initiated idea and can be in the form such as a framework, a process, a toolbox, or a Bootcamp.

↘ The evaluation of all solution directions can be found in Appendix M.

5.3.3 Tooling

There are five reasons why tooling is selected as the design direction and the first step of the bottom-up innovation roadmap.

First of all, (i) the tooling can be offered to employees who already work on self-initiated ideas and can immediately add value by increasing their success rate. Additionally, the empirical research found that most self-initiated ideas fail or are stopped due to employees' lack of knowledge in innovation and their awareness of well-known innovation pitfalls. A summary of the pitfalls is shown in Figure 18. Hence, the tooling can equip the target group with the necessary know-how on these pitfalls and higher their awareness to be able to prevent them, subsequently increasing the success rate of their self-initiated ideas. Furthermore, the tooling can help adopt an experimentation-driven approach in the innovative behavior exhibited by the target group. As a result, the target group can learn how to develop their ideas in a lean and effective way, and validate their assumptions by collecting customer insights. The latter aims to not only higher their chance of success, but also prevent employees from spending unnecessary time on undesired, unviable or unfeasible ideas.

Secondly, (ii) it is presumed that by increasing the success rate of self-initiated ideas the organization, results will be generated. Since PEPP is a result-driven organization, the successes of self-initiated ideas might trigger the required buy-in from top management and support from supervisors and co-workers, ultimately contributing to a supportive-innovative climate that invites more employees to work on their ideas.

Thirdly, (iii) the tooling builds on top of, and enriches current knowledge, interest, and time made available by Area 52 on facilitating bottom-up innovation. Also, the tooling builds on top of, and enriches current knowledge and training programs offered within Pon, such as the Digital Impact Program and the Digital Impact Program in a day.

Fourth, (iv) the tooling can be designed, tested and implemented in the time span of this project. Tooling can be integrated into existing structures, schedules, and processes of OpCo's and employees. Additionally, tooling is flexible in its design and can be tailored to be a low investment in resources for the organization.

The last reason is that (v) when no tooling is provided, the handful of employees that currently work on self-initiated ideas might quit due to low success rate, high risks, and lack of compensating rewards. This target group is the only group of employees that engage in innovation. When they quit, it might signal to the rest of the organization that innovation can't be achieved, subsequently inhibiting other employees to start working on their ideas.

The PENL 8 innovaton pitfalls

#1	Think in solutions only and too fast
#2	Make decisions on personal intuition only
#3	Driven by internal problem-solving
#4	Selling solutions
#5	Customer is king and a transaction
#6	Interview interaction is sales
#7	Ask permission first
#8	Let's plan everything

Figure 18. The PEPP-specific Innovation Pitfalls

5.4

The Design Brief:

5.4.1 Design Objective

The purpose of this thesis is to "Design (i) minimum tooling that is (ii) implementable by an OpCo, and (iii) equips (iv) employees, who work on self-initiated ideas, with the necessary innovation expertise to subsequently (v) higher their chance to successfully realize their idea."

The design objective consists of 5 elements which are:

(i) Minimum tooling
Tooling that requires minimum resources is preferred to higher the chance of adaptation and implementation by the OpCo. For this reason, the design tool will be considered an "MVP Tooling" referring to it as a Minimum Viable Product. The goal of the tooling is to facilitate employees through the necessary steps to develop their self-initiated ideas.

(ii) Implementable by an OpCo
To sustain the tooling after this thesis, the OpCo should be able to adopt, implement and offer it.

(iii) Equips with the necessary innovation expertise
The tooling should provide employees with the necessary know-how and practice that they can apply to their own self-initiated ideas. This innovation expertise should include the practices of an experimentation approach.

(iv) Employees who work on self-initiated ideas
For this thesis, the target group consists of employees who work already on self-initiated ideas or are interested in working on an idea they have in mind.

(v) Higher the chance to successfully realize their idea
The aim of the tooling is that by offering the necessary support and innovation expertise, employees will have a lower chance of failing.

5.4.2 Design Criteria

Respective to the objective of the MVP tooling, the following design conditions are formulated:

- Equip the target group to develop their self-initiated ideas according to an experimentation-driven approach
- Be low in threshold, time, effort and fit within employees' existing work schedule and workflow
- Require minimal resources from both the organization and fit within the existing infrastructure
- Be generic and applicable to all OpCo's within the PEPP group
- Be desired by the target group and the organization
- Increase the success rate of self-initiated ideas
- Be implementable after this thesis (e.g. contain a feasible implementation plan)

Chapter 06 |

Final Design

In this chapter:

6.1

The Final Concept:

6.1.1 The Final Concept

The final concept is based on the chosen solution direction (1b) to higher the success rate of self-initiated ideas by designing an MVP tooling. This MVP tooling is considered the first step in a roadmap for realizing bottom-up innovation within the OpCo's of PEPP. The final concept is a proposition of a training program, the crash course "Verbeteren = Experimenteren". The crash course is a training program offered to employees from the organizational level that work on self-initiated ideas or have an idea in mind. For this crash course, (a) a standardized experimentation process, (b) a set of instruments, including a workbook and presentation, and (c) the organizational role of the "Innovation Facilitator/Coach" are developed.

6.1.1 The Final Concept

The final concept of the crash course is an iteration of 5 MVP tooling concepts. All 5 concepts have been designed, tested, and co-created with employees from the target group within the context of the OpCo PENL. The development of the MVP tooling into its final concept can be found in Figure 19.

↘ The development of the final concept is be elaborated upon in Appendix N, Appendix O and Appendix P.

6.1.3 Concept Innovation Process

In addition to the design of the final concept, the innovation process is initiated and co-created during this project with a team of 5 employees. The innovation process is considered essential for the success of the MVP tooling as it addresses aspects of time, budget, FTE, and management support, considered necessary contextual conditions by the target group (see paragraph 4.4. Contextual Conditions).

↘ The designed PENL innovation process is elaborated upon in Appendix X.

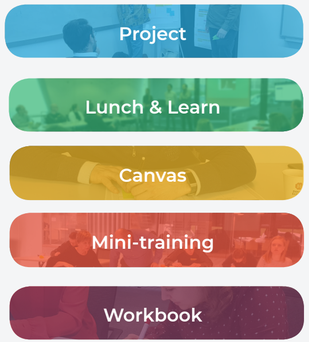

Figure 19. The MVP Tooling Concepts

6.2

The Crash Course:

6.2.1 The Objectives

The main objective of the crash course is to demonstrate minimum tooling that is ready for implementation to help the organization of PEPP facilitate bottom-up innovation. The purpose of the crash course itself is (i) to equip employees who work on self-initiated ideas with the necessary tooling and innovation expertise (ii) to higher their success rate and (iii) deliver fruitful results of bottom-up innovation.

The crash course aims to equip employees with the necessary tooling and innovation expertise in two ways. First of all, participants of the crash course will be offered a continuous, structured, and experimental process to guide a lean and effective development of ideas. Secondly, the crash course upskills participants by developing their personal factors and "Innovation Capabilities": (i) a creative mindset, (ii) know-how and practice and (iii) self-leadership skills.

