Master Thesis : "How have key human factors shaped and been shaped by the reformation of fire and rescue services in Belgium over the past decade? In what ways can these insights foster innovation while maintaining critical standard operations, that is, achieving organizational ambidexterity?"

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How have key human factors both shaped and been shaped by the reformation of fire and rescue services in Belgium over the past decade? How can these insights be used to foster innovation while maintaining critical standard operations, that is, achieving organizational ambidexterity?

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Acknowledgement

Personal reflection

For as long as I can remember, I dreamed of becoming a firefighter. Quite common for children, given the heroic image of firefighters rescuing people and saving property. At the age of eighteen, I started as a volunteer firefighter and after achieving my higher education degree the opportunity of becoming a career firefighter in my hometown crossed my path.

For what else to wish? But wrong was I, driven by a critical mind I started thinking about how the organization could do better, delivering operational services as well as level-up as their whole. Always with a focus on people, being the essential part of delivering value to the community we serve.

As a result, less than three years and an application later, I was assigned as fire officer in the local fire station of Tessenderlo. At the age of twenty-three, being the only fire officer in this station, challenges were ahead. When again three years passed by, the reformation to emergency rescue zones was a fact resulting in my assignment as a district chief responsible for the operational execution in both Hasselt (headquarters) and Herk-de-Stad. With a staff of approximately two hundred, career and volunteer firefighters as well as non-uniformed staff members, this was a new major step in my professional life.

Since September 2024 I have been functioning as chief of operations, after almost 10 years of being a district chief. My dream as a young child and my first steps in the fire and rescue services are already a long time ago. The ambition to innovate, improve and my conviction people are key in value-creation is still the same. Looking back on a decade of reforming the local fire departments into emergency rescue zones gives me a strong belief we are on the right track. Meanwhile it is time for a next step in professionalizing and making sure fire and rescue zones are ready for future challenges lying ahead.

A result of the open-borders MBA program

The open-borders MBA program is a result of a personal belief that as a future-proof fire and rescue service we need to professionalize the overall management of the organization. We need to open our mind and learn from others. Over a decade of change caused by a reformation, it was not always easy to keep an open mindset toward opportunities and chances.

A shift in business thinking is clearly more present in the world of fire and rescue services now than it was before. Non-profit and for-profit organizations face similar challenges in achieving their respective missions.

Expression of gratitude

Combining an MBA with a final thesis, a full-time job, and a baby in his first years is demanding. This effort is a teamwork and would have been impossible without the huge effort of my beloving wife Kaat, who has always been supportive and understanding. Within the open-borders MBA, besides the professor and export, the support staff did an excellent job. They meant much more than only facilitating the process. The same holds true for all the students in our cohort. Sharing experiences and collaborating closely were essential in fostering an open and engaging learning environment. Furthermore, I am grateful to the emergency rescue zone South-Western Limburg and especially the CEO, colonel Bert Swijsen, for the support and trust in my participation in the MBA program. Professor Piet Pauwels inspired me to take on the challenge. As both a professor and a volunteer firefighter, he clearly understands the importance of connecting academic insight with practical application for fire and rescue services. My sincere thanks for this inspiration!

Finally, a special word of thanks to Dr. Frank Lambrechts, who supervised this work. He not only provided valuable reflections on the content but also offered support and encouragement on a personal level.

Abstract

The purpose of this thesis is to analyze the first decade of reformation from local, municipal organized fire brigades to emergency rescue zones in Belgium. This analysis, focused on human aspects-management, is employed to give insight into the key factors in people management to become an ambidextrous organization combining both exploitative and explorative activities. The emergency rescue zone South-Western Limburg is chosen as the use-case for the author's relevance and accessibility of information.

Before 2015, fire brigades in Belgium were organized on a municipal level, counting a total of around 250 covering only one or a small number of cities. After the reformation, the direct connection with and integration within the administration of the municipalities disappeared. The 250 local fire departments were seized to 34 emergency rescue zones – all having their own legal entity and responsible for multiple municipalities within their assigned juridical area.

Given the reformation's profound impact on the fire department's organizational structure, a study of the past decade is of particular interest. The specific situation of fire and rescue services, being both public service and high-reliability organizations, offers a unique perspective on the field of organizational ambidexterity.

A decade of reformation led to a major change in the landscape of fire and rescue services in Belgium. This research gives opportunities for valuable insights that can be used for further organizational understanding and development. If fire and rescue services want to be prepared for the future challenges lying ahead, one needs to know what key essentials are needed for successfully aiming organizational ambidexterity. A fire and rescue service that innovates while maintaining essential operations.

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Introduction

Setting

The emergency rescue zone South-Western Limburg is one of 34 fire and rescue zones in Belgium originating from a merging of five fire brigades working under the administration of a municipality. Since the reformation of all fire and rescue services in Belgium in 2015 the new organizations are legal entities in themselves. They are responsible for (fire and rescue) operations, fire prevention activities and their own business support activities like HR management and accountancy. In this dissertation several terminologies are used the described the fire and rescue services, like fire departments, fire brigades or emergency rescue zones. All of them refer to the same organization.

Problem statement

Due to their organizational structure, before 2015 fire brigades were mostly focusing on pure operational activities. After the reformation, the focus was mostly set on the so called “hard business activities.” The must-haves to ensure the minimum required activities could remain being done was of predominant interest. Like every other organization, a fire and rescue service experiences new challenges in today’s uncertain and complex world. Organizational ambidexterity, the ability to balance exploitation of existing capabilities while exploring new opportunities, is critical for public sector organizations facing dynamic environments and increasing service demands.

The intertwining of HRO (High Reliability Organization) characteristics and PSO (Public Service Organization), combined with ambidexterity, creates a specific complexity within the fire and rescue services. At the same time, it makes this an exceptionally fascinating area to explore. Adding the challenges of reorganization as extensive as the reformation, it becomes clear why gaining insights from the past decade can be of great value for the future development of the fire and rescue services.

Relevance and research question

This thesis investigates the transition of local fire brigades towards a regionalized structure. We focus on the essential human factors during this transition. These human factors are both influencing and being influenced by the transition process. Organizational ambidexterity studies focus mostly on large, for-profit organizations outside the public sector (Boukamel & Emery, 2017; Kassotaki, 2022). This thesis aims to apply the field of ambidexterity to a non-profit, high-reliability, public service organization. However, focused on fire and rescue services, several insights can be used for a severe variety of organizations within the public service or beyond. Both to become ambidextrous as well as key factors to embed this in an organization in a sustainable way.

Research question: *"How have key human factors both shaped and been shaped by the reformation of fire and rescue services in Belgium over the past decade? How can these insights be used to foster innovation while maintaining critical standard operations, that is, achieving organizational ambidexterity?”*

The focus on HR is chosen due to the fact the fire and rescue zones are a service-oriented organization and quality of service depends very much on how employees feel involved, supported, and appreciated (Babakus et al., 2003; McClean & Collins, 2011). The employees are the foremost valuable resource in the organization’s ambition to deliver superior fire and rescue services. This analysis should give insight into what to improve, keep or change in the key human factors detected to achieve organizational ambidexterity. There is only a little academic work on organizational ambidexterity within the non-profit sector, and it does not exist focusing on fire and rescue services. If we, as a fire and rescue service, want to be prepared for the future challenges lying ahead, one need to know what key essentials are for successfully aiming organizational ambidexterity.

Approach

After this introduction, a literature study on the subject of organizational ambidexterity is made. This is followed by an extensive explanation was provided about the functioning of the Belgian fire and rescue services, with a particular focus on the emergency rescue zone South-West Limburg.

To further investigate which human factors related to ambidexterity were actually important during that reform, a qualitative study was conducted within the author's organization, the emergency rescue zone South-West Limburg. The methodology used for this qualitative study is described in detail.

A comprehensive analysis of qualitative data compared to the conducted literature study identifies and evaluates the key factors influencing effective people management during the transformative decade of reformation from local fire brigades to emergency rescue zones between 2015 and 2025.

By determining these key factors, this thesis provides a framework for fire and rescue services aiming to become ambidextrous, offering practical recommendations. This research contributes to the broader field of organizational ambidexterity in public service organizations, fire and rescue services in Belgium particularly.

Figure 1 - Structure of the thesis

List of abbreviations

AAR = After-Action Review
AI = Artificial Intelligence
CEO = Chief Executive Officer, in this context the regional commander
CFO = Chief Fire Officer (CEO / regional commander)
EMS = Emergency Medical Services
EMT = Emergency Medical Technician
FD = Fire Department
FPS = Federal Public Services
FRS = Fire and Rescue Services
HAZMAT = Hazardous Materials
HR = Human Resources
HRO = High Reliability Organization
IC = Incident Commander
OBMBA = Open Borders Master of Business Administration
PSO = Public Service Organization
SCBA = Self-Contained Breathing Apparatus
VUCA = Volatile, Uncertain, Complex, Ambiguous

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What is organizational ambidexterity about and to what extend are several aspects of this domain relevant, or not, for fire and rescue services? Over the years, this intriguing yet often ambiguous concept has been the subject of extensive academic research. This first literature study served as a crucial foundation, providing the necessary theoretical grounding before qualitative research could be conducted within the author's organization.

Literature study on ambidexterity

Literature study on ambidexterity

What is an ambidextrous organization?

An ambidextrous organization can be defined in several ways, but it fundamentally refers to an organization that must be attentive to the past while also being prepared for the future. This involves a mental balancing act between using and optimizing existing processes, methods, or organizational structures that have been deployed and proven effective in the past, and exploiting new opportunities, ideas, future possibilities, and innovative breakthroughs.

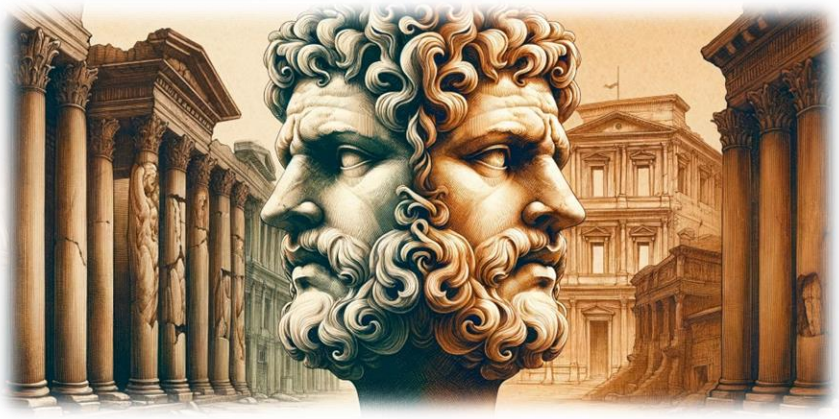

Figure 2 - Janus, the Roman god of transitions, beginnings, and endings (source: History Skills)

Janus, the Roman god of transitions, beginnings, and endings, has two faces: one looking to the past and the other to the future. This dual perspective symbolizes his role as the guardian of thresholds and his ability to connect opposites, such as old and new, or chaos and order.

In discussions about organizational ambidexterity, the figure of Janus is frequently used as a metaphor. Ambidextrous organizations must balance exploration (innovation and future growth) and exploitation (efficiency and optimization of current operations). Like Janus, these organizations need to look simultaneously to the past—leveraging existing strengths and resources—and to the future, adapting to change and fostering innovation.

The scope of an ambidextrous organization is to combine exploitative and exploratory business activities (March, 1991; Tushman & O'Reilly, 1996). Exploitative activities focus on refining and enhancing existing capabilities, processes, and products to achieve efficiency, reliability, and incremental improvements. On the other hand, exploratory activities involve experimenting with new ideas, embracing innovation, and seeking out new opportunities that may lead to significant breakthroughs and long-term growth. These two types of activities are inherently different in terms of structure, culture, and leadership roles (O'Reilly & Tushman, 2004).

Although the term "ambidexterity" may seem relatively new, it was first used in the 1970s by Duncan (1976). Over the years, the concept has gained increased attention, particularly in the academic world. The article by Gibson and Birkinshaw (2004) served as a clear accelerator for this interest, and from 2015 onwards, there has been an immense increase in research on organizational ambidexterity (Kassotaki, 2022). This goes along with the difficulties discovered in combining innovations while making steady improvements to existing businesses creating a fascinating battleground of management thought (O'Reilly & Tushman, 2004).

Organizational ambidexterity is often formulated as the combination of exploitation and exploration, or reliability and agility. Reliability is defined as being a stable organization that can be trusted in its

business continuity, while agility is the ability to detect and exploit market opportunities. Where agility is about change and adaptation, reliability is about the continuation of operations and maintaining stability (Millar et al., 2018).

Kassotaki (2022) used keywords such as search, risk-taking, experimentation, and innovation to describe exploration, and refinement, efficiency, implementation, and execution to describe exploitation. Innovative work behavior can be described as the intentional promotion and realization of new ideas within a team or organization, creating a performance benefit (Janssen, 2003).

Explanation and writings about ambidexterity can often be somehow confusing. O'Reilly and Tushman (2004) describe two types of innovation. Incremental innovations as being small improvements in the existing products and operations to increase efficiency and add value to customers. And discontinuous innovations, radical advances that profoundly alter the basis for competition in an industry. Figure 3 gives an overview of keywords used to describe both activities organizations has to combine. The terms exploitation and exploration or innovation will be used in this research.

Figure 3 - Exploitation / Exploration

Over time, the main shift in research on ambidexterity has been from a trade-off focus between exploration and exploitation to a paradoxical thinking where both aspects are combined. This means that **organizations are increasingly recognizing the importance of balancing both exploitative and exploratory activities simultaneously to achieve long-term success and sustainability** (Gibson & Birkinshaw, 2004).

Why is being ambidextrous important?

Levinthal and March (1993) conclude that long-term survival and success depend on an organization's ability to "engage in enough exploitation to ensure the organization's current viability and to engage in enough exploration to ensure future viability." This dual focus is crucial for navigating VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) environments, where there is a global consensus that executives should emphasize agility, dexterity, flexibility, and resilience (Raisch & Birkinshaw,

2008). Emphasizing one of two activities over the other leads to substantial difficulties for organizations. Organizations that are overly oriented towards exploitation suffer from inertia (Benner & Tushman, 2003) and a sub-optimal stable equilibrium (March, 1991). When a firm's actions are mainly directed towards exploitation, it is likely that they will achieve returns. However, these returns are not necessarily sustainable and may result in short-term performance gains, leaving the firm unable to respond adequately to a changing environment (Kassotaki, 2022). Organizations mainly dedicated to exploration activities risking the costs of experimentation without the benefits (March, 1991).

There are exceptions, however, where it is preferable to focus solely on either exploitation or exploration. One of the clearest examples is the semiconductor industry, where one firm can focus on research and development while another within the same industry can focus on production. This logic of ambidexterity extends from an individual organization to the broader social system (Gupta et al., 2006). This approach cannot be directly transferred to the context of fire and rescue services for obvious reasons.

Ambidexterity has a positive correlation with sales growth (Derbyshire, 2014) and enhances company performance and innovation (He & Wong, 2004; Junni et al., 2013; Kafetzopoulos et al., 2023). While sales growth is a major objective in for-profit companies, it is not the case for non-profit organizations in general and fire and rescue services specifically. The benefits of increased innovation (Kortmann et al., 2014) and organizational performance (Gibson & Birkinshaw, 2004) are not limited to for-profit organizations though. Measuring organizational performance in fire and rescue services is slightly different than described by Gibson & Birkinshaw (2004). Additional difficulties include a diversity in assigned tasks, differences between the organizational level and the legislative levels, and incident outcomes that are not easy to quantify. Carvalho et al. (2006) concluded that performance measurement techniques are applicable to fire and rescue services for performance evaluation. For example, peer challenge as a sector-led approach to performance improvement in fire and rescue services in the UK is used together with an operational assessment covering seven key assessment domains like prevention, training, and incident support (Murphy & Greenhalgh, 2018). This peer challenge approach emphasizes that fire services are responsible for their own performance, and these challenges are managed and delivered by the sector, for the sector. The research of Murphy & Greenhalgh (2018) concluded that both operational assessment and fire peer challenge are commonly determined to be working well and highly valued within the sector.

Organizational ambidexterity is most impactful on performance in dynamic environments like knowledge-intensive services (for example higher education organizations) and high-technology sector (like biotech). Due to the uncertainty of the duration of competitive advantage continuously innovation is needed. More stable markets may be more forgiving (Kassotaki, 2022). Fire and rescue services operate in a market being very stable, as there is only limited competition despite some exceptions. **Innovation in public sector organizations however is a critical issue as they strive to cope with unprecedented challenges** due to fiscal, demographic, sanitary, and ecological pressures, **along with rising citizen expectations for a more responsive and accountable government** (Clausen et al., 2020; De Vries et al., 2016). Public sector organizations must continuously innovate to meet these challenges and improve their performance and service delivery. Meanwhile, these PSOs need to continue their assigned activities and cannot focus only on innovation. The underlying challenges to the development of innovation capabilities in public sector organizations imply structural, cultural and managerial adaptations (Boukamel & Emery, 2017). Inertia is defined as a potential issue, arising from the tendency to favor exploitation but also barriers to knowledge sharing and the lack of integration, also called "silo functioning" (Boukamel & Emery, 2017).