It is presumed that by equipping employees with the necessary tooling and innovation expertise, the success rate of self-initiated ideas will increase in 3 ways. First of all, (i) participants making use of the offered process will work and spend their (personal) resources in a lean and effective way. Rather than best guessing and figuring out the process themselves, participants will be able to spend all their time on developing their ideas. Secondly, (ii) participants with developed innovation expertise will have a higher awareness of innovation pitfalls and spend sufficient time on determining the opportunity of their idea. Consequently, they will be able to avoid innovation pitfalls and determine in an early stage the impact and relevance of their idea. This latter can help them build a case to justify working on their idea or pull the plug not wasting unnecessary (personal) time. Lastly, (iii) participants will be more motivated and willing to spend time on self-initiated ideas. It is presumed that when the organization offers tooling and allows work time to be spent on the development of ideas, employees feel more supported and encouraged to work on their ideas and are less likely to give up or call it a day.

6.2.2 The Scope

The crash course focuses on the first phase of the standardized experimentation process, namely opportunity. The standardized experimentation processes and the phase opportunity are elaborated upon in section 6.3.1. It is explicitly decided to focus on this phase since the (risk of) failing of most self-initiated ideas can be traced back to this phase.

The empirical research found that employees with ideas immediately start building a solution or writing a business plan. Hereby, they risk spending (personal) resources on building a solution that might be not desirable, viable, or feasible or they quit due to the lack of skills and/or innovation necessary to write a business plan. Additionally, they continuously struggle to justify working on their self-initiated idea and provide a solid argumentation to coworkers, supervisors, and/or responsible persons.

6.2.3 The Design

The crash course consists of a series of three 1-hour mini-trainings organized in a period of three weeks. Each training consists of (i) a preparation assignment, (ii) a presentation with an introduction, theory, and Q&A (20 min), (iii) a work session with a number of assignments (30 min), and (iv) (homework if not finished) and a preparation assignment for the next mini-training. The training is organized and facilitated by the "Innovation Coach". The crash course can be offered both physically and digitally. Figure 20 illustrates an example of a mini-training. The entire crash course is presented in an accompanying file with this thesis.

The crash course is designed to evolve over time. Whereas most employees are currently unfamiliar with innovation and have no skills nor experience, the aim of the crash course is to train employees with the necessary skills and know-how. When participants have the necessary skills and know-how, and are able to apply it, the crash course is designed to shift its purpose from training to work session and adapt its structure by eliminating the theory part and continue to offer the mini-trainings as a work session. The benefit of this design is that employees become accustomed to the structure allowing it to become part of their routines, while simultaneously the organization requires little resources to adapt its structure.

Figure 20. An illustration of the mini-training part of the Final Design

6.2

Crash Course Elements:

6.3.1 Standardized experimentation process

The standardized experimentation process is a tailor-made framework for the context of OpCo's within PEPP. The process consists of the necessary steps employees can undertake to develop their ideas according to an experimentation-driven approach. The standardized experimentation process can be found in Figure 21. The process entails three phases along self-initiated ideas can be effectively developed, these phases are (i) opportunity, (ii) solution, and (iii) implementation. In (i) the pportunity phase, the relevance and impact of a self-initiated idea are assessed. In (ii) the solution phase,

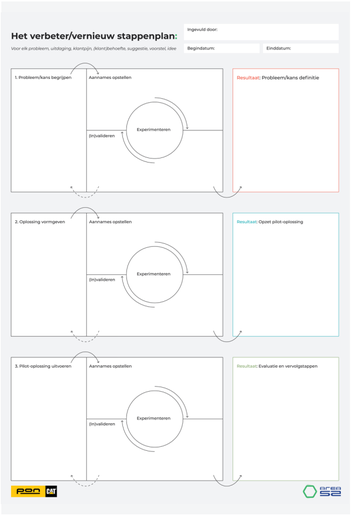

Figure 21. The Standardized Experimentation Process

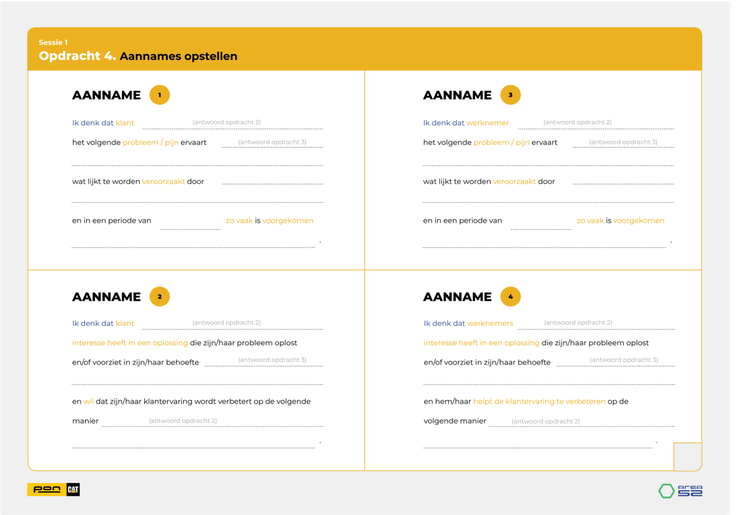

Figure 22. One of the canvases of the workbook "Kickstart je Idee" part of the crash course

ideas are generated and a concept for a Minimum Viable Product (MVP) is designed. In (iii) the implementation phase, the MVP is built, tested and evaluated.

6.3.2 The Instruments

During the crash course, participants are offered multiple instruments, including a presentation (as reference work), a workbook with the assignments, and a standardized experimentation process as a framework. The presentation entails theory on innovation and experimentation, tips and tricks, and instructions for the workbook.

In addition, a physical and digital workbook named “Kickstart je idee” is created with a set of canvases. Each canvas is presumed to be filled within 15 minutes. Additionally, the software Mural is used to offer the canvases online, allowing participants to work on them collaboratively, digitally, and remotely. Each mini-training focuses on a subset of the assignments that are to be filled in by participants before, during, and after the mini-training. Figure 22 shows one of the canvases of the workbook.

Both the theory, assignments, and instructions are written using “Jip en Janneke” or “Jan Boeren Klompen” language rather than design jargon. The content of the instruments focuses on addressing the main identified innovation pitfalls and helping participants gain a customer-perspective.

↘ The presentation and workbook can be found in Appendix Q and Appendix R.

6.3.3 “Innovation Coach”

The last element of the crash course is the design of the organizational role of “Innovation Coach”. The Innovation Coach is the responsible person for the organization and facilitation of the crash course and its tooling. This role is explicitly designed since few OpCo’s currently have an employee dedicated and/or skilled in innovation.

Similarly to the evolving design of the crash course, is the organizational role of “Innovation Coach” also designed to evolve over time. As mentioned above, OpCo’s currently do not have employees who fill in this role of “Innovation Coach”. Hence, the role is first designed to add to the responsibilities of current innovation experts, such as an Area 52 member or a Digital Innovation Lab member. When a small group of employees within OpCo’s have gained the necessary innovation expertise and have skills/ambition in facilitating the crash course, these employees can be trained to become an “Innovation Coach” inside their own OpCo.

↘ The preferred skills and responsibilities of the “Innovation Coach” are elaborated upon in Appendix S.

6.4

Implementation Requirements:

6.3.1 Standardized experimentation process

Lastly, the implementation of the crash course will be designed. The implementation will require 3 key resources, which are (i) work time from employees, (ii) a responsible person for the organizational role of “innovation coach” and (iii) a training platform. The implementation aims to make use of the resources available in the existing organization infrastructure to higher its adoption and implementation. Regarding (i) work time, the crash course requires a 6-hour time investment per participant. Regarding (ii) the role of innovation coach, 3 parties have the skills and knowledge to facilitate the crash course, which are the Digital Innovation Lab (DIL) [15], Area 52 (member or Horizon 2 coordinator), design consultancy New Craft, and collaboration between Area 52 and DIL. Regarding (iii) a training platform the options are DIL’s training portfolio, Area 52’s training portfolio, and the Learning & Development platform of PEPP. The Winter & Summer Labs and Area 52 website are excluded since they do not fit the format of the crash course. The role of “Innovation Coach” also determines the training platform and will be focused upon during the validation phase.

Chapter 07 |

Validation

In this chapter:

7.1

The Objective:

The success of the crash is measured in its ability to achieve its main objectives to be minimum tooling that increases the success rate of self-initiated ideas and is ready for implementation.

The crash course will be evaluated and validated by conducting a pilot and multiple reviews of the final design with different parties within the organization, including members of Area 52, members of the Digital Innovation, and members of the executive board of PEPP.

During the pilot and reviews, the crash course is assessed on the aspects of desirability, viability, and feasibility in terms of:

- Desirability: The crash course is desired by the employees and organization
- Viability: The crash course adds business value
- Feasibility: The crash course can be implemented

7.2

The Pilot:

To validate the crash course a pilot is run within the OpCo PENL. For the pilot, employees have been invited via email, posters, and an intranet post. In total, 12 participants took part in the crash course and 18 more employees have shown their interest. All 12 participants successfully partook in mini-training 1, and 6 participants finished mini-training 2. Unfortunately, the pilot was affected by the Corona Crisis. As a consequence, the third session is rescheduled to after the hand-in of this report, employees have declined due to more urgent matters, and sessions have been held via Hangout and Mural. Figure 23 captures the crash course sessions. To validate the crash course, employees have been asked to evaluate the sessions and their behaviors were observed.

Figure 23. One of the tested mini-training session as part of the pilot

7.3

Overall Opinion:

The overall opinion and points for improvement from the pilot and reviews are elaborated upon.

↘ The extensive findings from the validation are elaborated upon in Appendix T.

7.3.1 Validation Pilot

Regarding the desirability of the crash course, the format of a crash course with 1-hour training sessions was perceived positively by both employees and participants. The format was found effective, fun, different from routine tasks, and not disturbing their daily workflow. Participants believed the crash course added value to them by (i) developing their skill set, (ii) providing guidance, support and encouragement, (iii) allowing work-time to be spent on the development of ideas, and (iv) facilitating cross-departmental collaboration and knowledge-sharing. Participants were found to gain (i) awareness of the innovation pitfalls, (ii) ability to apply the experimentation process, (ii) a customer-centric perspective. A key point for improvement is the advice given to focus the crash course on learning by using an example rather than using self-initiated ideas.

> "Vond de training nuttig, heb iets "nieuws" geleerd, dit geeft echt wel praktische handvatten voor in de praktijk."

Regarding the viability of the crash course, the crash course was found to higher participants success rate since participants were able to (i) spend their time more effectively, (ii) prioritize working on their idea over other tasks, (iii) avoided well-known innovation pitfalls, getting stuck or quit, (iv) feel more comfortable failure and continue when it happens, (v) conduct an experiment to determine in an early stage the risks and value of their idea, (vi) work on the development of ideas with limited resources, no approval, or need to write a business plan.

> "Ik had geen idee hoe ik een klantinterview moest doen en weet nu door de tips hoe ik een werknemer kan interviewen om mijn idee te testen."

Regarding the feasibility of the crash course, participants accepted a time-investment of 6-hours. Unfortunately, participants struggled to find time for the preparation and homework assignment. A key point for improvement is the advice given to better communicate

> "Om echt structureel te gaan innoveren en niet te meer te gaan hobbyen, hebben we een externe partij nodig die dit faciliteert. Enerzijds omdat we de kennis niet hebben, maar ook de mankracht niet hebben om dit te kunnen faciliteren. Iedereen heeft al een baan, waardoor het onmogelijk wordt om innoveren naar een structureel niveau te brengen met de huidige resources."

and organise the expected time investment by scheduling time slots. Additionally, participants believed a facilitator is essential and named it one of the conditions. The crash course was found to be applicable to most ideas, yet a facilitator was needed to help employees see the customer value in their ideas.

7.3.2 Validation Reviews

Regarding desirability of the crash course, value is added to Area 52 by gaining insight in the OpCo's, to Digital Innovation Lab by complementing their existing products, and for the Executive Board of PEPP by complementing current limited tooling to facilitate employees. Within PEPP or Pon Holding, none of the existing tooling is applicable to ideas of employees, focuses on experimentation, and is low in required resources.

> "Daarnaast geeft het mij inhoudelijk ook veel inzichten over de initiatieven van de OpCo's."
>
> "Like the innovation process, DIP (in a day), the crash course can help us facilitate innovation."

Regarding the viability of the crash course, value can be gained by all parties. For Area 52 it can be a low-investment to facilitate Horizon 1 and Horizon 2. For DIL, it can strengthen their training portfolio and facilitate an experimentation-driven approach. For the Executive Board of PEPP is can resolve the current

unfruitful bottom-up practises, since the tooling can (i) help OpCo's innovate on Horizon 1, (ii) make effective use of scarce resources, (iii) build internal innovation capabilities, (iv) lower the threshold for employees to partake in bottom-up innovation, and (v) is a minimum investment with a high return on investment.

Regarding the feasibility of the crash course, the different parties have different ideas and concerns about the required resources of work time and a facilitator role. First of all, it was discussed to further specify which employees should be able to join the crash course and allocate time to. Despite this, it was found positive that the crash course is scalable to other OpCo's outside PENL and even applicable to other business groups.

> "Als positief vind ik dat het een haalbaar plan is, het al PENL-proof is, en het een schaalbaar concept van een gedachtegang is. Wel gaat het tijd kosten om dit op te zetten en uit te voeren. We moeten zorgen dat uiteindelijk voor de training Area 52 niet meer nodig is en los van mij kan draaien."