Competition in the market

The provision of firefighting and emergency services by the private sector is relatively limited in Europe and almost non-existent in Belgium. In some other European countries such as Denmark, fire and rescue services are partially privatized, but this remains rather exceptional. Overall, fire and rescue services do not face strong competitive forces within their industry. However, the situation is different for emergency medical services (EMS), where competition is much more extensive both in Belgium and across Europe (Lethbridge J., 2009). Given that EMS is a major component of most fire and rescue services in Belgium, particularly in the fire and rescue service studied, the competitiveness in this market is highly relevant. A significant change in the financing of emergency medical services could drastically increase the threat of new entrants.

Furthermore, Belgian fire and rescue zones are responsible for fire prevention assessments. Both in advance (providing fire prevention advice on new construction permits) and during exploitation (conducting periodical assessments depending on the usage of certain buildings). The Act of May 15th, 2007 explicitly assigns this role to the fire and rescue services. Other, more technical inspections, such as the conformity of electrical installations or gas leakage tests, are carried out by external technical inspection services. Theoretically, it is feasible to privatize fire safety regulations assessments.

Among Belgian fire and rescue services, there is increased competitive pressure due to the current environment where cities are merging. When two merging cities were part of different emergency rescue zones (designated areas) before the merger, a choice must be made between the two zones. As a consequence, there is a shift in financial income for both.

In summary, while the private sector provision of firefighting and emergency services is limited in Belgium, the competitive landscape for emergency medical services is much more dynamic. In addition, the responsibilities of fire and rescue zones in Belgium include crucial fire prevention assessments, which can be privatized relatively easy. Finally, the merger of cities adds another layer of complexity to the competitive environment in between fire and rescue services.

HRO – High Reliability Organizations

Besides a governmental or public service organization, an emergency rescue zone is a high-reliability organization (Christianson et al., 2011). High-reliability organizations are typically hyper-complex, having a high frequency of decisions, strong interdependence, large numbers of decision-makers and many critical outcomes (Vogus & Rerup, 2018; Brand et al., 2023). Le Bris et al. (2019) emphasize on five main factors of HROs: a redundancy of the decision-making channels (1) associated with a redundancy of control between the actors (2); training and retraining through repetition of incident scenarios that actors have never had to face (3); an agreement on the final goals within the organization (4) and a focus on decision-making processes with centralization at strategic levels and decentralization at operational levels when circumstances require (5). These five factors constitute the basis of a culture of reliability.

HROs need to be able to pursue their everyday business. Providing international air traffic control for a country, even for aircraft that do not even plan to land there but only pass through its airspace or maintaining an ambulance service that can never know when the next accident will happen. The “first error in the trial-and-error-learning will also be the last trial” (Weick & Sutcliffe, 2011, p.20).

In these HROs innovations are often very delicate because of the effect they can have. Other than losing market share or economic and image damage through the development of a bad product, lives can be at stake. Trusted and well-proved technology, techniques and equipment are preferable. On

the other hand, building further on experience is not enough to tackle future challenges. Balancing between maintaining their critical routine and innovation (exploration) in such environments where innovation can be critical or even fatal, implementation of innovation is especially challenging (Kraner, 2018). Additionally, within an HRO, trust from the customer- base, public opinion in the situation of the fire and rescue services, is crucial.

Within HROs, it is known that very strict hierarchies are vulnerable to errors and that operational decisions are made at the frontlines where the operational expertise is allocated, regardless of people's rank (Kraner, 2018; Weick & Sutcliffe, 2011). Because of the nature of HROs and their environment, the majority of the workforce tends to pursue exploitative jobs, while incrementally improving existing technologies, rather than revolutionizing them. In such slow-moving industries, the environment and the competition also have a direct influence on the ambidexterity of an organization, as was found by several researchers (Kraner, 2018; Levinthal & March 1993; Volberda, 1999).

One reason for vulnerability in High-Reliability Organizations (HROs) due to strict hierarchies is the focus on whom and how to speak up as an employee or team member. A study by Jahn & Black (2017) explores navigating hierarchy in such a way that supervisors, work groups, and members find ways to work around communication obstacles. They stated, "a crucial drawback of hierarchies is that the nature of their stratified relationships can become members' central concern in their interactions. It can be difficult for subordinates to share partial information and tentative conclusions, which are the types of information HROs depend on to catch problems while they are still small and manageable."

Building further on earlier research, particularly that of Blatt et al. (2006), they concluded that "when serving in hierarchical roles, members might become focused on what they can (and cannot) say to whom and how they should say it, rather than openly expressing concerns about circumstances they face." (Jahn & Black, 2017, p. 360). This focus on hierarchical communication can hinder the flow of crucial information, leading to potential vulnerabilities in the organization.

To mitigate these vulnerabilities, supervisors play a critical role. Their use of inclusive communication, characterized by openness and non-defensiveness, should foster a climate for information sharing. By creating an environment where team members feel safe expressing their concerns and sharing partial information, supervisors can help ensure that potential issues are identified and addressed early on.

By promoting a culture of openness and encouraging team members to speak up, supervisors can help navigate the challenges posed by strict hierarchies and enhance the overall reliability and safety of the organization. This goes along with findings from research done by Le Bris et al. (2019) on CTI situations which is an acronym they have used for complexity (C), time pressure (T) and risks of critical irreversibility (I).

Formalization, by written rules, procedures and guidelines, can support employees when perceiving unpredictable changes (Gianzina & Paroutis, 2025). Findings from detailed research by Folger et al. (2022) suggest that in uncertain environments, higher degrees of formalization help employees balance exploitative and explorative work tasks. Feelings of stress and uncertainty for employees could, potentially, be counterbalanced by the provision of procedures, written rules and guidelines.

Research within the French Navy suggests that meta-rules can be a reliable solution in high-pressure situations. When time is limited, decision-makers may not be able to organize existing knowledge or develop new, robust insights. In such cases, meta-rules help guide action. This is especially important when errors in decision-making could cause irreversible damage to the entity being managed. These meta rules are overarching principles or guidelines, enabling them to make decisions quickly, if necessary, using new robust and reliable strategies. When applicable to the difficulties of decision

making in unexpected or complex situations which goes along with incident responding, extension to the daily preparatory work and training could be beneficial for the overall organizational ambidexterity.

Typology of organizational ambidexterity

There are different approaches on how organizations should balance explorative and exploitative activities (Kassotaki, 2017, 2022; Turner et al., 2013; O'Reilly & Tushman, 2013). When using time and space there are four approaches to organizational ambidexterity (see figure 4). Time dimension is about the pursuit of both exploitation and exploration simultaneously or sequentially. The space dimension is whether exploitation and exploration are taking place within the same organizational unit or in different ones.

The first approach is contextual or harmonic ambidexterity, meaning a simultaneous balance of exploration and exploitation by alignment in the same business unit. The second approach is structural ambidexterity, where separate business units are used simultaneously, one working on exploration, the other on exploitation. Cyclical ambidexterity is the third one, where an organization cycles through periods of exploration and exploitation (within the same business unit). Finally, the fourth approach is reciprocal ambidexterity, including sequential application of ambidexterity across different units. The output of exploration for one unit is an input for exploitation for the other.

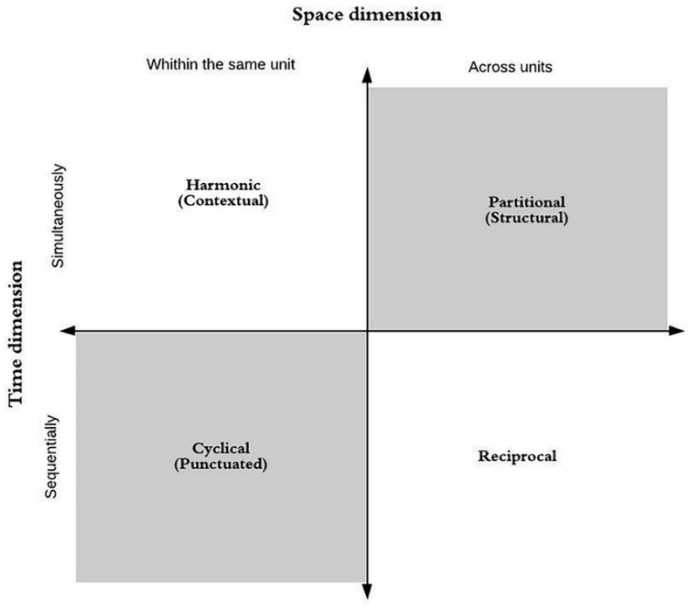

Figure 4 - Typology of organizational ambidexterity (Kassotaki, 2022)

Key-essentials to become an ambidextrous organization

Researchers working in various literature streams have contributed to the discussion on organizational ambidexterity. The contradictions between exploitation and exploration, as well as the need to reconcile the two orientations, have been discussed in different contexts such as organizational learning, technological innovation, organizational adaptation, strategic management, and organizational design (Raisch & Birkinshaw, 2008). Several key essentials for becoming ambidextrous are detected, those most relevant for fire and rescue services, based on the scale and organizational structure are:

- **A clear and compelling vision**, relentlessly communicated by a company's senior team, is crucial in building ambidextrous designs (Andriopoulus & Lewis, 2009).

- **A compelling strategic intent** that intellectually justifies the importance of both exploration and exploitation (O'Reilly & Tushman, 2011).
- **The ability of the organization to reallocate assets and capabilities** to address new threats and opportunities (O'Reilly & Tushman, 2011).
- **Top-down and bottom-up knowledge inflows** is an important aspect based on the literature stream of organizational learning: "the more a manager obtains top-down and bottom-up knowledge inflows, the higher the level of ambidexterity in which he engages" (Kassotaki, 2022)
- **Supportive leadership promotes ambidextrous actions**, whereas dominant leadership hinders explorative activities (Gianzina & Paroutis, 2025)
- **Middle managers play a crucial role when implementing innovations** by creating a bridge between the top management and its actions and the team leaders and the operational level (Engle et al., 2017)

These last two topics about leadership need some more explanation. Kelloway and Barlin (2010) describe leadership as a process of social influence that is enacted by designated individuals who hold formal leadership roles in organizations. These formal roles have a particularly strong potential effect on individual well-being and are determined to be crucial to employee performance. This importance on leadership behavior is further strengthened when applied in a service-oriented organization. After all, quality of service is very much depending on how employees feel involved, supported, and appreciated (Babakus et al., 2003; McClean & Collins, 2011).

More specifically on the innovative climate within teams being part of public sector organizations, little research is done. A study conducted in the Norwegian labor and welfare administration finds that enhancing innovation in the public sector requires fostering psychological safety (Oppen, 2024). An environment where employees feel safe to express ideas and take risks is crucial for innovation. Leaders who inspire and motivate their teams can significantly enhance the innovative climate by building trust and security. Encouraging continuous learning and openness to feedback can further enhance innovation capabilities.

Kousina and Voudouris (2023) elaborate on leadership behavior in the public sector. In the context of organizational behavior and team dynamics, opening and closing behaviors are described, referring to different approaches that individuals and teams use to foster creativity, collaboration, and decision-making processes. These behaviors are important in managing how teams generate ideas and reach conclusions effectively. This research is interesting because of the high importance of teamwork within fire and rescue services and the high number of different (fixed or ad-hoc) teams existing.

Opening behaviors are characterized by actions and attitudes that encourage the free flow of ideas, creativity, and exploration. They are often employed during the initial stages of a project or when trying to generate new ideas and solutions. Key features of opening behaviors include:

- Encouraging creativity: fostering an environment where new and diverse ideas are welcomed (promotion of experimentation) and explored without immediate criticism.
- Promoting inclusivity: ensuring that all team members feel comfortable sharing their thoughts and suggestions.
- Facilitating brainstorming: allowing for open-ended discussions where all possibilities are considered before narrowing down options.
- Suspending judgment: delaying evaluation of ideas to allow more creative and out-of-the-box thinking.

Closing behaviors involve actions and attitudes that help narrow down options, make decisions, and implement solutions. These behaviors are crucial for moving projects forward and achieving goals. Key features of closing behaviors include:

- Evaluating ideas: critically assessing the feasibility, potential impact, and practicality of various ideas and solutions.
- Prioritizing options: identifying the most promising or viable options from the pool of ideas generated during the opening phase.
- Making decisions: choosing a course of action and committing yourself to it, often by setting clear goals and timelines.
- Planning and organizing developing action plans and assigning responsibilities to ensure the chosen ideas are implemented effectively.
- Ensuring accountability: establishing clear metrics and responsibilities to track progress and performance.

Whereas opening behaviors are critical for fostering innovation and allowing teams to discover unique solutions, closing behaviors ensure that innovative ideas are effectively implemented leading to results. Innovative work behavior is highest when both opening and closing behaviors are high. By understanding and applying opening and closing behaviors, teams can enhance their creative processes while ensuring efficient execution and goal achievement.

This balance between opening and closing behaviors helps organizations remain adaptable and competitive in rapidly changing environments. In the context of ambidexterity this is in the area of exploration. There is a close connection to the "design-thinking approach" where mainly three dimensions are important for innovation. One is desirability *(Does it solve a real problem?)*, the second is viability *(Should we build this? Does it align with organizational goals, and will it deliver long-term value?)* and the third is feasibility (*Can we do this? Can it be maintained?).* Figure 5 shows the interconnection between all three dimensions needed for effective innovation.

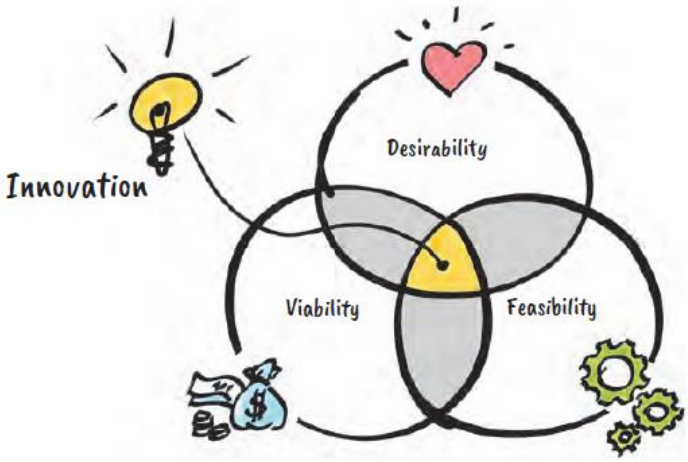

Figure 5 - Innovation in the design thinking approach (source: the design thinking toolbox)

Finally, on leadership, research on how leaders affect the implementation of innovations mainly focuses on top management. Middle management and its influence has been neglected so far (Engle et al. 2017). Kraner (2018) summarized: supporting activities of the middle management can include holding meetings to spread information to educate staff, demonstrating the hand-on use of innovation, and providing guidance concerning the application of innovation. This can promote the buy-in of the workforce, as was found in the healthcare industry (Engle et al., 2017), which is also considered an HRO environment. According to Birken et al. (2012), middle managers are having several

roles when it comes to facilitating innovation. They need to state their commitment to innovation, diffuse information and knowledge, synthesize information in order to make innovations and technologies understandable. Furthermore, they need to mediate between strategy and daily operations and promote implementation of innovation within the workforce.

A short summary

To summarize, the literature study on organizational ambidexterity treated several topics. Foremost, the scope of an ambidextrous organization is to combine exploitative and exploratory business activities. Organizations are increasingly recognizing the importance of balancing both exploitative and exploratory activities simultaneously to achieve long-term success and sustainability. For public sector organization, innovation is a critical issue as they strive to cope with unprecedented challenges, along with rising citizen expectations for a more responsive and accountable government. Meanwhile, fire and rescue services are high-reliability organizations as well, in these HROs innovations are often very delicate because of the effect they can have.

Several key-essentials for achieving organizational ambidexterity are identified, like a compelling vision and strategic intent, besides the ability to reallocate resources and ensure bottom-up and top-down information streams. Additionally, the role of leaders is of fundamental importance, in particular for innovation.

Ambidexterity is a complex subject, as shown previously. It covers different aspects and applying it to organizations can differ much depending on the organizational structure, its core business, size and much more. The specific situation of fire and rescue services, being both public service and high-reliability organizations, offers a unique perspective on the field of ambidexterity. The next section provides a comprehensive explanation of the fire and rescue services in Belgium. It starts with a short historical hindsight and further on explains the reformation process of the past decade. Finally, an in-depth explanation of the fire and rescue services of South-Western Limburg is provided, as this is the organization used for this research and thus important for further understanding.

Context of the Fire and Rescue Services

Context of the Fire and Rescue Services

History of fire and rescue services in Belgium

The generally accepted starting point of fire and rescue services in Belgium goes back to the Middle Ages. It was, however, not really a service worth the name and not much of an organization. In 1472 a resolution from the French king Louis XI decided that a human chain for passing by buckets of water should be formed in case of a fire. But even earlier, mayors of cities declared several rules for all citizens on actions that need to be taken to prevent fire and what to do in case they occur.