Despite the pilot being successful and considered PENL-proof, its success for adoption depended upon finding a fitting party for the role of "innovation coach". It was found that currently Area 52 is interested in filling this role, and the Digital Impact Program is interested to be involved as well.

A last concern was the lack of next steps after the crash course. It was shared that most ideas within the OpCo's fiddle around without any resources, time, or budget and get sooner or later shelved. To ensure ideas from the crash course have potential to be realized, more thought should be given on the decision-moment and the follow-up steps for ideas that receive a "Go" to continue to the next phase of building a prototype and testing their idea.

> "We starten veel kleine ideeën die uiteindelijk geen budget of tijd krijgen waardoor ze doodbloeden. We moeten voorkomen dat we nog meer ideeën en projecten gaan opzetten zonder dat hier tijd en budget voor wordt vrijgemaakt."

7.4

Conclusion:

The overall conclusion of the pilot and reviews is that the crash course is desirable, viable and feasible by participants, employees, Area 52, the Digital Innovation Lab, and the executives board of the PEPP group.

The crash course is found as an effective tooling the organization can offer to facilitate employees working on self-initiated ideas to higher their success rate, build internal innovation capabilities, and invite more employees to work on self-initiated ideas.

For the implementation of the crash course, classified employee is interested to adopt the crash course and fill in the organization role of "Innovation Coach" under specified conditions. These conditions are (i) the required time investment, (ii) the transfer of responsibility and (ii) commitment from top management within an OpCo. Regarding the transfer of responsibility, this means that the role of "Innovation Coach" will not be permanent and is preferably transferred to an employee within the OpCo. Also, Digital Innovation Lab is interested in supporting the crash course and helping it scale to other business groups. Furthermore, the managing director of a classified OpCo and executive of the PEPP board is interested to see how the crash course can complement its existing innovation process.

The new insights gained during the pilot and reviews to improve the final design and create an implementation plan for Area 52 are elaborated upon in the next chapter.

Chapter 08 |

Recommendations

In this chapter:

8.1

The Crash Course:

By conducting the pilot and multiple reviews new insights are gained to improve the final design. Additionally, the next steps and the train-the-trainer program will be recommended, since they have not been included in the final design of the crash course.

8.1.1 Design Iterations

The pilot and multiple reviews provided a list of new insights to improve it's desirability, viability, and feasibility.

↘ The entire list of recommended design iterations is elaborated upon in Appendix U.

For Area 52, it is recommended to give attention to 3 insights before implementing the crash course. These 3 insights are (i) structure and rhythm, (iii) decision-moment, and (iii) case examples.

Regarding (i) the structure and rhythm, the crash course is recommended to include organized time slots, a time span, and a required time investment from participants. A final rhythm is created together with Horizon 2 coordinator Kristel Breukers. This rhythm is shown in Figure 24. Whether the rhythm is accepted by participants and aligns with the time management of the crash course should be both validated.

Furthermore, due to the infancy of the OpCo's, the decision-moment and the next steps of the crash course is advised to be further designed and facilitated by Area 52. Self-initiated ideas that are considered a "Go" during the decision-moment are advised to have the necessary resources to design, build and test the idea allocated. This means that the sponsors and decision-makers within the organization are preferred to be involved in the design-making and allocation of resources. Potential concepts such as Area 52's pitch stop, a dragon's den, or organized speed date with idea owners and sponsors/ decision-makers can be explored.

Lastly, the crash course requires a case study. Hence, it would be proposed to Area 52 to build a showcase of case examples conducted during the crash course. With no prior examples, finished projects such as Thunderbolt, Remote Assistance, and Verachtert can be used as examples first.

The Designed Rhythm and schedule for the Crash Course

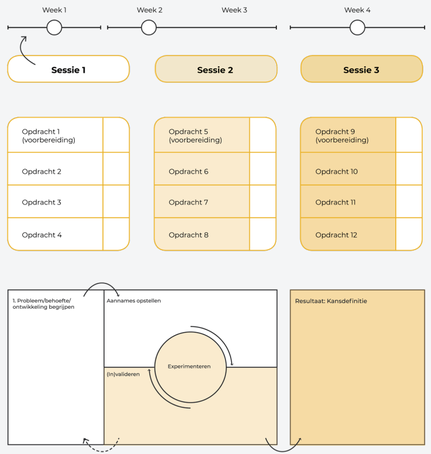

Figure 23. Recommended and Designed Rhythm and Schedule Crash Course

8.1.2 The Next Steps

This thesis has focussed primarily on designing the crash course for the opportunity phase. Before implementing the crash course, the next steps are advised to be further elaborated upon. A brief direction is proposed for follow-up activities, and respective canvases are designed. Hereby, a similar structure of the crash course for the solution phase is advised. To create a crash course for the "Solution" phase, it is recommended to utilize the expertise within Area 52 from the entrepreneurs and Area 52 members to design a set of similar steps supported by theory and canvases. For example, one mini-training might focus on how to build a prototype to test an idea. Within Area 52, a classified employee has the expertise to build prototypes and if (Area 52 pursues the crash course) he/she is interested to explore the details of such training.

8.1.3 A Train-the-trainer Program

Unfortunately, this thesis did not have the time to further explore the train-the-trainer program in-depth due to the prioritisation of other steps. If the crash course is successful, it is advised to contact Allianz and Innovation Booster to learn from them on the challenges and design of a train-the-trainer program. Allianz has applied this model successfully and Innovation Booster has designed similar programs for numerous companies.

8.1.4 Contextual Conditions

The conducted pilot and reviews (see Chapter 7) revealed 4 conditions need to be in place for the crash course to be successful, which are (i) required organization and facilitation, (ii) structural work time spend on innovation, (iii) support and recognition, (iv) a future vision, and (v) an innovative-supportive climate. First of all, (i) the crash course requires organization and facilitation. Kristel Breukers has confirmed to take over this responsibility and fill in the role of "Innovation Coach" under specified conditions. Secondly, participants require allocated work time in their schedules to participate in the crash course and finish the preparation (and homework) assignments. After the crash course is finished, this allocation of work time should be embedded in their work schedule to guarantee participants continue to exhibit innovative behavior. Thirdly, (iii) participating in the crash course should include benefits for the participants in terms of recognition and support (e.g. allocating resources) from top management. Also, it is recommended to make participating in the crash course something employees can be positively assessed during their personal evaluation. Fourth, (iv) the goals to which the ideas developed in the crash course should align with should be formulated. This way ideas will have a higher chance of further development and buy-in from top management. Fifth, (v) an innovative-supportive climate should be initiated by top management believing innovation is part of (employee's) work, embracing and celebrating failure, and being an ambassador. It is advised to focus on the contextual condition of work time allocation (ii) since it is most vital to the crash course's success.