The effectiveness of fire brigades began to evolve during the 16th century with the coming of fire hoses and with steam-driven pumps in around 1830. In Belgium the first official fire brigade was established in Brussels in the early years of the 19th century under impulse of Napoleon, however Belgium as an independent country came into being only in 1830. The organization of the fire brigades differed from municipality to municipality. Some cities had a professionally organized fire brigade quite early in the 19th century with some equipment like buckets, hoses, ladders or a hand or horse-drawn cart. Other municipalities and regions lagged behind and had to rely on firefighters from neighboring villages or cities for a long time. The tasks were done by different groups of people, never as a full-time job and in almost all municipalities under the command of the chief of police.

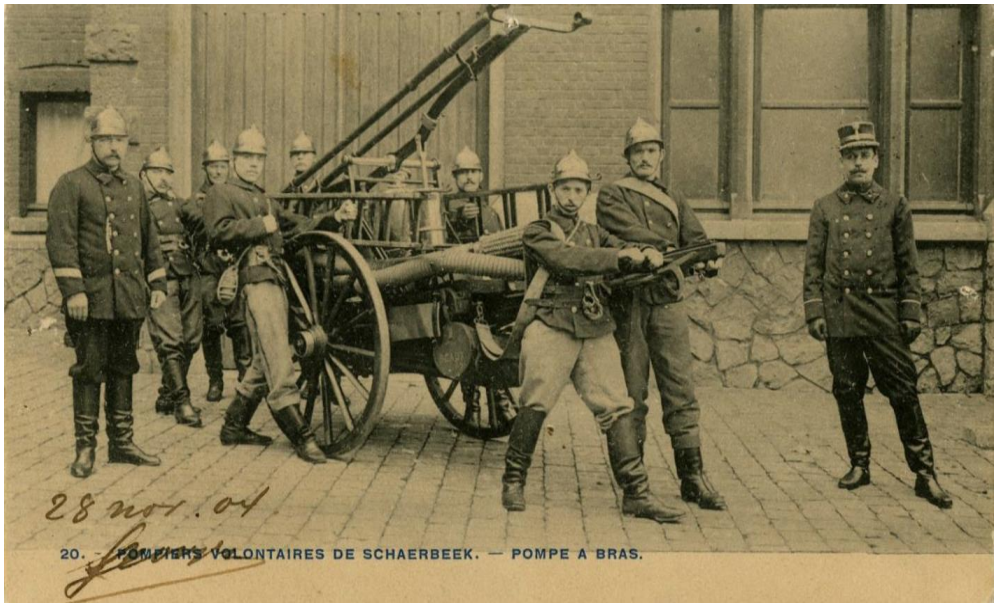

Figure 6 - Steam-driven pump (source: digital archive, city of Schaarbeek)

During the first world war, a new era arose for the Belgian fire brigades. The German occupier formed several “Municipal unarmed fire brigades,” unarmed to make it clear police and fire brigade work were no longer carried out by the same people. Once the war ended, the attention for fire brigades decreased, however some actions in an attempt to make fire services more consistent across the country were taken.

During the second world war the German occupier again started with the installation of local fire brigades in municipalities and the separation between police and fire brigades was set-up once again.

Within the law of December 31, 1963, the different tasks for fire brigades and the civil protection agency were described. Besides responding to fires and explosions other tasks like fire prevention, emergency medical services, technical rescue operations and more where defined.

For the organization of fire services, the municipalities of each province are divided into regional groups. The governor determines the composition of these groups and designates, after consulting the municipal councils concerned, the municipality that will serve as the center of each group. This designated municipality is obligated to maintain a fire service with the necessary personnel and equipment. The other municipalities in the regional group are required either to maintain or establish a fire service with adequate personnel and equipment, or to rely on the fire service of the central municipality of the group, in exchange for a fixed annual contribution.

On May 22, 1967, a catastrophic fire engulfed the “Innovation” department store on Rue Neuve in central Brussels, resulting in 251 fatalities and 62 injuries. This tragedy remains the deadliest fire in Belgian history. The store's architectural design, featuring a central atrium topped with a skylight, acted like a chimney, allowing the flames to spread rapidly. The extensive use of wooden materials and the absence of a sprinkler system exacerbated the situation. Within approximately ten minutes, the entire building was engulfed, trapping many insides. In the aftermath, the disaster prompted a comprehensive review of fire safety regulations in Belgium. Authorities recognized the need for stricter building codes, mandatory installation of fire suppression systems like sprinklers, and improved emergency response protocols.

Besides stricter fire safety regulations, a modernization of fire brigades with a focus on training, equipment and coordination was put in place. The need for more centralized oversight was part of the discussion.

During the 1980s, several initiatives were launched to professionalize fire and rescue services, though they achieved only limited success. Throughout the 1980s and 1990s, growing concerns about homeland security ultimately led to a major reform in 2001, which restructured the municipal police forces, gendarmerie, and judicial police. At the time, a similar reform for fire brigades was considered too complex to undertake simultaneously and of minor importance.

The reformation to emergency rescue zones

The reformation initiated by the federal government already goes with the Act of May 15th, 2007. The 2004 gas explosion in Ghislenghien, which resulted in 24 fatalities, served as a catalyst for the growing conviction that upscaling emergency response structures was essential. A commission chaired by C. Paulus, who was serving as the governor of the province of Antwerp at the time, created the blueprint for this reformation. It however took till 2015 before emergency rescue zones were a fact.

Before, fire departments where mainly organized on a municipal level, counting at a total of around 250 covering only one or a small number of cities in the direct neighborhood of their fire station as a so-called regional group. There were some exceptions around Brussels and Liège as well as partnerships in between local departments but only very limited in amount.

The reformation aimed at three main objectives:

1. An optimal organization of the emergency response to society
2. Increasing the safety of citizens and rescue workers
3. Professionalizing the framework for rescue services, including training, apparatus, standard operating procedures and a uniform regulation for both professional and volunteer staff

Within the stated basic principles to achieve these targets, one of them is scaling up resulting in the shift from the existing 250 local fire departments to 34 emergency rescue zones (see figure 17 in the appendices). This reformation resulted in economies of scale and have had a profound impact on the fire department's organizational structure across all levels of the organization. Emergency rescue

zones are separated legal entities since the reformation. Important to mention is the fact that, besides fire and rescue operations, the fire and rescue zones have responsibilities for fire prevention. On the one hand by checking compliance with legal obligations that apply to buildings or events, on the other hand by informing citizens about risks and safety. Fire and rescue zones are supervised by the Federal Public Service (FPS) of Home Affairs.

Emergency Medical Services (EMS) in Belgium are not solely managed by fire and rescue zones. There are differences across the land, in several areas many ambulances are operated by the fire and rescue zones, but hospitals and private companies also manage EMS. In Flanders around 60% of the ambulances are part of fire and rescue zones. The FPS Public Health oversees EMS operations.

Before 2015, fire departments were primarily composed of operational staff, as most overhead activities were handled by municipal administration. Since fire and rescue zones became legal entities, this has changed. Now, all business support activities, such as human resources management, financial management and facility management, are conducted within these new legal entities.

Employment in Belgian fire and rescue services

According to the official numbers of 2022 from the directorate-general of civil security there is a total of 18,822 operational staff in Belgium, including 1710 medical. Medical staff is trained for EMS-calls but cannot respond to fire and rescue incidents. Firefighters are responding to these incidents and can be trained for EMS-responding as well. Within 17,112 firefighters, 61% are on-call (volunteer) and 39% are career staff. On this total amount of firefighters only 2,37% is female. Within the small number of medical personnel, it is 41,34%.

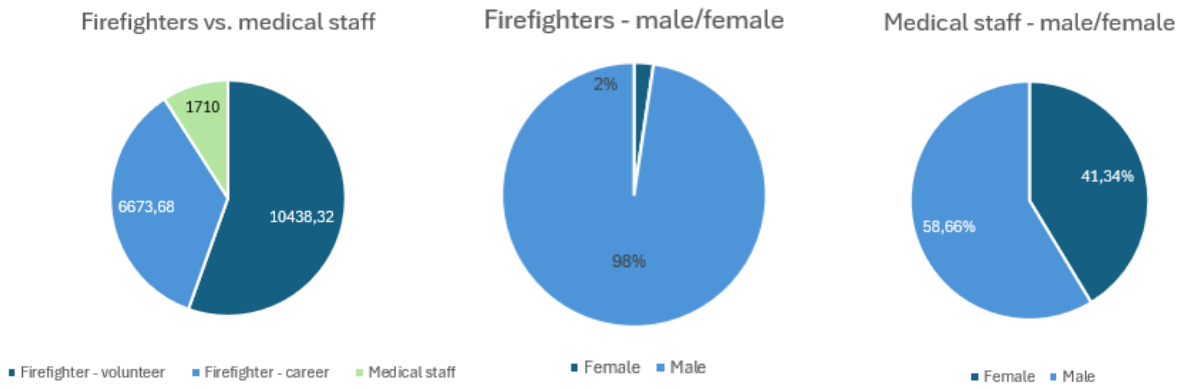

Figure 7 - Overview of employment in the Belgian FRS

The average number of non-uniformed employees is around 30 full-time employees and strongly related to the number of operational staff and the size of the region. 62,2% of them are female.

Important aspects in the field of HR

Belgian Fire and Rescue Services (FRS) historically are mostly depending on volunteers for their core operations. These operations are emergency fire and rescue incident responding and, for most FRSs, the emergency medical services as well. The combination of voluntarism, professional (career) firefighters and non-uniformed business administration is one important characteristic of FRS' human resources.

Secondly there is an operational-oriented and action-driven culture and history, enabling a great potential to tackle crises and deal with uncertainty. There is a risk however, when this mindset is the approach for the entire organizational management. A more business-oriented, strategic management has gained increased importance since 2015. What aspects of the cultural heritage of fire and rescue

services should be preserved, and what needs to evolve, have been the subject of much discussion. This will likely remain so for a while, as is often the case with reformation.

Finaly, government regulations on the organization of fire and rescue services are rather strict, in particular for subjects concerning employees. With the increasing complexity of the world and the need for ultra-specialization there is a risk of falling behind when fire and rescue services cannot adapt.

A more detailed discussion on culture, organizational structure, and voluntarism is presented later in the text. First, starting from a national approach, we will now zoom in on the focus organization, the emergency rescue zone South-West Limburg.

A decade of reformation for the emergency rescue zone South-Western Limburg

Given the reformation's profound impact on the fire department's organizational structure, there is a "before" and "after" framework to provide a detailed explanation.

Before 2015

Before 2015, local fire chiefs had a strong and centralized influence on "how the work has to be done". Overall, employees experienced a significant degree of autonomy in executing their responsibilities. This experienced agency and influence of the fire chief was caused mainly by the small scale of the municipal division they were running, in combination with a rather limited budget and great confidence coming from public opinion. For a majority of support functions, finance and HR in particular, the fire departments were fully dependent on the municipal administration.

It is a remarkable discrepancy between formal integration at the municipal level and the high amount of independence experienced. Fire brigades were on the one hand financially fully dependent on the local government as well for recruitment or purchases. On the other hand, most of these local fire brigades experienced a large freedom in daily operations. Some of the main reasons can be found in the structure with ranks, federal legislation and the unique volunteer-based workforce which was significantly different than all other city administration. Furthermore, the costs for fire brigades were a rather small percentage of overall costs for local governments.

As a result of the reformation process, the merging of five local fire departments on a municipal level gave rise to the "South-Western Limburg" emergency rescue zone. Four out of these five local fire brigades only had a very small number of full-time employees. Two local fire brigades, those of Hasselt and Heusden-Zolder, were responsible for a second fire station in a smaller, nearby city.

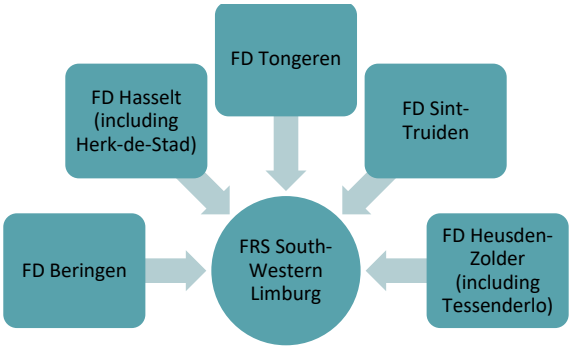

Figure 8 - Formation of FRS South-Western Limburg

Although many of these local fire brigades have existed for over 150 years, their organizational structures have remained largely unchanged. Traditionally, they operated as small-scale, volunteer-

driven units with minimal formal hierarchy. In essence, their organizational setup was relatively undeveloped.

The majority of local fire chiefs have served in their roles for several years, or even for their entire professional career. It is worth noting an exception within the five fire departments, specifically the one in Hasselt. Due to the more expansive urban area, it covered, the local fire department in Hasselt operated on a different organizational scale. While the autonomy experienced by employees was similar, the increased staff size necessitated a distinct organizational model. Apart from a dedicated group of 40 volunteers, there were 70 uniformed employees and a small contingent of six non-uniformed roles within support units such as administrative and technical services. While the four other local fire departments did not exhibit such characteristics, they share substantial similarities in between, making them comparable to each other.

After 2015

After the reformation, the direct connection with and integration within the administration of the municipalities disappeared. The 250 local fire departments were seized into 34 emergency rescue zones, all having their own legal entity and responsible for multiple municipalities within their assigned area.

The emergency rescue zone South-Western Limburg, used as focus company here, is one of 34 emergency rescue zones covering the Belgian territory. As one of three zones in the province of Limburg, it covers 17 municipalities over an area of almost 1000 square kilometers and a total of over 412,000 inhabitants. As a public service organization, it is financed by both federal and local governments, with a majority on the latter (see figure 18 in the appendices). Only a limited part of the financial resources is created by the services delivered. For example, by the legal fire prevention advice provided during the construction of new buildings or the renewal of permits for specific institutions, such as student housing. In addition, responding to urgent medical assistance and specific incidents like pollution are sources of revenue.

The 34 emergency rescue zones in Belgium are divided in four categories, based on the number of inhabitants for the area they protect, the amount of fire stations and the total staff. This is defined in the Royal Decree of February 26, 2014 (see figure 19 in the appendices). The FRS of South-Western Limburg is a category 3-region which is the most common category. There is a combination of volunteer and professional firefighters as well as a presence of industrial, rural and urban areas. As such, the transition as experienced in the FRS of South-Western Limburg is a good benchmark for the overall transition experienced within the Belgium territory.

The operational service, specifically referring to incident management here, functions through a network of eight fire stations spread across the protected area. These stations do all first line incident-responding and serve as hubs for more specialized operations. The assignment of specialized operations to stations depends on both size and geographical location. This decentralized approach ensures efficient and tailored emergency response capabilities across the entire region.

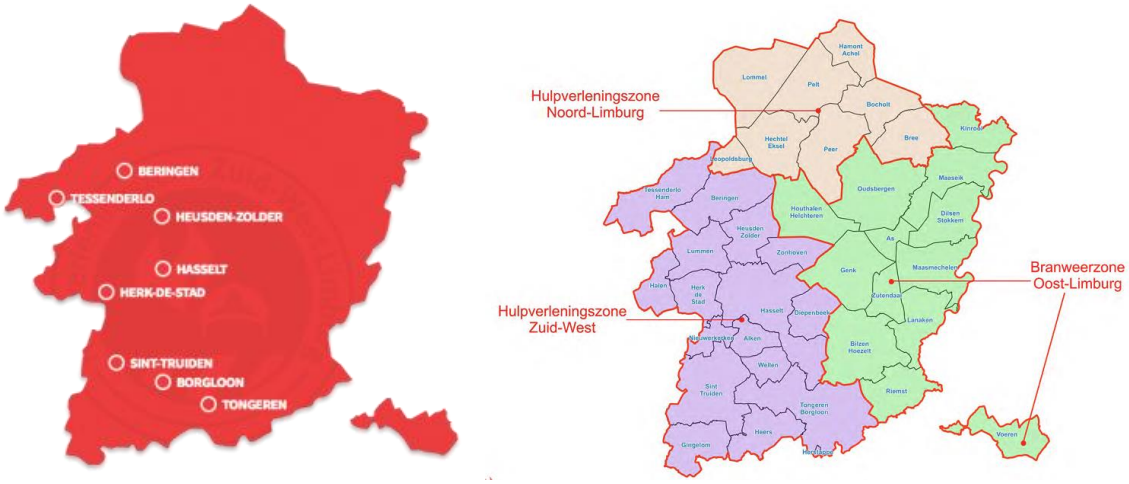

Figure 9 - Locations of the different fire stations & map of Limburg
(source: HVZ Zuid-West Limburg & Directorate-generale civil security)

Previously, each fire brigade, typically comprising one or two fire stations, independently handled several supportive tasks. A significant shift occurred following the reformation. Tasks such as maintaining SCBA apparatus or customizing and repairing fire trucks were centralized. This entailed departing from the previous model where numerous stations, many of them with limited full-time staff, undertook a diverse range of tasks. Business support activities like recruiting, accountancy and IT were done by the local municipalities.