8.2

Implementation Guidelines:

The implementation guidelines are written to support the facilitating party, Horizon 2 coordinator Kristel Breukers, to implement the crash course. The guidelines consist of an (i) proposed implementation team, (ii) a proposed pilot phase, and (iii) a designed and proposed integration with an innovation process. Each guideline has been discussed and/or developed in collaboration with Kristel Breukers.

8.2.1 The Implementation Team

To implement the crash course it is advised to a classified employee to involve other parties. For example, a classified employee from Digital Innovation Lab has offered his/her support. Additionally, a classified employee has shown interest in discussing the crash course with his/herinnovation team. Also, another classified employee has shared its challenge to find sustainable ways to support employees who have self-initiated ideas and might be interested in helping.

8.2.2 The Pilot Phase

To implement the crash course it is advised to start with a pilot phase of 1 year. The purpose of the pilot is to reduce the required resources and see in what form Area 52 can offer the crash course. During this pilot, a classified emplotee will fill in the role of Innovation Coach to organize and facilitate the crash course. Tasks such as preparation, organization, and proportion can be located to other parties and other Area 52 members. Before conducting the pilot, it is recommended to first address the recommendations on the design of the crash course (see paragraph 8.1).
The pilot is advised to be conducted with OpCo's that (i) have an innovation process or have a way to collect and commit to self-initiated ideas, (ii) have buy-in from top management, and (iii) have committed to take over ideas after the decision-moment. Hence, PENO, Bolier, and PENL are preferred OpCo's to start with. During this first year, the crash can be offered within each OpCo to employees. It is recommended to limit the participation group to a maximum of 12 participants that work in groups to keep the resources low. During the pilot, Area 52 can gain insights into the (i) gaps in innovation expertise within the OpCo's, and (ii) the conditions, resources, and next steps for the crash course that are needed to lead to results.

↘ After the pilot is considered successful, potential directions to scale up are elaborated upon in Appendix V.

8.2.3 Integration Innovation Process

In addition to offering the crash course as separate tooling, it is recommended for Area 52 to explore how the crash course can become integrated in existing and future innovation processes. This is believe to align with Area 52's objective to facilitate the design of the innovation funnel and process within every OpCo.

Regarding implementing the crash course in both existing and future processes, two integration options are proposed. First of all, the crash course can be used as an instrument to collect ideas, as the first phase of the innovation funnel. This way the crash course (i) becomes a mechanism to assess whether ideas should be further developed or be dismissed, and (ii) offers a way to monitor and gain overview of all self-initiated ideas. Secondly, the"execution" phase of the innovation process can make use of elements from the crash course. Potential elements of work sessions, group work, and the standardized experimentation process can be integrated into the execution of ideas. As a result, the execution phase can be reformatted to work sessions on all three stages of Opportunity, Solution, and Implementation.

8.3

Bottom-up Innovation:

The bottom-up innovation recommendations are written to support Area 52 and the Executive Board of PEPP in realizing bottom-up innovation within the OpCo's of the business group PEPP. The recommendations entail (i) a bottom-up innovation team, (ii) a bottom-up roadmap, and (iii) the first step of the bottom-up innovation roadmap, (iv) the role of Area 52, (v) responsibilities of the Executive Board of PEPP, and (vi) responsibilities of the Management Teams of OpCo's.

8.3.1 The Bottom-up Innovation Team

To facilitate bottom-up innovation every party, Area 52, the Executive Board of PEPP, and Management Teams of OpCo's, holds responsibilities. To ensure that bottom-up innovation doesn't become a side issue, it is recommended to form a dedicated team that works on the project "bottom-up innovation", like similar projects such as NAXT. This dedicated team works project-based, meets on a regular basis, has tasks and responsibilities, and has allocated work-time to spend on this. It is proposed that a group of classified employees are at least part of the team, and experts, such as Change Managers and Management Directors, are closely involved.

8.3.2 A Bottom-up Innovation Roadmap

It is agreed upon by the Executives Board of PEPP and Area 52 to create a roadmap for bottom-up innovation. To help the team decide how to approach this, three recommendations regarding the design of this roadmap are proposed.

First of all, for the design and execution of the roadmap, it is advised to look at the roadmap for "Safety". Within the organization, multiple employees have addressed that innovation should become like 'Safety'. A classified employee has shared that this process took over 4 years, and had dedicated resources as well as responsible persons within the Executive Board of PEPP, the Management Teams of OpCo's, and employees within functions of "Safety". It is recommended to use "Safety" as a framework to build the roadmap of innovation.

where multple classified employees would be interested in helping the team on this.

Secondly, a roadmap to prioritize the different aspects necessary to facilitate bottom-up innovation is elaborated upon. The execution of this roadmap is advised to be part of the pilot phase (see Paragraph 8.2.1). In this case, it can be experimentally explored on a small scale and with a small pilot group, how each step can be designed. A proposal for the roadmap to facilitate during the pilot phase is shown in Figure 24. Regarding the bottom-up innovation roadmap, the first step focuses on increasing the success rate of self-initiated ideas through tooling. This thesis is a demonstration of such tooling in the form of a crash course. It is advised that in parallel to the design of tooling, the second step of allocating resources is designed. The most essential resource is the official allocation of work-time employees can spend on utilizing the provided tooling. Depending upon the number of employees aimed to facilitate, the required work-time will differ. For the crash course, the allocation of 6 hours in 3 weeks is required per participant. Additionally, a budget should be made available to further develop self-initiated ideas. Once step 1 (tooling) and step 2 (allocation of resources) are completed, the third step can be executed. In step 3 types of rewarding and recognition are designed to increase employees' motivation when developing self-initiated ideas. When step 3 is filled in successfully, step 4 can be executed. In step 4 incentives will be designed to attract a larger number of employees to develop self-initiated ideas and therefore step 1,2, and 3 need to be redesigned in order to fit a larger group of employees.

A Proposal for a Bottom-up Innovation Roadmap during the Pilot Phase of the Crash Course

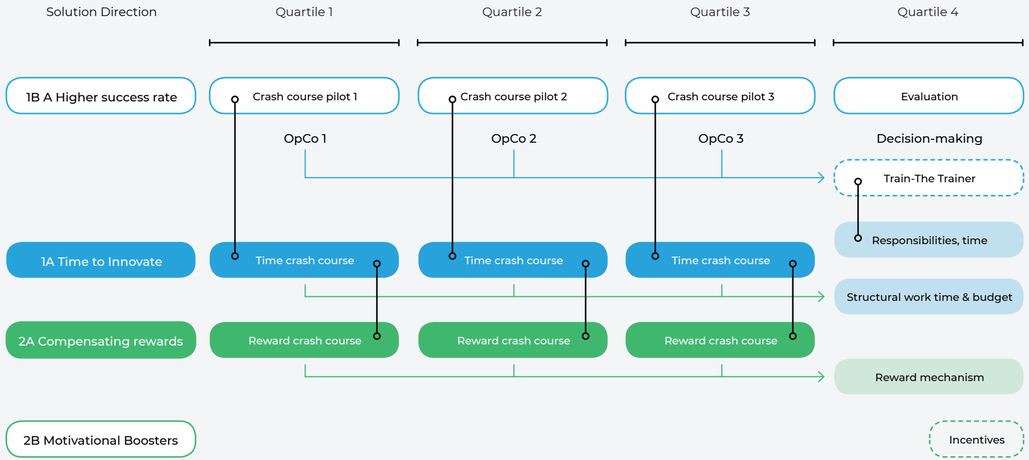

Figure 24. A proposal for the roadmap to facilitate bottom-up innovation during the pilot phase

The last recommendation is the starting point of the roadmap, which is proposed to be a discussion between the Executive Board of PEPP, Area 52, and the Managing Directors of OpCo's. During this thesis it is found that every party holds different expectations, yet these differences are never discussed. The objective of the discussion is to determine how all parties are going to facilitate bottom-up innovation collaboratively. Issues found during this thesis that are advised to be addressed during the discussion entail (i) the missing of long-term goals and focus, (ii) the meaning of "innovation", (iii) the ROI on innovation, and (iv) roles and responsibilities.

↘ Recommended discussion points, roles and responsibilities are elaborated upon in Appendix W.

8.4

Other Recommendations:

The following set of recommendations entail activities that are considered interesting for Area 52:

Participate in Industrial Design Courses

- Take part in the IDE courses and activities with the Horizon 2 and Horizon 3 projects. Creative Facilitation is a great course to start with, where NS has a fixed spot already. One contact the coordinator of the course for this.
- Additionally, it is recommended to discuss with the professors from the IDE masters for opportunities within the courses Design Strategy Project and Design Roadmapping.

Knowlegde-sharing sessions

- Facilitate more sharing sessions with concepts such as Lunch & Learn and Pizza sessions.
- At Allianz, these sessions have been hosted every quarter and are popular by employees.
- Additionally, this way a certain rhythm is created.

Experimentation in the daily operation

From the evaluation of the movement activity "Experimenteren kun je leren" ideas with a classified employees are shared to further facilitate employees to conduct experiments by (i) making a framework for employees to determine when an experiment is preferred to be conducted, (ii) making a set-up or mini-training on how participants and Movement members can teach co-workers and supervisors on what experimentation is and show their example to higher their awareness and buy-in, and (iii) start a challenge on how employees can use experimentation to say "no" to things and redefine their priorities. According to a classified employee, it can be considered a "piepjes" test. The latter will help employees, supervisors and top management to find out what can be considered priorities, sub consequently discarding current tasks that are unnecessary or even irrelevant.

Chapter 09 |

Conclusion

In this chapter:

9.1

Conclusion:

This thesis has contributed to the business group PEPP's, and in specific Area 52's, quest on how to realize bottom-up innovation within the OpCo's. Until recently, bottom-up innovation has been rather unfruitful within the OpCo's of the business group PEPP. While most employees have not engaged in innovation at all, a small handful of employees work on ideas in their personal time. Due to the high risks involved, the low chance of success, and the lack of compensating rewards, most of these self-initiated ideas either fail or are discontinued. This doom to failure is caused by employees' limited time, unawareness and inexpertise in innovation, and the lack of support provided by the organization.

Increasing employees' chances of success when they work on self-initiated ideas is considered vital to keep this handful of employees encouraged and continuing to exhibit innovative behavior. Additionally, increasing employees' chances of successfully realizing their ideas are also considered effective, since (i) most failures can be prevented with minimum resources and innovation and expertise, (ii) a higher success rate leads to fruitful results, and (iii) potential fruitful results might stimulate buy-in from top management and invites more employees to develop ideas and engage in bottom-up innovation.

The crash course "Verbeteren = Experimenteren" is a designed, tested and validated minimum tooling that demonstrates how organizations can facilitate bottom-up innovation. In total, 12 employees from the OpCo PENL participated in a pilot of the crash course and were offered (i) tooling to build necessary innovation expertise, (ii) a structured, lean, experimentation-driven process that guides the development of self-initiated ideas, and (iii) an organized and facilitated activity that spends work time on the development of self-initiated ideas. Participants were found to have developed necessary innovation capabilities that allowed them to (i) prevent and overcome failure and (ii) work in a more lean and effective way of innovation. Also, for the first time, (iii) employees were able to officially spend work time on the development of their self-initiated ideas. In the end, the crash course is found to higher the success rate of self-initiated ideas. Additionally, the crash course has contributed to building the organization's internal innovation capabilities, while simultaneously initiating the allocation of work time spent on innovation and design of supporting structures that contribute to the innovative-supportive climate within PEPP. Conclusively, the crash course demonstrates to Area 52 and the executive board of PEPP how minimum resources of tooling, a process, and work time can provide the necessary facilitation to higher the success rate of self-initiated ideas and make bottom-up innovation fruitful.

Regarding its implementation, Area 52 is interested to add the course to its portfolio and take over the necessary role of innovation coach under specified conditions. Unfortunately, realizing the crash course does not only depend upon Area 52 and requires support from both management teams from the PEPP board and OpCo's. For the crash course and any form of bottom-up innovation, both management teams need to show commitment to facilitating bottom-up innovation. As a matter of fact, the success of the crash course and bottom-up innovation relies upon whether both management teams take the responsibility to make bottom-up innovation a necessity and show their commitment by prioritizing it. This condition requires both parties to genuinely believe in and see the value of bottom-up innovation.

In fact, realizing bottom-up innovation demands a paradigm shift for top management within PEPP and OPCo's to (i) believe that bottom-up innovation is work (and not a hobby or personal investment), (ii) prioritize and find it important despite the lack of acuteness, (iii) dedicate official and accessible resources to it despite their scarcity, (iv) make room in employees' daily work schedules and responsibilities to spend time on developing ideas or thinking about them, (v) recognize, value, appraise, and reward its outcomes and its employees that exhibit innovative behavior accordingly, (vi) be able to formulate and communicate a long-term (innovation) vision and goal that steers and inspires innovative behavior among employees, and lastly to (vi) provide the necessary incentives to encourage more employees to work on their self-initiated ideas.

In the end, the key condition is that top management of both PEPP and OpCo's can make bottom-up innovation a necessity and prioritize it will determine the fruitfulness of bottom-up innovation and tools such as the crash course. As participants from the crash course have learned: "an idea or solution is a Jenga-tower of assumptions (see mini-training session 1). Out of all these assumptions one is considered the Most Riskiest Assumption that is able to let the entire tower collapse that needs to be validated by conducting an experiment."

Based on this philosophy, this thesis concludes with a final experiment that tests this thesis' Most Riskiest Assumption: "Do management of PEPP and OpCo's make bottom-up innovation a necessity and show their commitment by prioritizing it?". This experiment is conducted under the Corona-crisis that has led the organization to sharpen its priorities and make its necessities crystal clear. Continuing the crash course has led to the conclusion that bottom-up innovation is not one of these priorities and the assumption is invalidated.