In response to the upscale of fire brigades, tasks were strategically reassigned. Instead of each station managing a broad spectrum of responsibilities, a more centralized and intensified specialization was adopted. Stations were assigned new tasks, and while these were fewer in number, they came with a greater focus on depth and proficiency. This restructuring reflects a strategic response to the growing complexity of challenges in our contemporary world, demanding specialized expertise for effective solutions.

The operational services (both medical and fire/rescue) are the core business of the organization. Most companies only hire new employees when their overall workload is too much for the employee resources they have. This is vastly different when we look at fire and rescue services, due to the unpredictability of incidents. Explaining it with a strong statement: “without a fire, every firefighter on duty is a waste of money but when there is a fire, they’re worth all the money.”

The emergency rescue zone employs a total of 630 personnel, working in three main categories. The largest group is formed of volunteer firefighters and paramedics, totaling 450 individuals. Operating on a paid-on-call basis, they incur costs only when actively engaged. However, substantial investments are made in their training, which is essential to ensure adequate incident responding. Additionally, they actively take part in station duties alongside the career staff. This latter is a group of 125, they are assigned at one of eight fire stations with a majority in Hasselt, headquarters. Besides responding to emergency incidents, they are working on different tasks for the training department, logistics or fire prevention.

While operational firefighters are primarily known for their role in incident response, their responsibilities extend well beyond emergency situations. When not actively engaged in incident response, full-time (career) firefighters work on a wide range of supportive tasks that are essential to the day-to-day functioning of the organization. These tasks may include equipment maintenance, training, administrative duties, and logistical support.

As a result of this dual role, the number of staff dedicated exclusively to business support functions - such as IT, HR, and finance - is relatively small. This third group, composed of non-uniformed personnel, focuses on specialized or time-sensitive support activities that require dedicated expertise. Their work ensures continuity and efficiency in areas that support both operational readiness and organizational performance.

Within the emergency rescue zone, the medical department is providing 8 ambulances responding to medical emergencies. This department is an important part of the operational core, 24/7 well-trained emergency medical technicians (EMT) and paramedics are responsible for first-line medical care. The EMT's are mostly firefighters who have had extra specialized training for emergency responding. The paramedics are mostly nurses professionally employed in emergency care units of hospitals and working as volunteers in the fire and rescue services. These paramedics covers around 29% of total operational staff.

In the emergency rescue zone South-Western Limburg there are 4,4% non-uniformed employees for a total of around 630. 60% percent of these non-uniformed employees are female. Within the uniformed staff almost 80% is employed as volunteers. 89% percent of total operational staff is male. These numbers align with trends at the Belgian national level.

Management of the organization

An emergency rescue zone is governed by a board of directors, in the case of South-West Limburg consisting of the 17 mayors (19 before 2025, due to the merging of cities) who represent the municipalities protected by the region. Additionally, there is an executive committee. This committee consists of 9 mayors, selected from the group of 17, with attention to political balance. It is responsible for overviewing certain business operations, such as expenditure, within the boundaries of the predefined budget. The reason behind this close political connection is of course the provision of public goods to the company, mainly from municipal sources.

As illustrated in figure 10, the management committee operates directly beneath the executive committee and holds responsibility for day-to-day management tasks. The CEO of the fire region serves as the chief fire officer, appointed for a mandated term of six years. When participating in periodic meetings of both the board and committee, the CEO takes an advisory role. Within the management team, the CEO naturally assumes a leadership role.

Figure 10 - Top level of the organization

In the two years leading up to the reformation, a commission composed of chief fire officers from local fire departments played a key role in preparing and coordinating the necessary steps for the transition. The coordination of this effort was entrusted to the former chief fire officer of Hasselt, one of five local fire brigades. Subsequently, he officially assumed the role of CFO/CEO for the newly established organization, a position he still holds now.

The management team consists of senior fire chiefs responsible for one of the different departments or operational districts (geographically organized).

In figure 11 the organizational chart is further explained. As you can see this is a matrix structure combining five departments with three operational districts. The five departments are fire prevention, training, logistics, business operations and operations. This latter is the actual fire and rescue operations, medical services, dispatching and crisis management. The business operations department is mostly focused on human resources management, payroll and finance.

The three districts, which are part of the operations department, are organized geographically and named “West,” “Central,” and “South.” Every district has its own fire officers working within a department and within a geographical district. To simplify these fire officers can be considered being junior managers. The district chiefs are responsible for the integration of the work done by the different fire officers within the objectives of the different departments. As explained, the districts chiefs, together with the directors of a department and the CEO, are forming the management committee.

Whereas in the early years since the formation of the region South-Western Limburg the geographical organization was very explicit, this decreased over time. Fire officers were getting less tied to physical workplaces (their local fire station) and the need for specialization within the different units became more present than the need for a geography-based approach.

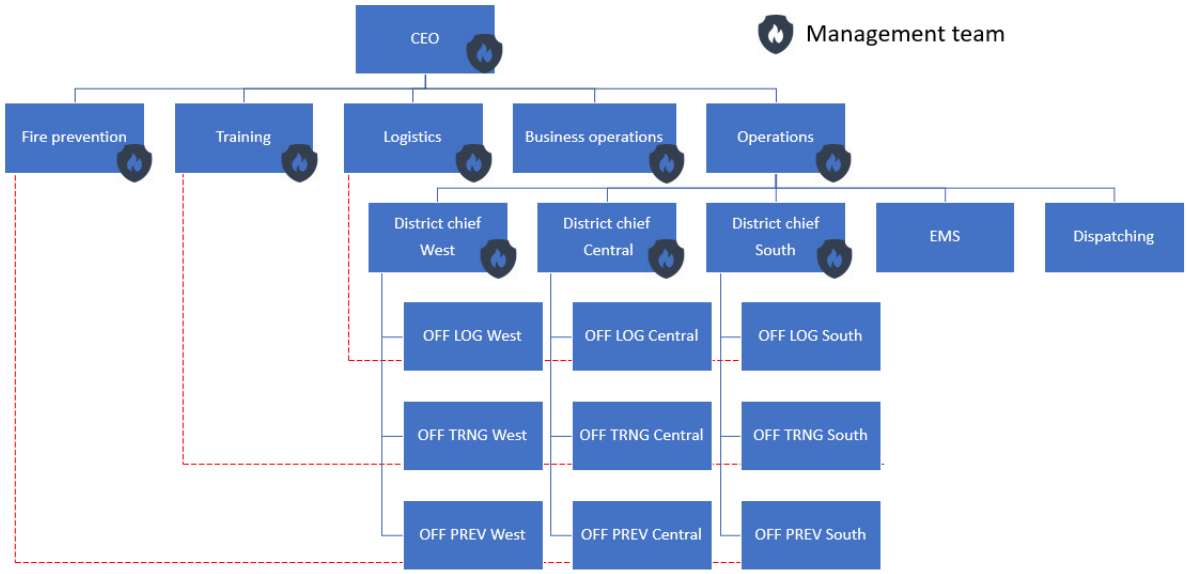

Figure 11 - Organizational chart

About the matrix structure at least some doubts can be expressed. First, being part of the definition of a matrix structure, there are several lines of authority: one coming from the departments (training, logistics or fire prevention) and simultaneously one coming from the operations department (district chiefs). In the matrix structure of the fire region most personnel are operational staff assigned to one

of eight fire stations and working under direct command of a petty officer. These petty officers are working under direct command of the district chief.

The district chiefs are acting as a manager and supervising the different stations in their district. The methods used for supervising and the organization of daily operations in the different fire stations is organized by the district chiefs as well.

Work groups

Besides the different departments, with their assigned responsibilities, there are various work groups. These work groups are composed of members from different fire stations with a diversity of functions. Each group focusses on a specific domain, predominantly linked to fire and rescue operations but not limited to them. They have expertise and concentrate on further developments, the elaboration of new techniques, testing new materials, and so on. The primary leadership role in these working groups is held by a petty officer who acts as the chairperson. There is always an officer who supervises the working group, for most groups a junior officer. Examples of these work groups are technical rescue, rescue divers and physical training.

Table 1 illustrates the organizational structure. The first two columns represent, respectively, the departments responsible for non-operational tasks and the districts in charge of operational activities and overall integration. The third column shows the workgroups, which consist of members from across the entire organization.

Departments (functional)	**Districts (geographical)**	**Workgroups (cross-organizational)**
Fire prevention	West	Firefighting
Training	Central	Technical rescue
Logistics	South	Rescue divers
Business operations		Rope rescue
Operations		Physical training
		HAZMAT

Table 1 - Different structures in the organization

Employment in the fire and rescue services

In this paragraph we focus on career (full-time) employees, after all volunteer staff is almost exclusively assigned to one fire station and focus on interventions and exercises. In operational shifts, they primarily focus on interventions as well.

The majority of the full-time staff is assigned to the operational core of the company and thus under the direct supervision of one of the district chiefs. A minority of the full-time staff is directly assigned to one of the departments, except for the thirty non-uniformed coworkers. Nevertheless, operational firefighters under command of a district chief still do some or even most of their tasks as designed by one of the heads of department.

A search for efficiency: In most companies, the primary objective of the operational core is clearly defined: production - whether of goods or services. The role of support services is to enable and optimize this production process. Interruptions due to maintenance or training are generally avoided to maintain output. In contrast, within an emergency rescue zone, the core mission is to respond to

emergencies. Since incidents are unpredictable by nature, a sufficient number of operational personnel (uniformed staff) must always be available to respond effectively when needed. However, this readiness is often misunderstood. Professional firefighters typically spend only 10% to 30% of their working hours on actual incident response. As a result, a significant portion of their time may appear underutilized. To enhance efficiency without compromising the primary goal of effective emergency response, many support tasks are assigned to uniformed personnel within the operational core. This approach ensures that their availability for emergencies is preserved while maximizing their contribution during non-critical periods.

The decentralization of the workforce due to the need for low respond times combined with the assignment of supportive tasks to uniformed personnel creates the need for a matrix structure.

Caused by the allocation of tasks over the eight locations (fire stations), there is an increase in horizontalization of the work division. Every station has a petty officer acting as a local manager. As the eight fire stations in the region of South-Western Limburg are staffed with personnel going from three up to eighty, there is a broad range in horizontal work division. The more people working in a station, the fewer the variety of tasks done as an individual and the lower the individual autonomy. However a military structure with ranks would suggest a high vertical division of work, this is very much to nuance in daily work done by the operational core. Coworkers in the operational core are getting tasks from within the operations department as well as from other departments. On both sides there are not necessarily much hierarchical layers in between.

In practice: *a firefighter who is performing tasks within the training department as a main part of his daily work, has a direct link to this training department collaborating with a junior chief or directly to the chief of department. For the daily routines, like planning or the organization of the daily controls and maintenance, this firefighter is working together with the petty officer who is supervised by the district chief.*

Decision making process

The organization has a centralization of the decision making for regulations and work procedures. All activities in a fire region are, in the end, meant to serve the incident responding. It is extremely important all actors are working together as a team to reach their objectives in stressful situations where people's lives are at stake.

Despite working in different fire stations and doing different tasks on scene, the cooperation must run smoothly. This centralization of decision-making is about the general orientations of the organization and the use of resources. For many tasks, not limited to incident-responding, the standardization of outcomes is used. Overall, we can conclude the organization knows a controlled decentralization, but in defining regulations which are having direct impact for the core business, a strong centralization is applied. The decision making on incident responding explains the combination of centralization and decentralization very practically. Within the framework of regulations and procedures, when responding to an incident the incident commander ("IC," depending on the level of incident going from firefighter to officer) is working with a full focus on the outcome. Within the (broad) range of possible work methods the incident commander must choose what fits best to reach the objective, saving life and property and taking away potential risks.

Ranks in the fire and rescue service

Within the operational core, firefighters operate under the direct command of petty officers (commonly known as "sergeants" or "adjutants"), very alike the military rank structure. These petty

officers are responsible for assigning daily tasks and overseeing operations on a day-to-day basis. While the military-ranked structure is very hierarchical on paper and strictly employed during (critical) incidents, daily work supervision and regulation is much more dependent on the assigned functions instead of the strict use of ranks. The term “middle-management” is used for a broad range of management levels, in this rank-based context middle-management is frequently used to refer to the petty officers. They are the most important bridge between strategic decisions and day-to-day operations, supported and supervised by the district chiefs with the assistance of the fire officers (junior managers). To facilitate a better comparison with the academic research middle-management will be used to cover both fire officers (junior managers) and district chiefs instead!

Figure 12 illustrates the hierarchical chain of command organized by ranks, where OFF4 (colonel) occupies the top position as part of the strategic apex. The orange-colored segments represent the petty officers, serving as first-line supervisors or team leaders.

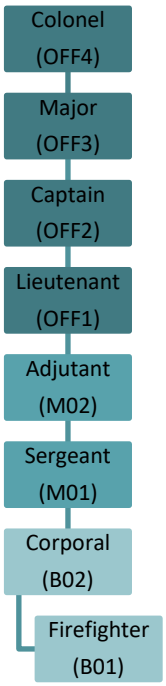

Figure 12 - Chain of command, ranks in the FD

Culture of the FRS

In addition to detailing the organizational structure and the company’s internal work, it is crucial to highlight the distinctive culture of the fire department, which centers around responding to incidents driven by a profound social motivation. While classifying it merely as a missionary organization (Mintzberg, 1989) would be an oversimplification of the matter, there are parallels, particularly in the evolution of traditions and a robust ideological identification. Originating primarily as volunteer-based entities, a characteristic still prevalent in the entire region, this historical foundation is not surprising. The primary allure for volunteers lies in the esteemed social status associated with being a heroic firefighter, contributing social value alongside their daily professions as, for example, clerks or accountants.

An important sidenote however is the difference between the career firefighter (full-time/professional) and the volunteer firefighter. The former is, depending on the actual function performing, only spending 10 to 30% of its time directly on responding to incidents. Volunteer firefighters are, besides training and station duties, paid on-call. Their focus is almost full set on

operational activities, in this context responding to incidents. While having earlier experience as a volunteer firefighter is still the main reason candidates apply for a job as career firefighter, such earlier experience is – in and of itself – insufficient for well-functioning as a fulltime professional firefighter on a long-term basis.

What is voluntary?

According to the most recent numbers of 2022 from the directorate-general of civil security, in Belgium there is a total operational staff of 18,822, including 1710 medical. Within 17,112 firefighters, 61% are volunteers and 39% are career firefighters. Taking the medical staff into account this percentage rises, and when leaving out the major cities numbers rise to 80%. It is clear fire departments are strongly dependent on volunteers for their operations.

To figure out to what amount this terminology of voluntary is right, we can make a short comparison on a national level. Compared to similar public service (alike) organizations like police departments, the military or hospitals, volunteers within the fire department are subject to much more expectations in terms of training and daily effort. They, however, get a salary based on the number of activities done. Volunteers in police departments are only doing specific, defined tasks like burglary prevention and are receiving (except for their expenses) no salary. It is an engagement in social responsibility without many obligations. In the Belgian military people are hired as reservists to do specific tasks based on their professional careers and maintain a minimum operational military level. These people have different jobs and during the military training they are paid. Obligations are very limited in time to spend. Finally, there are volunteers working in hospitals, these volunteers are mostly doing basic care tasks and are paid only a very low compensation, mostly for their expenses made.

To conclude, within the national context, volunteer firefighters within emergency rescue zones can be considered as freelance employees with considerable requirements on training, expected availability and performance.

Training and personal development

Emergency rescue zones in Belgium are committed to ensure their personnel is highly trained and prepared to respond effectively to emergencies. Training is a cornerstone of their operations, encompassing both foundational and advanced learning tailored to the diverse challenges firefighters face. Belgian Federal legislation (mainly by the Royal Decree of February 26, 2014) mandates that every firefighter completes:

- 24 hours of permanent training annually: this training focuses on maintaining and refreshing existing knowledge and skills, ensuring readiness for routine and complex operations.
- 24 hours of advanced Training annually (on average over 5 years): aimed at developing new techniques and skills, this training prepares firefighters for evolving risks and innovative rescue methods.

Except for the permanent training, most of the training is conducted at regional fire academies, such as “PLOT” in Limburg, which offers specialized facilities and extensive training programs. These centers provide both theoretical knowledge and hands-on practical training, including live fire simulations, vehicle extrication, and hazardous materials (HAZMAT) handling. A very broad range of different potential incidents leads to a broad skillset but creates a need for specialized teams like rescue divers, high rise rescue or HAZMAT teams. They undergo additional hours of intensive training tailored to their expertise adding many additional hours per specialization. For most specialized functions a certificate from the official fire academies is required. Table 2 gives an overview of the minimum training required. This is based on local and national regulations.

	Yearly training	Certificate
Yearly (basic)	24h	-
Average advanced	24h	-
Rope Rescue	12h	120h
HAZMAT	06h	24h
Rescue diver	12h	108h
EMT	24h	120h
Driver (engineer)	10h	-
Dispatcher	12h	-
Technical rescue	12h	-
Team HAZMAT meas.	08h	40h

Table 2 - Mandatory training for specialized teams (source: Royal Decree 26/02/2014)

Operationally, the military rank structure is also applied to exercise levels of command, with each rank requiring a comprehensive training program to be completed. All these rank-based certificates are set up in programs in the regional fire academies. Rather unusual, especially when compared to similar organizations, is the possibility to do a course for a higher rank, without taking on a promotion exam. There are limitations, however, it is only allowed taking courses to a maximum of two steps above your own rank. This possibility of "higher rank" education gives opportunities to deepen and broaden your knowledge but meanwhile gives a risk of expectations which may never be fulfilled. A promotion exam is still needed, despite succeeding in a higher-rank course. Table 3 provides a simplified overview of the rank-based courses. This is based on national legislation.

Certificate (rank)		
	Theoretical courses	Practical courses
B01 (obligated minimum)	82h	158h
B02	16h	14h
M01	100h	130h
M02	24h	16h
OFF1	70h	34h
OFF2	372h	376h
OFF3	270h	30h
OFF4	120h	100h

Table 3 - Mandatory training for rank-based courses (source: Royal Decree 26/02/2014)

To summarize, emergency rescue zones in Belgium prioritize continuous and advanced training for firefighters, as mandated by federal law. Each firefighter must complete 24 hours of annual permanent training and an average of 24 hours of advanced training per year over five years. Specialized roles, such as rescue diver, HAZMAT, or EMT, require additional certified training hours. Training is primarily conducted at regional academies like PLOT in Limburg, offering both theoretical and practical instruction.

A military-style rank structure governs operational command, with each rank requiring specific training programs. Notably, personnel may follow higher-rank courses (up to two levels above their current rank) without immediate promotion, additional exams are still required for advancement. Over a 40-year career, a firefighter with a mid-level rank and two specializations may accumulate around 4,500 hours of training, equivalent to nearly 600 full-time working days. Training is a fundamental pillar of the Belgian fire and rescue services, ensuring personnel are always prepared for diverse emergency scenarios.

After the literature review on organizational ambidexterity, insights were gained into a wide range of aspects relevant to pursuing an ambidextrous organization. The fact that emergency rescue zones are both high reliability organizations and public service organizations was taken into account and explained. Additionally, an extensive explanation was provided about the functioning of the Belgian fire and rescue services, with a particular focus on the emergency rescue zone South-West Limburg. This included an overview of its history and the transition to a regional fire service over the past 10 years.

To further investigate which human factors related to ambidexterity were actually important during that reform, a qualitative study was conducted within the author's organization, the emergency rescue zone South-West Limburg. In the upcoming section, the methodology used for this qualitative study is described more in detail.

Methodology

Methodology

Research question: *"How have key human factors both shaped and been shaped by the reformation of fire and rescue services in Belgium over the past decade? How can these insights be used to foster innovation while maintaining critical standard operations, that is, achieving organizational ambidexterity?"*

By determining these key human factors, this thesis provides a framework for fire and rescue services aiming to become ambidextrous, offering practical recommendations.

Research design

An abductive approach within an interpretative philosophy was used, applied in a retrospective way on the case-study of 10 years of reformation of emergency rescue zones in Belgium starting in 2015. Inspired by Murphy, Huybrechts and Lambrechts (2019) the interviews were conducted based on the grounded theory approach (Charmaz, 2006; Glaser & Strauss, 2017). With this approach we aim on using abductive reasoning to let theory emerge from the data collected and using an iterative process. Data collection and analysis is done simultaneously, which allows us to refine the focus when patterns and themes emerge.

Information on the internal organization of the focus company is predominantly coming from primary sources of information whereas the explanation is built on academic work being secondary sources of information. To summarize the used methodology, an adaption of the "research onion" as developed by Saunders et al. (2018) is showed in figure 13.

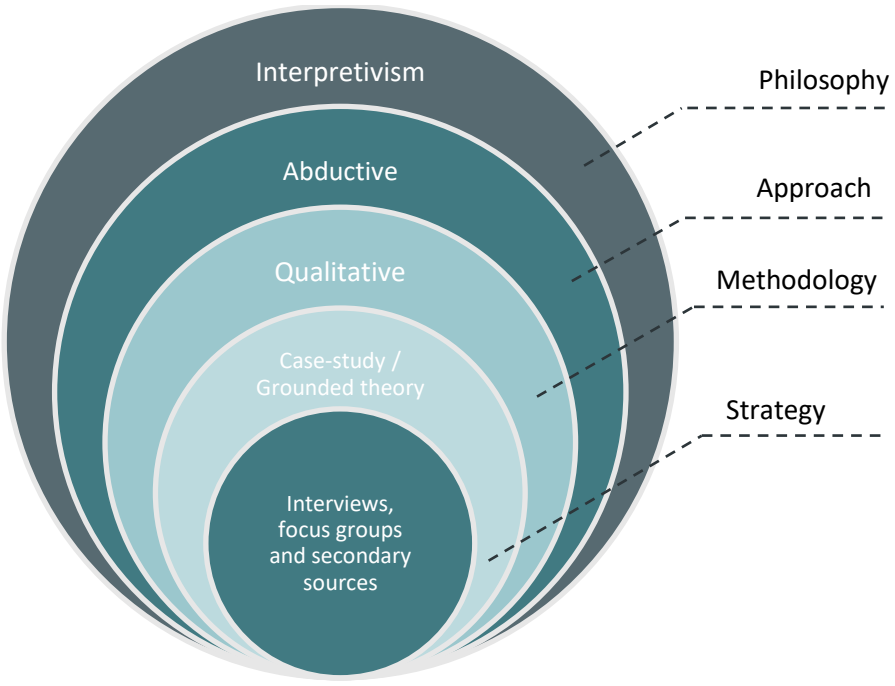

Figure 13 - The research onion (source: Saunders et al. (2018) – author's adaptation)

After the selection of participants, the first in-depth individual interviews were conducted. After conducting the first four, a shift towards focus groups was made. There was no strictly predefined minimum number of participants for the individual interviews, however the first four where purposively chosen to maximize diversity, both in rank and station assigned to.

Setting

The study was conducted in the emergency rescue zone South-Western Limburg. As one of thirty-four zones in Belgium it is covering seventeen municipalities in the province of Limburg over an area of almost 1000 square kilometers and a total of 412,000 inhabitants. There are 8 fire stations, spread over the area protected, working together for all business operations.

The fire region employs a total of 630 personnel, working in three main categories. The largest group is comprised of volunteer firefighters and paramedics, totaling 450 individuals, operating on a paid-on-call basis. Full-time (career) firefighters are comprising a group of 125 colleagues, they are assigned at one of eight fire stations with a majority in Hasselt, headquarters. Besides responding to emergency incidents, they are working on different tasks for the training department, logistics or fire prevention.

Given the dual responsibilities of operational tasks and on-call duty for incident response handled by the operational staff, the third and final group—overhead personnel—is relatively modest in size. There are thirty non-uniformed staff members working in administrative services like IT, HR and finance.

Selection of participants

Participants were recruited purposively by the author who is also a member of the fire region South-Western Limburg where the study was performed. In a first step, participants were informed about the aim and method of the study by the author, after which informed consent was obtained.

Participants were recruited on theoretical grounds, based on the following inclusion criteria: (i) aged between 23 and 65 years, (ii) employed as career firefighters within the South-Western Limburg fire region, and (iii) a minimum of five years of work experience in the South-Western Limburg fire region. Participants with less than five years of work experience in the fire region were excluded, as they were deemed to have limited insight into the reformation process of the fire region and were primarily focused on training and education during their initial five years of employment. This explains the minimum age of 23 years, which is 5 years from the minimum age for firefighters (18 years).

As explained, initially only career firefighters were selected for the individual interviews. However, volunteers are the majority of the employees (about 80%), their focus is much less on daily operations and almost full-on incident responding and training. At a later stage, volunteers were incorporated into the focus groups to enhance data richness.

Medical staff is excluded due to the fact that they all operate on a voluntary basis. This exclusion is justifiable, as they are deployed for a very specific task. Even much more than volunteer firefighters. Their focus lies almost exclusively on staffing ambulances for emergency medical services.

Another exclusion criterion was employment as non-uniformed personnel within business support units. Due to the nature of their specific tasks, the working environment for non-uniformed personnel differs significantly from that of uniformed staff. They do not combine both incident response and daily work and for them both workplace and management is centralized in the organization’s headquarters. Additionally, most of them only began working in the zone after the initial years of the reform and are therefore likely to have a limited understanding of the changes resulting from the reform.

Finally, people participating in a trajectory for a promotion in the actual year are excluded because of the hierarchical role of the author and the potential interference of their trajectory to the openness in interviews.

There are 3 types of fire stations that are determined; participants assigned to those different types are selected.

- Type 1: volunteer station, only very little professional firefighters for daily operations

- Type 2: mixed station, limited staff of professional firefighters during day hours
- Type 3: station 24/7 staffed with professional firefighters – volunteers in support

Participants from all three types of fire stations were selected. Almost all had worked at different stations in recent years or were still doing so at the time of the study. The sample included employees across various rank levels, including firefighters/corporals, petty officers, and officers. Participant details can be found in the appendices.

Author's own context (reflexivity)

Within the organization before and during the reformation process till this moment, the author had a very active role in the change process. On an organizational level this involves activities like determining new structures, processes and corporate rules needed to create one new organization out of the five existing. As a leader there was a focus on change management and organizational culture change. There is a risk of making several assumptions due to the high level of involvement.

Additionally, due to the position as a fire officer in a hierarchical rank-based organization it is particularly important to create a culture of openness and clearness about this research during the interviews.

Execution of interviews and initiating focus groups

As explained, the data collection initially started by conducting semi-structured individual interviews, the interview guide used can be found in the appendices. The interviews started with an open question as an icebreaker and to prevent steering directly towards a specific theme. All interviews were done in one of the fire stations where the interviewee was employed and in a meeting room, separated from the operational activities. All participants have been invited in person by the author explaining the research' objectives and had the option to agree or disagree on participating.

Transcriptions of the interviews are made and used for interview data analysis. The data are available on request from the author. The data is not publicly available due to privacy concerns.

The first four participants were purposively chosen to maximize diversity, both in rank and station assigned to. Analyzing these first four interviews in the synthesis document several similarities and differences came to mind. Main topics already emerged clearly from these individual interviews, but there was a need for deepening these topics.

Instead of conducting more interviews in addition two focus groups where selected to deepen the preliminary findings from the interviews by interactions between participants. One focus group was composed of firefighters/corporals and one with petty officers. For the analysis of the focus groups a transcription and coding was done, comparable to the one-on-one interviews.

A total of fourteen participants were included in this research, mostly between 36 and 46 years old. There is an equal representation of the different types of fire stations, several of the participants are working in more than one. Most of the participants are career firefighters, but almost all of them have been employed as volunteers before. Two volunteers where purposely added for enrichment. Table 4 gives an overview of all participants.

Both focus group meetings started with an informal moment to create an open and collaborative atmosphere. The themes emerged from the interviews were used as a guidance for the focus groups, without strictly limiting the space for input. Although modesty is certainly appropriate here, an effort was made to use an appreciative inquiry approach in order to keep the energy level and interaction high both in individual interviews and focus groups.

Quality assurance

There is a potential risk for a lack of research triangulation due to the fact there was only one researcher involved in both conducting and analyzing the interviews. The reason is due to the integration of this dissertation within an MBA course. Collecting data from within different groups in the organization studied this risk should be lowered. After the first interview an in-depth reflection with an experienced researcher in qualitative academic research was conducted to decrease personal bias and the risk of research triangulation.

	Characteristics of the participants	n=14
Gender	Male	*14*
	Female	*0*
Age	18-35	*5*
	36-46	*7*
	47-57	*1*
	58-68	*1*
Station type	1 (voluntary)	*7*
	2 (mixed)	*6*
	3 (fulltime)	*8*
	Several participants are active in more than one fire station, causing more than 14 (n) in total.	
Rank	FF/Corporal	*6*
	Sergeant/Adjutant	*7*
	Captain	*1*
Employment	Volunteer	*2*
	Career	*12*

Table 4 - Characteristics of all interviewees (individual and focus group participants)

Coding

The transcription of each interview was done automatically with an online tool called “Transkriptor”. After processing the transcription an initial coding was done for each interview separately, this coding was intensive by nature as all lines of data were used in the coding process. The same application for transcription was used for the focus groups as well. Figure 14 gives an example of this coding.

I2: Ik zit hier natuurlijk met een deel vrijwilligers, waar ik ook oefeningen geef. Bij hen merk ik dat er toch vooral ook veel herhaling nodig is. Je merkt bij de beroeps dat er soms wel verbreding tussen zit, maar ook niet voor iedereen. Ik heb het ook altijd heel moeilijk gevonden om te zeggen van je moet een oefening geven die voor iedereen moet dienen. Maar Jan die twee maanden bij de brandweer zijn en Jef die twintig jaar bij de brandweer is, het is een beetje dezelfde oefening. Je kunt het dan wel iets uitdagender doen. Ja, eigenlijk moet toch wel iedereen zijn dingen hebben.	Bij vrijwilligers is er vooral nood aan veel herhaling op te merken bij oefeningen. Bij beroeps kan er verbreding zitten in de oefeningen, maar ook niet voor iedereen. Ik vind het moeilijk om eenzelfde oefening te geven voor iemand met heel veel en heel weinig ervaring tegelijk.

Figure 14 - Example of coding

Comparing the coding of all conducted interviews and focus groups led to a breakdown in several themes in a synthesis document. Figure 15 illustrates these main themes and examples of first-order categories (raw data) leading to the originating. These five main themes (second-order categories) are used for structuring the findings in the next section, illustrated by quotes from individual interviewees and focus groups.

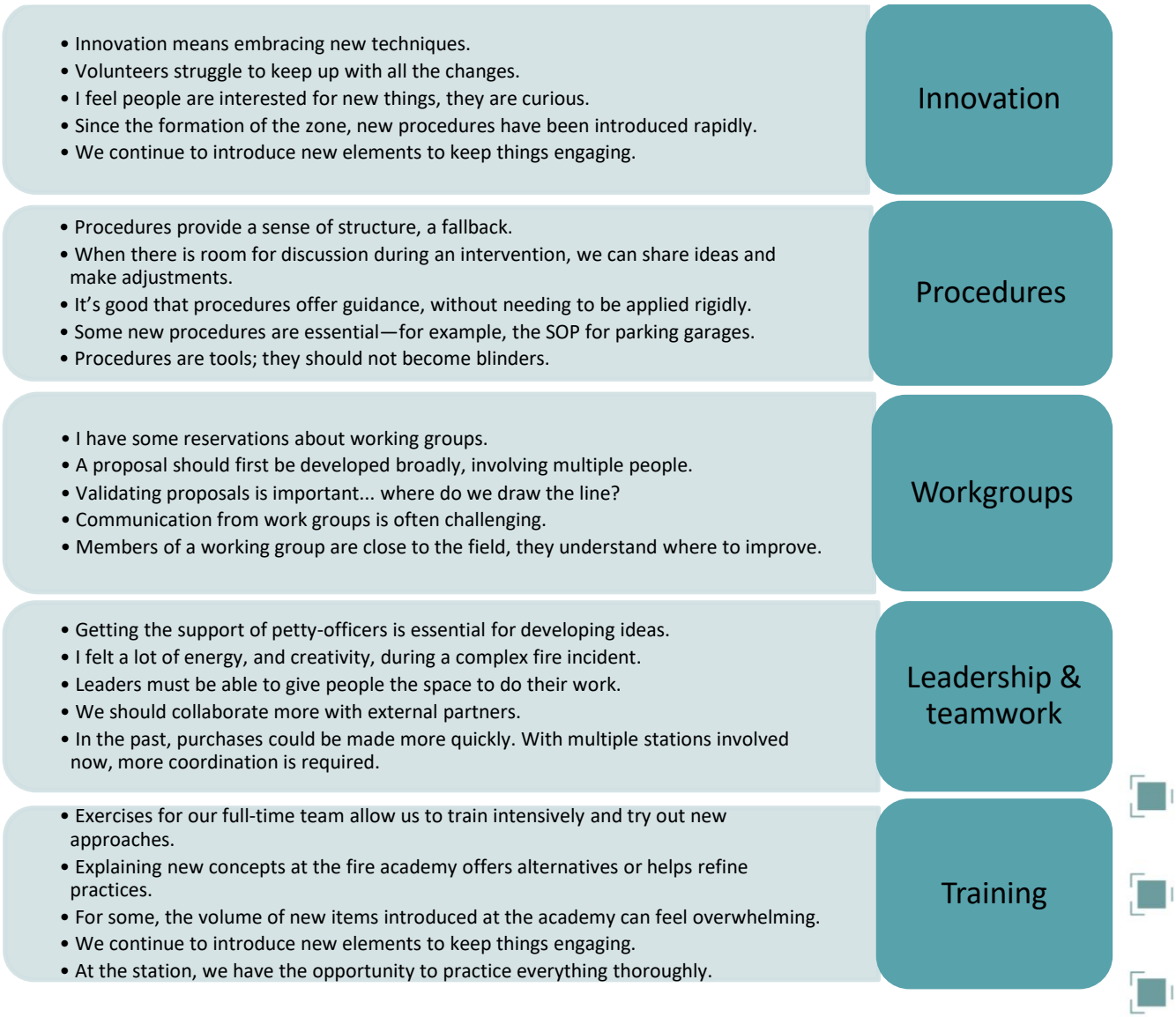

Figure 15 - From first order coding to second order categories

After conducting the qualitative research by individual in-depth interviews and focus groups, findings are extracted. The five main themes emerged from the analysis of data, as earlier described, is further used for structuring the findings, despite the strong interconnection between these themes.