Figure 25 shows that for both top management and employees bottom-up innovation is currently a choice that can be swept away any time other priorities and more urgent and acute matters come up. Hence, it will require top management from both PEPP and OpCo's to make the organization understand that just like safety, innovation is not a choice but a necessity.

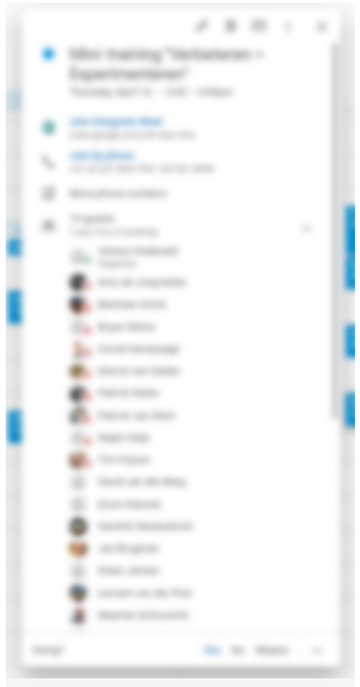

Figure 25. Accepted Invites Crash Course

9.2

Practical Implications:

The practical implications of this thesis entail the impact and contributions to the business group PEPP, it's OpCo's, and in specific Area 52, in their quest for realizing bottom-up innovation.

The first contribution of this thesis is the gained in-depth knowledge of what inhibits bottom-up innovation within the context of OpCo's. This thesis has created an overview of 15 factors that, within the context of PEPP, are found to influence an employee's decision to exhibit innovative behavior and their success rate when doing so. Additionally, it has provided Area 52 with insights on the main hurdle, a lack of time, preventing a large part of the organization to innovate. Although this problem was observed already by Area 52, this thesis gave evidence that this main huddle is experienced by employees despite their OpCo, function, or layer in the organization.

Secondly, this thesis sheds new light on the current - yet unfruitful - bottom-up approach that takes place within OpCo's of PEPP. The findings display that every OpCo holds a handful of employees that work on self-initiated ideas in their own personal time. Unfortunately, most of the employees' attempts have been found doomed to fail or get dismissed, due to (i) the missing of resources in time, innovation capabilities, and available organizational support and (ii) dealing with high risks involved that are not being compensated for. These findings have provided the organization, and in specific Area 52, to guide its efforts and focus upon the found key hurdles, its consequence, and its respective 2 pain points.

Furthermore, the thesis aims to show evidence to the organization that self-initiated ideas remain to fail if they are not being facilitated and that facilitation can significantly higher the success rate. It elaborates on the necessity for the organization to facilitate bottom-up innovation in order to prevent the current handful of employees from stopping to exhibit innovative behaviors, subsequently discouraging more employees to start engaging in bottom-up innovation. Additionally, it offers practical guidelines on and demonstrates how the organization can facilitate bottom-up innovation, in the form of tooling, and a bottom-up innovation roadmap. Regarding tooling, this thesis offers tooling in the form of the crash course that is validated to be effective, minimum in resources, and ready for implementation. By running a pilot, the evidence is collected that equipping 12 participants with the tooling and innovation expertise leads to (i) an increase in the success rate of ideas, (ii) the development of internal innovation capabilities, and (iii) an experimentation-driven approach. On top of this, additional evidence is collected that the crash course contributes to creating an innovative-supportive climate and building supporting structures & practices, by (i) allocating work time and organizing project-based working, (ii) offering a structured and standardized process for the development of ideas, and (iii) enable knowledge sharing and cross-departmental collaboration.

In the bigger picture, this thesis contributed to the ongoing debate between executives of the PEPP board, Management Directors of OpCo's, and Area 52 about who is responsible for the facilitation of bottom-up innovation. The findings reveal that bottom-up innovation requires more than facilitation from Area 52 and that also the PEPP Board and Managing Directors have to take a stake. The evidence helped Area 52 build a case that can be discussed with the executives of PEPP to explain why bottom-up innovation is not working by elaborating on the evidence found regarding the main hurdle, its consequences, and its respective pain points. Also, it supported Area 52 to focus the debate on why and how the PEPP Board and Managing Directors need to take an active role and contribute to facilitating bottom-up innovation rather than considering it a sole responsibility from Area 52.

The last contribution of this thesis is the evidence found on the necessity of a top-down approach to realize bottom-up innovation. Due to the hierarchical nature of the organization, a formulated and communicated future vision by top management is considered essential for all employees in regard to stimulating and steering their innovative behaviors. Based on this evidence, Area 52 is currently paying more attention to the lack of a future-vision and demanding the formulation of future-visions by top management of both the PEPP Board and OpCO's. Furthermore, this thesis demonstrates how Area 52 can broaden its scope by facilitating Horizon 1. Hereby, it tried to contribute to bridging the existing gap between the ambitions of Area 52 to facilitate on Horizon 3 solely and its infancy OpCo's currently in. The crash course is used as a demonstrator, providing both practical handles and a direction to further delve into. Additional concepts of a Lunch & Learn, Pizza sessions, and train-the-trainer program have inspired Area 52 to make use of new approaches to facilitate bottom-up innovation.

9.3

Theoretical Implications:

The theoretical implications of this thesis entail the answer to the research question and new perspectives and practical insights provided on the 3 identified literature gaps.

9.3.1 Answer to the Research Question

The research question of this thesis entails "How can the organization support employees to improve and innovate in a structured, consistent, and experimental manner during their daily work activities?". By answering the above-mentioned research question, this thesis contributes to the literature by consolidating the existing theory into a graspable and practical manner. In addition, it offers scholars and organizations a case study of how an organization has facilitated bottom-up innovation and built its internal innovation capabilities by offering minimum tooling.

The final design of the crash course is posited to offer organizations practical guidelines on how they can (i) develop personal factors of creative confidence, know-how and practice, creative mindset, and self-leadership and (ii) shape contextual factors of supporting structures and practices (e.g. a tooling, process), mechanisms for resource allocation (e.g. allocating resources such as time and budget to the crash course), and innovative-supportive climate (e.g. showing the commitment that innovation is facilitated, enable knowledge-sharing, and multidisciplinary teamwork). As a matter of fact, the crash course is presumed to offer organizations generic tooling that is ready to adopt for other organizations as well. Additionally, the designed bottom-up innovation roadmap is posited to offer organizational practical guidelines on the necessary 4 components of (i) tooling, (ii) time, (iii) rewards and recognition, and (iv) incentives organizations can focus their efforts on when pursuing to facilitate bottom-up innovation.

9.3.2 Contributions First Literature Gap

Until recently, little research has focused on the factors that influence innovative behavior on an individual level. This thesis has contributed to shedding light on the missing employees' perspective and elaborates on how employees believe innovative behavior can be fostered, encouraged and promoted. Hence, this thesis has offered new insights into the literature gap of our limited understanding of innovative behavior on an individual level. This thesis has enriched today's insights into (i) the multi-stage process of innovative behavior, (ii) the personal and contextual factors that affect innovative behavior, and (iii) the decision-making process of exhibiting innovative behavior.