Findings

Findings

Innovation

Innovation is an evitable key part of this study. Overall, participants expressed enthusiasm for new ideas surrounding them. All levels of participants (from firefighters to officers) experience low barriers in getting their colleagues aboard for innovation or new ideas. Some resistance and criticism exist but participants predominantly see enthusiasm and a will for fast adoption. Participants feel they have many opportunities to innovate and develop ideas.

- Participant 1: “Firefighters involve others in an early stage, often ideas are already designed to a certain extend on the operational level. Even before going to a team-leader which can further facilitate.”

Due to **regulations** on purchasing goods with public money, these processes are time-consuming and give burden to innovative initiatives. This is not mentioned as a real issue, but is seen as a potential brake on enthusiasm, participant 5 explains these regulations are “time-consuming and sometimes energy-breakers for new ideas”, whereas participant 3 give nuances: “you need to give an explanation for when asking for financial resources and it takes some time, but I feel our region is open-minded for new ideas or test projects”. Participants experienced **drivers for innovation** both internally and externally within the organization. As participant 3 noted: “Federal taskforces are often already engaged in exploring new developments, which also serves as a clear driving force.”

These external drivers for innovation are mainly from within a broad fire and rescue context, like federal taskforces, training centers or fire and rescue associations. There seems to be a shortage in utilizing knowledge from sources outside the (broad) fire and rescue services. This was indirectly noticeable because there was almost no discussion of external drivers from outside the fire and rescue context. Directly, participant 2 even explicitly said: “The upscaling gives a risk of not thinking outside anymore [outside the own organization], we assume we have to do everything on ourselves”. Volunteer firefighters, who work professionally across various organizations, can bridge this gap. Participant 9 explained, “There is a lot of knowledge outside the fire department that can be useful. Volunteers sometimes function as internal experts from outside.”

The reformation process has accelerated innovation. Participant 11 shared an internal perspective: “I experience many more opportunities for innovation than before. There was less attention to it… but above all, you often lived in a very small world, that of your own station.” Participant 3 elaborated on the organizational structure: “Before the reformation, the fire department was part of the municipality but was very atypical in this administrative structure. The fire region is now much more organized around incident response.”

With upscaling, certain risks have been identified. The **flow of information**, both top-down and bottom-up, has become more complex. The upscaling led to less direct contact with all coworkers and developing or testing new ideas now require more consultation due to the larger group impacted. Understanding the ‘why’ behind new implementations is crucial. Once people grasp the advantages, they adopt changes more easily. This necessitates more consultation and time in the preparatory phase, involving more colleagues, which ultimately reduces the implementation period (both in time and energy).

Three key factors are putting **pressure on volunteers**, which seems to have a relation to their willingness to improve or for innovation: the numerous changes from the reformation process, the high demand for a broad skillset, and the perceived stricter regulations.

- The reformation process has led to more procedures and regulations to ensure seamless integration of different fire stations and the merging of five organizations into one. Participant 11 highlighted this, saying, “The formation to a region has caused a lot of change, which is logical. You start from eight different worlds to create one new world.”
- Volunteers perform the same operational tasks as career firefighters and thus require the same broad skillset. Regular training is crucial for incidents that rarely occur. Combined with a broad range of essential skills while having limited time, this results in much energy in repetition at the expense of trying new tactics, methods or tools.
- Due to stricter regulations, the perceived number of obligations is higher than before the reformation. Although the actual training requirements or duty hours have not necessarily increased, the intensified and more formal follow-up has led to a perception of increased obligations among volunteers.

The wording “perceived” is used explicitly here as there was a broad consensus in the focus groups while discussing the obligations. Participant 7 said: "It is the perception of having to do something that sometimes puts pressure on the motivation and enthusiasm of volunteers, I specifically say perception because it often turns out that the efforts are not greater than before. The mental aspect, where it is mainly seen as obligations, perhaps plays too big a role."

There is a strong nuance regarding volunteers, as participants described a broad typology. Several volunteers work professionally in similar areas (e.g., airport fire service or fire academy) or work as career firefighters in different emergency rescue zones. Some other volunteers spend a significant amount of time in fire and rescue services, performing station duties, providing training or doing designated tasks. Where these three key factors are clearly identified, it is thus important to say this is not only applicable to volunteers and neither to all of them in the same amount. Overall, this pressure can be considered to be existing for a broad range of firefighters, much more impacting volunteers combining the fire service with a fulltime job outside the broader fire and rescue context. Participants feel this reinforces resistance to change and, consequently, to improvements or innovation.

Finally, **communication** about new procedures, equipment, or techniques is experienced as particularly challenging. This communication occurs through emails, newsletters, training events, meetings, ... It often takes too long to reach everyone and varies in speed. Expectations differ greatly depending on who is asked, without a clear link to function, employment, age, or other factors. Participant 7 expressed frustration with this challenge, saying: “It is almost impossible to always communicate well. If you send too much information, people don't read it. If you send things too often, they find it a burden.”

Leadership and teamwork

The second main theme emerged from the analysis is leadership and teamwork. Participants indicate the **vital role officers and petty officers** play in facilitating the development of new ideas, this is not perceived as a hindrance in general. Leadership and organizational culture are experienced as strongly interconnected. Petty-officers in fire stations can strongly cultivate or complicate changes and initiatives. According to participant 6 “the culture of a station plays a major role in facilitating new ideas, a learning environment or evolution… This is depending mostly on only a few key persons, both positively and negatively”. Times are experienced as changing, due to several reasons like the exchange of people over different stations, new colleagues or because there are several initiatives on a regional level like workgroups or project teams. There are different experiences mostly depending on the fire station and its historical culture. Changes are expected to continue, and participants see this as a

decreasing issue over time. The role of officers is more located at workgroups, which will be discussed as a separate theme.

Job rotation is valuable for collaboration and knowledge sharing, there are several examples from participants as many of them have changed from one fire station to another over the years or made changes in their roles in the organization. Besides job rotation, the operational function on incident responding is flexible by nature, depending on both incident-type and vehicle you're staffing. This can be too much either, as participant 6 explained: "*…this is certainly experienced, but there can be too much of a good thing. You need to be able to trust and get used to each other, both during interventions and outside of them. For this, you need to know what people's competencies are; too many changes put this at risk*". Finally, participants point out that opportunities for job rotation created by the organization is experienced as very positive and along with natural changes this happens frequently enough. An additional obligatory rotation of staff could create negative results, originated by a resistance to change.

The main objective of the fire and rescue services is to respond to incidents. **Complex incidents** where one can truly make a difference through knowledge and teamwork are clearly key motivators. This was a very striking element as independently and very clearly said by all individual participants in a spontaneous way and so for both focus groups.

- Participant 4: "A fire like xxx [*anonymized*] gave me energy for two weeks, and I felt the same when talking to colleagues… It triggered my drive to improve and the interaction with others afterwards initiated a new idea we are currently working on".
- Participant 1: "It is a while ago, where we were confronted with a fire and due to several incidents at the same time, we had to start the intervention with only one engine. It was a complex fire, for sure with a small team, we really did a great job there… With only a few words everyone knew what was expected, it was tough work, but it went well. This example is subject of pride in our team".
- Participant 14: "Interventions are generally the number one motivator; I feel it this way without any doubt".

Procedures

When responding to these complex incidents, **procedures served as support**. But only as a helpful guideline, not a strict order. This always led to a certain amount of improvising without taking intolerable risks. Participants had a strong opinion on this use of procedures as a guideline and not a strict order to follow. In particular, they can be useful when working with a team which hasn't worked together a lot (I), when responding to very complex or unusual incidents (II) or when people don't feel very experienced (III). There was a general consensus on these three main reasons. When procedures are used too strictly, people feel they will be unproductive. There are not two fire and rescue operations considered to be the same and it is more important to work with general objectives. For operations with risks, team effort is experienced to be crucial. The next three quotes illustrate the findings:

- Participant 10: "Procedures are indeed support. The better you know your job, the less you need the procedures, in a way. Sometimes they go too far, or the focus is wrong: for example, which foot you should step into a HAZMAT-suit first, this is not useful. Exams or tests are sometimes based on these details, which is complete nonsense."
- Participant 3: "Procedures are tools, they should not function as blinders."
- Participant 11: "It cannot be the intention that procedures are applied so strictly that a 'mistake' by one is not caught by another."

In addition to complex incident response, **After Action Reviews (AARs)** for these incidents have become key drivers for new ideas and techniques. AARs range from immediate hot debriefings after an incident to extensive in-class training sessions based on lessons learned. Over the years, AARs have evolved into genuine learning opportunities characterized by a calm and constructive atmosphere, a significant shift from the more judgmental approach of earlier years. Team leaders (petty-officers) appreciate the opportunity to spar with and receive support from senior leaders (petty-officers and officers) in developing ideas and learning from interventions.

- Participant 13: “There has been an increase in After Action Reviews over the years, which is very valuable. We experience that this can be done calmly and constructively, without it seeming burdensome. The process afterwards is not clear, there is certainly much to be gained in further knowledge sharing, this currently mainly happens based on individual ad-hoc initiatives."

This last sentence in participant 13’s explanation is an important notice, emphasized by other participants. Despite their usefulness, the insights gained from AARs are often not widely disseminated within the organization. Participants find it challenging to identify effective methods for leveraging these insights on a larger scale.

Workgroups

As already explained in the context of the emergency rescue zone studied, besides the different departments with their assigned responsibilities, there are various working groups. These working groups are composed of members from different fire stations with a diversity of functions. Each group focusses on a specific domain, predominantly linked to intervention operations. They possess expertise and concentrate on further developments, the elaboration of new techniques, testing new materials, and so on. The primary leadership role in these working groups is held by a non-commissioned officer who acts as the chairperson. There is always an officer who supervises the working group, for most groups a junior officer.

Findings reveal that participants consider these workgroups to be potentially very useful to do innovation, but their **composition and a good validation process** are of great importance. There is some criticism about how representative some workgroups are and how broad their playing field is. The chairman’s role is of major importance, leading to results originating in the workgroup but a potential bottleneck as well.

- Participant 6: “In an earlier composed workgroup I know, only ideas in line with the personal beliefs of the chairman did make chance to get implemented. This blocked several good initiatives, in an early stage but as well after a well performed research and test period”.

One participant pointed out the fact that, lately, in 2025, the appointment of a petty officer for each workgroup took place, accompanied by an officer who takes on a more supportive role. This is considered to be good practice to limit the risk of being too dependent on one person.

To make sure there is enough input from the field, workgroups should be close to it and have a good representation from the different fire stations. This should not limit the decentralized testing in different fire stations or teams but rather ensure involvement of a broad base of operational core.

Petty officers and officers are frequently consulted by firefighters with new ideas. Workgroups and their members provide **a framework for structural follow-up**. As participant 12 explained: “Workgroups are also a handy tool for referrals. I see this as a task for petty officers—to support

someone with an idea and refer them to the right person or workgroup. This way, an idea can be further developed in a structured manner."

Given their significant potential impact, management may exercise **strong supervision** over the workgroup. Participant 2 explains a validation of suggestions from workgroups to be important, "some ideas are unnecessary. New procedures for example, can go too far." Participant 10 adds to this: "… some matters are policy decisions. There can certainly be many opinions about them, but the crucial decision must be made at the management level".

Training

Within fire services, training is a crucial pillar that ensures necessary skills are maintained and further developed. Additionally, training linked to ranks or specializations is an important **source of developing new methods or tactics** based on insights from research, incident-analysis or others. Although it was already mentioned in the theme of innovation, it requires a separate section to delve deeper into it. A saying from participant 9 stipulates the essential role of training: "Some incidents occur so infrequently that you can only apply learnings from training much later." "In practice, you have partially forgotten the training by then, so to speak."

Despite the importance of training, there seem to be **many opportunities for improvement**. Participants indicate a difficult balance in keeping both experienced and new people interested, as well as between professionals and volunteers where this latter is nuanced as a certain part of the volunteers. As explained in the innovation-theme, the term "volunteer" is a too narrow description, several volunteers are in one way or another spending a lot of their time within a fire and rescue services context. The same nuance goes for age, where there is no clear gap between older and younger firefighters in training needs. A remark from participant 8 makes this clear:

- "… we do recognize the fact some volunteers are having difficulties… But one volunteer is not the same as another. There are volunteers who really are much more up to date with everything, but there are also others. This is certainly not always linked to age neither."

Participant 12 adds to this: "there are also professionals who sometimes struggle to keep up, although this is generally more limited." Finally, an important gap is mentioned based on how recently people have had fire school training, which is mostly limited to rank-based certification.

- Participant 5: "Sometimes there is resistance to new things because people feel insufficiently retrained. Newly trained firefighters graduate with much broader knowledge and new techniques, which creates tension with a group of people who have not had fire school training for a long time."

To **overcome these detected gaps**, some practical approaches have been used by participants themselves or known by them. One example is combining both experienced and new people to encourage mutual coaching. Another example is the separate exercises during station duty where you can train intensively and test new things more easily. While sufficient repetition is considered as important, not everyone always enjoys this. It is noted that the basic skills sometimes seem to be underemphasized.

In the fire and rescue service South-Western Limburg an **annual scenario training** at the official fire school is obligated for each operational member of the service. This training is an integrated exercise that best approximates a real-life situation and includes an assessment. There are opportunities for exploration as well, like **trying new techniques or equipment**. Overall, this annual training is

experienced as very useful and an evolution to a more learning environment is appreciated. With different wording from two participants:

- Participant 14: "… it is considered as very valuable, and the evolution is also seen positively. Learning is done in a constructive way, and there are opportunities to test new things."
- Participant 5: "… look, it's always the same story. Initially, we were somewhat reluctant, but on the day itself, it is intense, but we are having fun. Afterwards, we are satisfied and have learned new things."

There are some questions about this training. On the one hand, there is a desire for more challenges and on the other hand it is unclear whether the focus should be on learning or testing. The personal learning curve is sometimes experienced as too limited. A remarkable point made is the clear preference for training with your own team (colleagues who work in the same fire station). On a social level mixing different stations is experienced as valuable, but not for learning objectives. Participants are convinced learning to cooperate with others is much more valuable when doing it with those who will respond to incidents together. This is highlighted strongly by several participants.

After a literature study on organizational ambidexterity, additionally qualitative research was conducted within the emergency rescue zone South-Western Limburg. The extracted findings from this qualitative research is compared with the literature study in the next section.

This comparison provides nuanced answers to the stated research question.

A framework for use in practice in provided at the end of this section.

Discussion

Discussion

This work was conducted to analyze the first decade of reformation from local, municipal organized fire brigades to emergency rescue zones in Belgium. A strong focus on human aspects was set due to the fact an emergency rescue zone is a service-oriented organization, delivering their services through the workforce helping people in urgent need. We started with a literature study on organizational ambidexterity, followed by a findings session as a result of both individual interviews and focus groups. In this last section, a comparison is made between the existing literature and the findings to answer the research question:

"How have key human factors shaped and been shaped by the reformation of fire and rescue services in Belgium over the past decade? In what ways can these insights foster innovation while maintaining critical standard operations, that is, achieving organizational ambidexterity?"

Findings reveal several important key factors related to people management. First the fire and rescue services need to find a balance between formalization and flexibility. To foster innovation during training and operations, procedures should be a guidance rather than a strict order. However this approach on procedures is of major importance for the critical fire and rescue operations, it is not limited to operations only. A culture where overarching meta-rules provides guidance instead of using strict regulations needs a organization-wide approach.

Second, both exploitative and exploratory goals need to be promoted. A low barrier for learning in the organization and for working on potential opportunities for innovation need to be ensured. This includes feedback from incident responding, providing training and limit barriers to resources. The organization should include all employees in its ambition and create a culture of innovation while making sure the context of a high-reliability organization is ensured.

The third and last one is strongly interconnected with the second. Top-down and bottom-up inflow of knowledge is an essential need for ambidexterity which needs to be anchored. Workgroups comprised with employees from different levels, stations and with different backgrounds can provide a highly valuable framework for both innovation and exploitation. Their effectiveness is subject to improvement. Inflow of knowledge from outside the organization can be improved as well, but volunteers, though their main profession, can provide significant added value. The potential to profit from their unique position, operating both within and outside the organization, seems currently underused.

Before going more in-depth, first, an important aspect of organizational ambidexterity needs to be kept in mind. There are different approaches on how organizations should balance explorative and exploitative activities (Kassotaki, 2017, 2022; Turner et al., 2013; Tushman & O'Reilly, 2013). When using time and space there are four approaches to organizational ambidexterity. Time dimension is about the pursuit of both exploitation and exploration simultaneously or sequentially. The space dimension is whether exploitation and exploration are taking place within the same organizational unit or in different ones. Figure 16 shows space and time dimension, leading to four different approaches. The first approach is "structural" the second is "structural," the third is called "reciprocal" and the fourth "contextual."

For fire and rescue services a contextual approach (fourth approach) is most appropriate due to the specific matrix-structure, decentralized work force and operational staff doing supportive tasks. Things are getting clearer when focusing on the other approaches.

Where in the first approach (structural) different business units working on exploration or on exploitation, this does not seem to fit with the several organizational structures needed in the fire and rescue services. Structural ambidexterity is described as structurally independent units, each one having its own strategies, culture and structures (Kassotaki, 2017). Due to the presence of volunteers, the decentralization of (career) staff and the combination of operational core doing supportive tasks creating structural ambidexterity will be impossible. The reasons mentioned for why the first approach (structural approach) is not usable also apply to the second approach (reciprocal) making this not useful either. After all, sequential application of ambidexterity gives a need for units to only focus on exploration for a certain period of time. This would lead to a high impact at the expense of operational strength for incident responding. The cyclical (third) approach is even less relevant, the fire and rescue service is a high-reliability organization where critical incident responding as their major (overall) objective does not allow them to focus only on exploration during designated timeframes as a whole.

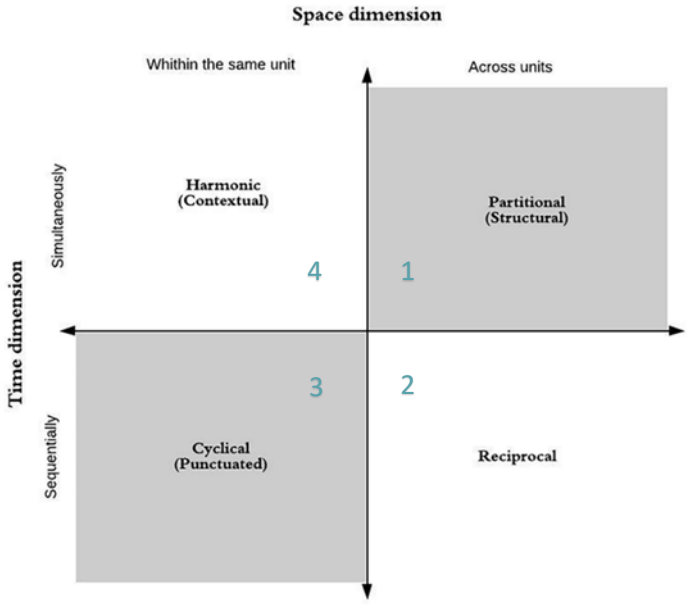

Figure 16 - Typology of organizational ambidexterity (Kassotaki, 2022) – author's adaptation

To conclude, the fire and rescue service of South-Western Limburg can achieve organizational ambidexterity within the contextual dimension.

Balance formalization with flexibility

The early years of the reformation there was a strong focus on exploitation at the expense of innovation. This is clearly driven by the need to integrate different fire brigades into one new organization (remember participant 11 saying: "…you start from eight different worlds to create one new world."). Especially in the last few years there has been an increasing combination of exploitation and exploration. It is striking how the focus on exploitation at the expense of innovation in the early years of the reformation is similar to what Dixon et al. (2007) defined. Dixon et al. (2007) declared that during the first stage of organizational change, an authoritarian management style is more appropriate to promote exploitation learning, whereas during the second stage, a more participatory management style is more appropriate to promote exploration learning. **It is important for a fire and rescue service to not stay stuck in the first stage at the expense of innovation.**

The presence of a number of essential business processes and activities that had to be initiated at the start of the reformation, such as payroll or an in-house accounting system explains the further formalization. This need for formalization of the managerial aspects of the organization gives a tension

when applied to fire and rescue operations. More overarching general rules which give a certain playing field to the responding teams is experienced important to act efficiently. The experienced margin for teams creates an atmosphere during training where innovation can emerge and further grow. As training is an essential part of firefighters' development this so-called margin is of great importance. There is an obvious difference between critical rescue operations and daily business operations, but a culture is created during all aspects of work. **A certain margin for following procedures and using them as guidance rather than strict orders.** This is aligning closely with the findings of Le Bris et al. (2019). An excessive focus on strictly following procedures appears to have negative effects on out-of-the-box thinking during incident-responding. In training, one can expect more reproduction and refinement, but less solution-oriented thinking and openness to alternative approaches. In a changing world, adaptability is crucial, and overly rigid thinking tends to be counterproductive.. For uncertainty, procedures can be helpful, which aligns with the useful usage in turbulent times as described by Gianzina and Paroutis (2025). But still, with some margin. The advantage of using meta-rules that define the framework within which objectives can be pursued becomes clearly apparent in this context.

Promote both exploitative and exploratory goals

Combining exploitation and exploration is in the definition of organizational ambidexterity. To encourage this combination, low barriers in both learning and exploration of potential innovative opportunities are important. Where the upscale of the fire and rescue services led to a more complex decision-making process, primarily due to the need for broader consultation, it has also created many new opportunities. By moving away from municipal structures, the organization is more structured to meet the needs of the fire service. Additionally, the scaling up also provides more opportunities. Certain investments, developments, or specializations were simply not possible in the smaller, local fire brigades.

Within the fire region South-Western Limburg people have experienced opportunities to work on innovation and they feel a willingness from their colleagues to do so as well. However, the difference between improvements and true innovation cannot always be clearly defined. This willingness to innovation can considered to be in contrast with earlier findings. Several studies have found in HROs the majority of workforce tends to pursue exploitative jobs. They prefer incremental improvements rather than revolutionizing them (Kraner, 2018; Levinthal & March 1993; Volberda, 1999). A reasonable explanation for the willingness to **stay open for innovation is the solution-driven mindset of firefighters**. Fire and rescue operations are time-critical, and procedures cannot foresee every possible situation, as explained before.

To make the advantages of a more tailor-made structure and the upscale beneficial for innovation, the fire and rescue service should foresee enough **flexibility in providing budgets for innovation**. This goes along with one of the key features of ambidexterity: the ability of the organization to reallocate assets and capabilities to address new threats and opportunities (O'Reilly & Tushman, 2011). Within a public service organization this can be a challenge, nowadays it is experienced as flexible and sufficient. This advantage should be kept and thoroughly watched. Regulations on expenses are time-consuming and give burden to test and further develop on new ideas.

As seen, operational success is a strong driver for motivation. It is known that quality of service depends very much on how employees feel involved, supported and appreciated (Babakus et al, 2003; McClean, E., & Collins, C. J., 2011) and thus motivated. But motivation as well is a stimulus to train intensively so that knowledge can be refined, or new methods can be developed. Within the fire and rescue services, a frequently used tool for better understanding and learning about critical incidents

are after-action reviews (AAR). Spending much energy and resources on understanding both problematic and successful activities to improve future operations is common in HROs (Jahn, Black; 2017). These AARs are a way to encourage communication and feedback between team members. Referring to the already mentioned awareness on vulnerability about speaking up in HROs, these ARR can be very useful. It can create a habit of appointing minor risks or mistakes to prevent them leading to major problems during future incident-responding. Retrospective discussions like AAR can play an important role in increasing HROs' reliability and supervisors (hierarchical role) are having a profound impact it (Scott et al., 2013). In the fire and rescue service **an intensified use of AARs and connecting them to workgroups** could be very useful. These workgroups can further develop the learned insights, involving participants of the incident in question. The experienced **positive evolution on openness and cooperative AARs is an important aspect** that fits to research on the mitigation of risks in hierarchical organizations (Blatt et al., 2006; Kraner, 2018; Weick & Sutcliffe, 2011). **This evolution should be fostered**. Petty-officers in particular, as team leaders, can play a key role for rather small incidents, so that potential issues are identified and addressed at an early stage.

Besides learning from incident-responding, training is experienced as one of the most crucial pillars in both exploitation and exploration. Especially exploration is much more done in training than in critical incidents, for obvious reasons. The certificate training courses in the fire academy are considered to be up-to-date and provide in a broad, well-founded skillset. There is a need to ensure people have enough opportunities to keep up to date over the years as well, even without taking on new certificate training. Where the yearly scenario training has overgone a positive evolution and creates opportunities for testing new equipment, procedures or tactics, the aspect of teamwork and differentiation based on skills and experience is subject to improvement. In-house training could differentiate thoroughly too, based on skills. Linking it to testing innovative methods and/or materials can provide significant exploration opportunities. To conclude, **training is essential for** fire and rescue services to ensure their **effectiveness on critical operations. The use for exploration is underused** in the fire academy as well as for in-house training. This detected opportunity for exploration in training activities is strongly **underexposed in existing literature.**

Provide top-down & bottom-up inflow of knowledge and prevent silo-thinking

Due to the scaling up, the top-down and bottom-up information flow has significantly changed and become less evident. **These information flows are considered to be of critical importance**. This is an exact key challenge for success in ambidexterity management defined by Kassotaki (2022), more specifically for the simultaneous pursuit of ambidexterity. Within the organization studied, leaders are considered to be key people. They can facilitate direct innovation by ensuring resources like budgets or time and more indirectly by creating a culture of continuous improvement, advanced training opportunities and sufficient margin for input during incident responding. Petty-officers can greatly improve the flow by actively working on projects with their team members. They can link the right skills with project teams, workgroups, or training activities. Officers are particularly well-suited to ensure that employees are sufficiently involved and that consultations are broad enough. This can be achieved, among other things, by monitoring the composition of working groups and setting the right priorities. It is important they have wide contacts within the organization to provide adequate support for innovation. There is a lot of willingness to change and to train, but the "why" is very important for employees. The better the base (operational core) can be involved in the implementation of changes in the field, the more certainty there is in addressing the right issues and the more the changes will be supported. This will always be a balancing act between the speed of progress and involvement. These findings are in line with earlier findings of Kraner (2018) and Birken et al. (2012) defining the importance of supporting activities of management for innovation. There also is a clear similarity to

what Gibson & Birkinshaw (2004) said about leaders being key people in organizational ambidexterity, fulfilling a mediating role, especially for contextual ambidexterity.

A useful way of providing a bottom-up inflow of knowledge is by the usage of workgroups. Within the organization studied, there are several workgroups composed of coworkers from different fire stations with different functions (both in grades and assigned tasks). One of management most important objectives for these workgroups is exactly the bottom-up inflow of new ideas, innovation and improvements. This research pointed out that these **workgroups indeed can be very useful, but their composition and a good validation process are of great importance**. To ensure meaningful input from the workforce they must be close to it and **secure strong representation from the various fire stations.** The management may exercise strong supervision over the working groups, after all, their potential impact is great. This creates a certain ambiguity between the management objectives of a bottom-up approach (important for organizational ambidexterity, Kassotaki, 2022) and from the workforce expecting a strong validation process caused a certain anxiety of too much power for the workgroups or imbalanced priorities. The role of the chairman in workgroups is experienced as crucial, both for ensuring input is broad enough and to ensure ideas from within a workgroup can become real. Again, top management should provide enough assets and autonomy for the chairman but as well find ways to prevent bottom-up information flows are blocked at this level.

Workgroups can ensure further research and development in insights from after-action reviews, a valuable source of knowledge and a learning opportunity as described earlier. Next steps after conducting an after-action review are considered to be too limited in most cases. People find it difficult to see where insights, how small they seem to be, can lead to. Connecting workgroups with results of AARs can create a good combination of opening and closing behaviors as described by Kousina & Voudouris (2023). Where the after-action-review is closely linked to the opening behaviors and the workgroups is to the closing behaviors.

Furthermore, workgroups can be an additional tool to prevent silo-thinking. This lack of integration of different organizations' departments, is a known issue which limits organizational ambidexterity, along with internal barriers for sharing knowledge (Boukamel & Emery, 2017). This research made clear this is not at all the case within the fire region of South-Western Limburg. **A decentralized structure** due to the need for different fire stations and allocated staff **and the operational core performing tasks for the business-support units** are considered to be the most important reasons and should be preserved. This facilitates the exchange of knowledge and gives opportunities for people to improve and innovate. This is in addition to **job rotation**, which proves very valuable for collaboration and knowledge sharing.

Today, there is some tension between the expectations placed on volunteers and what is seen as realistic. Out of caution, there is a figurative brake on further burdening volunteers, this has two disadvantages, however. It is important to pay sufficient attention to the role of volunteers in activities related to innovations. Including them in a working group adds an extra burden, but it also provides a good test of feasibility for a large percentage of our operational core. Volunteers often have specific expertise through their main profession that can be utilized. In practice, it often proves not so simple; the volunteers who can make enough time are not always representative of a feasibility test, and experts tend to lean towards excessive specialization. Nevertheless, **it would be beneficial to involve volunteers more actively in working groups and innovative activities while managing their workload.**

Caused by the allocation of tasks over the eight locations (fire stations), an increase in horizontalization of the work division is experienced. For the growing specialization and complexity of tasks needed to be done (new technologies, increased safety-guidelines, …) this is experienced as a profit. For the risk

of overdemanding volunteers, horizontalization gives opportunities to lower the diversity of obligated tasks assigned to them, without necessarily creating operational problems.

Moving towards the top-down information flow we can see opportunities for improvement as well. Although several indicators suggest the organization is combining both exploitation and exploration, an overarching ambition with its nuances, however, is not very clear. A clear and compelling vision, however, relentlessly communicated by top-management should is of great importance (Andriopoulus & Lewis, 2009; O'Reilly & Tushman, 2011). This top-down information flow could emphasize important insights. For example, the use of workgroups and explaining some of the tensions as described previously. On a yearly basis, there is a general meeting in every fire station, for all employees assigned to that specific station. These meetings can be easily used as a forum for the organization's objectives in terms of being ambidextrous, like the strategic decisions made to align being innovative and high reliability simultaneously.

This dissertation aimed at detecting key-factors on people management that shaped and have been shaped by the past decade of reformation from local fire brigades to regional ones. Several suggestions are made on these key factors in the pursuit of organizational ambidexterity. Within fire and rescue services there is a strong hands-on mentality. However the nuances and context are of major importance, a framework for actions is added in the next section. It summarizes the most important learnings for direct application in high-reliability organizations in general and fire and rescue services in particular.

Practical implications: a framework for actions

Vision and communication

- Action: communicate a clear vision for ambidexterity through general meetings and top-down information flow.
- Objective: involve people in the organization's ambition and create an innovative environment while securing the important aspect of an HRO context.

Procedures

- Action: focus more on overarching general rules (meta rules) to provide a playing field for incident responding. Apply procedures as guidance rather than strict orders.
- Objective: balance formalization with flexibility through the organization to foster innovation during training and operations.

Workgroup management

- Action: ensure workgroups have a broad representation and strong validation processes. Connect them to information from after-action-reviews.
- Objective: promote bottom-up innovation and prevent silo-thinking.

Leadership and innovation

- Action: support and coach leaders to facilitate innovation by ensuring resources and creating an open culture of continuous improvement and feedback.
- Objective: promote both exploitative and exploratory goals and ensure a low barrier in learning and exploring potential opportunities.

Organizational structure

- Action: work with a decentralized structure and let operational staff combine support tasks and incident-responding. Facilitate job rotation.
- Objective: prevent silo-thinking and facilitate contextual ambidexterity and bottom-up learning

After-Action Reviews (AARs)

- Action: intensify the use of AARs, use them for smaller incidents as well and connect them to workgroups for further development.
- Objective: improve future operations through feedback and learning.

Training

- Action: differentiate training based on skills and link it to testing innovative methods.
- Objective: provide exploratory opportunities and enhance skillsets.

Volunteer involvement

- Action: involve volunteers in working groups and innovative activities while managing their workload.
- Objective: utilize volunteers' expertise and ensure feasibility of innovations. Connect to more external partners/expertise.

Limitations

This study provides valuable insights for emergency rescue zones across Belgium, despite the wide variation in historical and current organizational structures.

This study is not without limitations. First, the selection of participants and the role of the researcher give risks for easy judgements and biases. The combination of individual interviews and focus groups should lower this risk, among the use of strict exclusion criteria as described in the methodology used. More individual interviews could deliver more findings, but once again, the focus groups clearly confirmed the identified topics as the most important.

Second, however volunteers, both firefighters and medical staff, are of major importance for the fire and rescue services, their contribution to this research is rather limited. They have a less critical role in how the organization structures all its activities but are a key player in the execution.

Finally, the non-uniformed staff as well are having a specific role in the fire and rescue services of profound impact, which should not be underestimated. As most of them were not part of the local fire brigades before the reformation, they are not directly involved in this research caused by their limited experience within the new organization and foremost the absence of pre-reformation work experience.

Contributions

Within a complex, broad and dynamic environment as organizational ambidexterity is it almost impossible to be both clear and tackle the complexity and ambiguity of its nature. Without oversimplification the author aimed to provide a useful framework combining existing academic research with real-life experience.

This research was conducted using a multi-level approach, as recommended by Kassotaki in her conclusions from the "Review of Organizational Ambidexterity Research" in 2022. There is almost no research on the field of ambidexterity in combination with an HRO, certainly not with one in the non-profit sector.