First of all, the built conceptual model of Employee Innovation Behavior enriches our current understanding of the multi-stage process of innovation behavior. The model proposes 3 stages employees undertake to exhibit innovative behavior, namely innovation ambition, innovation capabilities, and innovation behavior. It hereby suggests that employees require an innovation ambition before developing innovation capabilities and display innovative behavior.

Secondly, the built conceptual model of Employee Innovation Behavior enriches our understanding of the personal factors that influence both employees' decision-making and success rate of innovation behavior. This thesis contributes to today's literature by putting personal factors in order and giving the highest priority to attitude, creative confidence, and intrinsic motivation. Additionally, it describes an employees' perspective on how contextual factors affect their

personal skills or their decision-making to exhibit innovative behavior. For example, the lack of shared vision is found to impact employees in understanding the innovation ambitions of their organization, explaining why innovation is relevant, and self-assess if their ideas align within the shared vision. Furthermore, the findings found that contextual factors influence more personal factors, counterargument today's conventional wisdom that contextual factors only affect innovative behavior via the personal factor intrinsic motivation. For example, the mechanisms on rewards and incentives are witnessed to influence employees' attitudes on whether innovation is appreciated or not. In addition, the design of jobs is witnessed to influence employees' know-how and practice in innovation.

Thirdly, from an individual level, a two-level decision-making process is found. Employees are considered to make a decision both on the personal factors they own as well as the contextual conditions they believe are necessary for them to choose to exhibit innovative behavior. Regarding these personal factors, the extent to which they have to present (if at all) differs per employee. Nevertheless, this thesis suggests that the presence of all 6 personal factors leads to higher chances of successful bottom-up innovation. Conclusively, the conceptual model aims to help further researchers, practitioners, and managers, to redirect focus onto the personal factors that are vital for employees' to exhibit innovative behavior. The model aims to provide the guidelines on what personal factors to look into and steer their efforts on specific stages. Additionally, the evidence that intrapreneurs require minimum personal and contextual factors, proposes scholars and organizations to focus their efforts and studies on this group of employees.

9.3.3 Contributions Second Literature Gap

Today's literature posits that intrapreneurship relies on a top-down approach where top management ultimately designs the necessary factors to foster and encourage innovative behavior. As a consequence, little is known about how a bottom-up approach takes place within an organization and whether the existing theory on factors, conditions, and recommendations can be generalized to bottom-up innovation. Hence, this thesis has offered new insights into the literature gap of our limited understanding of bottom-up innovation and its practical implications.

This thesis has found that on an individual level the exhibition of innovative behavior is dependent upon three pillars of (i) the development of innovation ambition, (i) the development of innovation capabilities, and (iii) the presence of necessary contextual conditions. Additionally, it found that all 3 above-mentioned pillars are greatly determined by if and how the organization facilitates innovation. Hereby this thesis aims to offer scholars and organizations focus points when researching or pursuing bottom-up innovation.\ Regarding the development of innovation ambition, this thesis found that due to the hierarchical structure of the organization, such as the business group PEPP, a top-down approach is advised as necessary to inspire and steer innovative behavior.

Regarding the development of innovation capabilities, this thesis revealed that the organization requires two vital elements. First of all, the organization requires supporting structures, in terms of tooling, time, and a process to facilitate employees that work on ideas and equip them with the necessary innovation expertise. Secondly, the organization requires opportunities for practice to develop employees' self-initiated ideas and innovation capabilities. Ultimately, the development of both will lead to a higher success rate of self-initiated ideas.

Regarding the presence of the necessary contextual conditions, these conditions are found to be unique to each individual. Intrapreneurs were found to hold the least necessary contextual conditions and were less affected by all contextual factors. Nevertheless, it is presumed that the contextual conditions found in this thesis are generic for all organizations. These contextual conditions are (a) allocated work time to innovation, (b) available innovation resources, (c) a future focus, (d) compensating rewards and recognition, and (e) top management support.

In the bigger picture of scholars' quest to find ways to facilitate bottom-up innovation, this thesis applies a design approach to translate current theoretical findings into practical outcomes. It showcases how the practice of design can complement existing perspectives limited to creativity, innovation, leadership, management, and organizational change. Hence, it proposes a more active role for designers in the design for bottom-up innovation in terms of tooling and respective necessary contextual conditions, such as the design of rewarding and incentive mechanisms, the design of organizational roles, the design of jobs and responsibilities, and the mechanisms to allocate time.

9.3.4 Contributions Third Literature Gap

Besides one study, existing literature has little understanding of how companies can adopt an experimentation-driven approach in innovative behavior among employees. Hence, this thesis has offered new insights into the literature gap of our limited understanding of how companies can adopt experimentation successfully within the innovative behavior of their employees and their organizational culture.

This thesis contributed to shed light on and demonstrated applications of experimentation that adds value to innovative behavior to employees by (i) providing a process that is resource-efficient in the develop of self-initiated ideas, (ii) providing an approach eliminates uncertainties and risky assumptions grounding ideas to higher their success rate, and (iii) facilitating a customer-centric perspective by validating assumptions and uncertainties with customer insights, and (iv) offering decision-making to (dis)continue ideas that are fact-based rather than intuitive. Additionally, this thesis has found one key condition necessary for organizations to facilitate innovative behavior that involves an experimentation-driven approach. This key condition entails top management's understanding of the value, the necessity of failing and a learn-by-doing and embracing this.

9.3.5 Future Research

Concerning the findings of this research, 3 future research directions have been identified. First of all, (i) the conceptual model of Employee Innovative behavior has been built in the context of PEPP and requires validation within other organizational contexts. Also, the interaction between contextual factors and the conceptual model needs to be further researched.

Secondly, (ii) the application of the crash course to other organizational contexts should be further researched. It requires an evaluation of whether the unique characteristics of the business group PEPP limit the applicability of the designed tooling. The crash course might have been influenced by the characteristic of PEPP and OpCo's in terms of being a delegated business model, holding a dealership model, having a hierarchical structure, hold sales-and engineering-oriented organizational expertise, does not have in-house production, has a higher-aged workforce, and targets small and medium-sized enterprises.

Thirdly, (iii) the designed tooling is found to be a practical manner to reveal insights into the personal and contextual conditions on an individual level. A future research direction is suggested to explore how the designed crash course can be applied as a measurement instrument in addition to existing instruments of surveys and interview guides. It is suggested that the crash course can be used as a measurement tool to determine organizations' levels of the personal factors of their employees and the contextual conditions found necessary.

Lastly, it is advised to further research the hybrid model of a bottom-up and top-down approach. Although this thesis found evidence that a bottom-up approach requires a top-down approach to inspire and steer innovative behavior among employees, further research needs to be conducted on the extent to which this holds for other organizations and its effectiveness on realizing bottom-up innovation.

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