Several findings in this dissertation align to findings from earlier research. The focus on exploitation at the expense of innovation in the early years of the reformation is similar to what Dixon et al. (2007). Organizational aspects like the ability of the organization to reallocate assets and capabilities to address new threats and opportunities (O'Reilly & Tushman, 2011) is confirmed. As well as earlier findings of Kraner (2018) and Birken et al. (2012) defining the importance of supporting activities of management for innovation. Furthermore, there is a clear similarity to what Gibson & Birkinshaw (2004) said about leaders being key people in organizational ambidexterity, fulfilling a mediating role, especially for contextual ambidexterity.

The role of training is determined as very important and creates chances for innovation, this is strongly underexposed in existing literature.

The internal barriers for sharing knowledge that is created by silo-thinking (Boukamel & Emery, 2017) cannot directly be confirmed in our findings, but indirectly it does. Thanks to the decentralization of the workforce and the diversity of tasks for operational staff, silo-thinking is not experienced, and neither are internal barriers.

While several studies have found that in high reliability organizations (HROs), the majority of the workforce tends to favor exploitative roles (Kraner, 2018; Levinthal & March, 1993; Volberda, 1999), the fire and rescue service examined in this study demonstrates a notably high willingness to innovate.

However, it is important to distinguish between a willingness to innovate and the actual realization of effective innovation.

Future research

Insights from this research seem to indicate that a clear mission, which revolves around core values such as savings lives and property in crisis situations, can be a significant driver in combining exploitation and innovation. This is an important aspect for which further research would be recommended.

Underlying diversity in heterogeneous top-management teams encourages organizational members to share ideas for radical new products or new uncharted markets (Alexiev et al., 2010). This aspect has been largely overlooked in this research and could potentially provide very valuable insights. This goes beyond innovation within the operational activities and could, for example, focus more broadly on the overall organizational ambidexterity.

Within the fire and rescue service, the non-uniformed staff are mostly working on exploitative tasks and ensuring daily business operations. Several insights seem not to be directly applicable, as training and incident responding is not part of their tasks. It could be very interesting however to do research on their specific challenges in terms of ambidexterity in the context of HRO, incident responding where do can play a pivotal role in facilitating or accelerating innovation.

Personal hindsight

However, fire and rescue services are a very well-known area and there are strong personal involvements in the reformation process, this research was of profound importance for personal development. More than once my own ideas were nuanced, or the impact of certain aspects turned out to be strongly underestimated. The research approach gave space to colleagues for explaining their personal experience while connecting them to existing academic work. A touch of an appreciative inquiry approach was an accelerator for energy and openness, it created a positive and collaborative atmosphere. Taking a step back from daily operations and viewing the organization from a different perspective proved to be enriching. More than once a quote from Jean-Louis Pire (Strategic leadership course Open Borders MBA, 2024) came up to mind: “Connecting the dots from the past helps you define your future view”.

Several particularly important aspects of organizational ambidexterity seem to be present in the emergency rescue zone South-Western Limburg. As a member of the top management level, it is much easier to see the different connections in between all aspects. As clear as certain objectives were for me, they sometimes proved to be ambiguous for others. A more profound explanation of initiatives, identifying potential tensions and bringing nuance to changes are very important. This goes along with another insight from the MBA course “value-centered marketing” about internal marketing. In our own organization, cultivating success stories is often seen as inappropriate, as if it is a sign of arrogancy. However, the added value this cultivation can provide in improved service is underestimated. It helps to mobilize people, services, workgroups, etc. in the direction of a better fire and rescue service.

Although our mission as a fire and rescue service is a very important driver for people to continuously improve, society, for whom we ultimately work, is too little involved. It is about the people we are going to help, but in the search for both optimization and innovation, we involve them very little and think mainly from within. This insight was significantly strengthened during the development of this thesis. In management decisions taken, the real value for the customer (being society as a whole, focusing on those in need of fire and rescue services in the designated area) should be the top priority.

Appendices

Use of Generative Artificial Intelligence

In this dissertation, generative AI tools such as ChatGPT and Copilot have been used to enhance research efficiency, primarily by facilitating access to a broader range of perspectives and aiding in the refinement of language and structure. These tools have been particularly valuable in reformulating complex ideas, improving coherence, clarity, and readability, and ensuring that key arguments are articulated effectively.

However, while AI-assisted refinements in wording and structuring, the core research process remains entirely the author's work. AI was used as a supportive tool rather than a content generator, ensuring that the dissertation maintains academic and intellectual integrity.

Figures

Figure 17 - Map of the 34 emergency rescue zones in Belgium

Algemeen overzicht

Exploitatie	Rekening 2023
Ontvangsten	**29.717.197**
Prestaties	1.923.665
Gemeentelijke dotaties	18.546.759
Federale overheid	6.723.992
Overige	2.391.128
Schuld	131.652
GD Uitgaven	**29.189.826**
Personeel	19.510.876
Werkingskosten	5.184.584
Divers	132.981
Schuld	1.379.527
Overboeking naar inversteringen	2.981.858
Resultaat Boekjaar	**527.370**

Figure 18 - Financial overview 2023

Bevolkingscijfer	Aantal posten	Aantal operationele personeelsleden*	Punten
minder dan 100.000			1
van 100.000 tot en met 149.999	minder dan 3	minder dan 80	2
van 150.000 tot en met 199.999	van 3 tot en met 5	van 80 tot en met 100	3
van 200.000 tot en met 249.999	van 6 tot en met 9	van 101 tot en met 120	5
van 250.000 tot en met 329.999	van 10 tot en met 18	van 121 tot en met 160	7
van 330.000 tot en met 429.999	van 19 tot en met 39	van 161 tot en met 200	10
van 430.000 tot en met 529.999	meer dan 39	van 201 tot en met 250	14
van 530.000 tot en met 629.999		van 251 tot en met 300	18
van 630.000 tot en met 799.999		van 301 tot en met 400	22
van 800.000 tot en met 1.100.000		van 401 tot en met 550	26
meer dan 1.100.000		meer dan 550	30

Figure 19 - Categories for emergency rescue zones (source: Royal decree of February 24th, 2014)

2024	BE	BO	HA	HE	HZ	ST	TE	TO	*Total*
FIRE	119	47	448	77	137	207	76	142	1253
HAZMAT	16	5	88	18	28	45	20	37	257
TECH	974	308	2569	670	1289	1382	647	925	8764
SPEC	1	0	7	1	2	5	1	0	17
LOG	54	19	468	66	147	185	51	159	1149
Total	*1164*	*379*	*3580*	*832*	*1603*	*1617*	*795*	*1263*	*11440*

Figure 20 - Overview of incidents for each station in 2024

Interview guide

Dutch translation is used during the interviews due to the participant's native language.

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |_|_| - Between 23 and 65 Employment: Vol / Prof Type of station: 1 / 2 / 3 Rank: FF – PO – O
4. Interview date (dd/mm/yyyy)	|_|_| / |_|_| / |_|_|_|_|
5. Participants agree for interviews to be digitally recorded	Yes ☐ No ☐
6. Time – start of interview (hhmm-24hr)	|_|_|_|_|
7. Time – end of interview (hhmm-24hr)	| | | | |

Step 1: Complete Q1-4 above before the interview

Step 2: Introduce yourself as a researcher (not a business leader) – appreciate the participation

Step 3: Explain the study using section A

Step 4: Ask permission to start recording – complete Q5

Step 5: Complete Q5 and start interview (section B + section C)

Step 6: At the end of the interview, thank the participant and ask for further questions – fill in Q7

Keynotes for interviewer's mindset

- Ask open questions and keep on asking these questions.
- When getting stuck into one specific topic, try to get out of it ("I have heard … in another interview, what's your idea about that?")
- Apply an appreciative approach ("What is your best experience on … "What could be the ideal circumstances?")
- Search for concrete illustrations, not only opinions.

Section A:

This research aims to give an answer to the question *"what key people management factors have influenced the transition of fire and rescue service in Belgium over the past decade, and how can these factors contribute to achieving ambidexterity in the organization?"*

I am conducting this interview in a researcher's role for an MBA master's thesis. The conclusions in the thesis should deliver valuable insight in people management strategies to address challenges for Fire and Rescue Services in Belgium on organizational ambidexterity and the region of South-Western Limburg more specifically.

Section B:

- This research is about people management, what do you understand by this?

Deepening questions (in general)

- Can you tell me more about what you felt in that situation?
- What led you to make that decision?
- Can you describe the reasoning behind this (your) approach?
- Why do you think it happened that way?
- Can you describe how you arrived at that conclusion?
- What were the circumstances or factors at play?

Research questions

- What did you experience most in people management last decade? Key moments for you?
- Who (person, department, …) is playing a key role as an accelerator (or decelerator) for the further development and implementation of new ideas you have (or have had)?
- What opportunities for further innovation do you see?
    - How could this be in conflict with our standards and daily work?
- How much of your time is spend on executing tasks compared to working on changes?
    - Change can be any change, reflection with colleagues, try-outs on training moments, discussions on meetings, …
- How did you experience new tactics and technics during the past decade? Can you compare it before 2015?
    - Experienced frequently or not?
    - Difference before and after 2015?
- Can you describe a moment where you felt a great energy level, fostering creativity and giving results?
    - → Try to detect accelerators (or decelerators, when spontaneously pointed out)
- What leadership behaviors do you think are most critical for fostering ambidexterity?
- What role does (financial) resource allocation in the FRS play in achieving ambidexterity?
- What does innovation mean for you?
- Have you experienced innovation?
    - Bottom-up – experienced need to convince management?

- Top-down – experienced need to convince operational core?

Section C:

Make sure subjects of importance according to personal insights are covered as well. Only after section B is done and in correlation with the answers and depth of the interview so far.

- Training (station or training facilities) vs. incident responding.
- Participation and use of work groups / project teams?

Registration of participants

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	1 (IND)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|7| - Between 18 and 65 Employment: Vol / **Prof** Type of station: 1 / **2** / 3 Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|5| / |0|2| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|3|9|
7. Time – end of interview (hhmm-24hr)	|1|5|2|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	2 (IND)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|3| - Between 18 and 65 Employment: Vol / **Prof** Type of station: 1 / 2 / **3** Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|_|_| / |_|_| / |_|_|_|_|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|3|1|0|
7. Time – end of interview (hhmm-24hr)	|1|4|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	3 (IND)

3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|0| - Between 18 and 65 Employment: Vol / **Prof** Type of station: 1 / **2** / 3 Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|1|4| / |0|3| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|0|2|5|
7. Time – end of interview (hhmm-24hr)	|1|1|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	4 (IND)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|1| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / 3 Rank: FF – PO – **O**
4. Interview date (dd/mm/yyyy)	|0|3| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|0|9|0|0|
7. Time – end of interview (hhmm-24hr)	|0|9|5|5|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	5 (FG_BK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|3| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|3| / |0|4| / |2|0|2|5|
5. Participants agree for interviews to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|0|1|5|
7. Time – end of interview (hhmm-24hr)	|1|2|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	6 (FG_BK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|5| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / **2** / 3 Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|3| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|0|1|5|
7. Time – end of interview (hhmm-24hr)	|1|2|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	7 (FG_BK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|5| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / 3 Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|3| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|0|1|5|
7. Time – end of interview (hhmm-24hr)	|1|2|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	8 (FG_BK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|3| - Between 18 and 65 Employment: **Vol** / Prof Type of station: 1 / **2** / 3 Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|3| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐

6. Time – start of interview (hhmm-24hr)	|1|0|1|5|
7. Time – end of interview (hhmm-24hr)	|1|2|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	9 (FG_BK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|3| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: **FF** – PO – O
4. Interview date (dd/mm/yyyy)	|2|3| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|0|1|5|
7. Time – end of interview (hhmm-24hr)	|1|2|0|0|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	10 (FG_MK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|9| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|2|8| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|1|0|
7. Time – end of interview (hhmm-24hr)	|1|6|2|5|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	11 (FG_MK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|2| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: FF – **PO** – O

4. Interview date (dd/mm/yyyy)	|2|8| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|1|0|
7. Time – end of interview (hhmm-24hr)	|1|6|2|5|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	12 (FG_MK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|7| - Between 18 and 65 Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|2|8| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|1|0|
7. Time – end of interview (hhmm-24hr)	|1|6|2|5|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	13 (FG_MK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |3|2| - Between 18 and 65 Employment: Vol / **Prof** Type of station: 1 / 2 / **3** Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|2|8| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|1|0|
7. Time – end of interview (hhmm-24hr)	|1|6|2|5|

1. Interviewer name	Frederick van der Have
2. Participant ID (separated list)	14 (FG_MK)
3. Inclusion criteria *(Double-check exclusion criteria)*	Age: |4|7| - Between 18 and 65

	Employment: Vol / **Prof** Type of station: **1** / 2 / **3** Rank: FF – **PO** – O
4. Interview date (dd/mm/yyyy)	|2|8| / |0|4| / |2|0|2|5|
5. Participant agrees for interview to be digitally recorded	**Yes** ☒ No ☐
6. Time – start of interview (hhmm-24hr)	|1|4|1|0|
7. Time – end of interview (hhmm-24hr)	|1|6|2|5|

Training obligations

Tables from the Royal Decree of November 18th, 2015.

Opleiding tot het behalen van het brevet van basiskader NBO1

Mod.	NBO1	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NBO1/01	Welzijn - Algemeen (verplicht als eerste module te volgen)	18	11	0	29	303,00
NBO1/02	Welzijn - Levensreddend handelen	11	12	0	23	296,00
NBO1/03	Welzijn - Adembescherming (verplicht om te slagen voor deze module vooraleer te starten met de warme praktijk van module NBO1/08)	2	18	0	20	386,00
NBO1/04	Incident gevaarlijke stoffen	7	5	0	12	133,00
NBO1/05	Technische hulpverlening Storm en Instortingen	8	17	0	25	389,00
NBO1/06	Technische hulpverlening Verkeer	7	16	0	23	364,00
NBO1/07	Technische hulpverlening Water, Redding van Personen en Dieren	8	14	0	22	326,00
NBO1/08	Brandbestrijding	21	33	32	86	2.153,00
	Totaal :	82	126	32	240	4.350,00

Opleiding tot het behalen van het brevet van N brandweerkadet

Mod.	N Brandweerkadet	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NBO1/01	Welzijn - Algemeen (verplicht als eerste module te volgen)	18	11	0	29	303,00
NBO1/02	Welzijn - Levensreddend handelen	11	12	0	23	296,00
NBO1/03	Welzijn - Adembescherming (verplicht om te slagen voor deze module vooraleer te starten met de warme praktijk van module AT 108 14)	2	18	0	20	386,00
NBO1/06	Technische hulpverlening Verkeer	7	16	0	23	364,00
NBO1/07	Technische hulpverlening Water, Redding van Personen en Dieren	8	14	0	22	326,00
AT 108 11	Brandbestrijding - hoofdstuk 1: Brand en brandbestrijding	12	0	0	12	48,00
AT 108 12	Brandbestrijding - hoofdstuk 2: Materieel voor brandbestrijding	3	8	0	11	180,00
AT 108 13	Brandbestrijding - hoofdstuk 3: Tactiek en techniek van een interventie	0	12	0	12	252,00
AT 108 14	Brandbestrijding - Hittetraining en binnenbrandbestrijding	0	0	16	16	688,00
	Totaal :	61	91	16	168	2.843,00

Opleiding tot het behalen van het brevet van basiskader BO2

Mod.	BO2	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
BO2/01	Bevelvoering	2	6	0	8	134,00
BO2/02	Arbeidsveiligheid	2	2	0	4	50,00
BO2/03	Coaching: werken met mensen	12	6	0	18	174,00
	Totaal :	16	14	0	30	358,00

Opleiding tot het behalen van het brevet van middenkader NMO1 via bevordering

Mod.	NMO1 via bevordering	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NMO1/01	Bevelvoering	8	4	0	12	116,00
NMO1/02	Brandbestrijding 1	19	5	0	24	181,00
NMO1/03	Brandbestrijding 2	15	11	0	26	291,00
NMO1/04	Compartment Fire Behaviour Training praktijk	0	0	38	38	1.634,00
NMO1/05	Industriële brandbestrijding	10	6	6	22	424,00
NMO1/06	Hulpverlening	14	18	0	32	434,00
NMO1/07	Gevaarlijke stoffen 1	16	8	0	24	232,00
NMO1/08	Gevaarlijke stoffen 2	18	10	0	28	282,00
NMO1/09	Geïntegreerde praktijkoefeningen (Alle voorgaande modules moeten behaald worden voor deelname)	0	8	16	24	856,00
	Totaal :	**100**	**70**	**60**	**230**	**4.450,00**

Opleiding tot het behalen van het brevet van middenkader NMO1 via aanwerving

Mod.	NMO1 via aanwerving	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NBO1/01	Welzijn - Algemeen (verplicht als eerste module te volgen)	18	11	0	29	303,00
NBO1/02	Welzijn - Levensreddend handelen	11	12	0	23	296,00
NBO1/03	Welzijn - Adembescherming (verplicht om te slagen voor deze module vooraleer te starten met de warme praktijk van module NBO1/08)	2	18	0	20	386,00
NBO1/04	Incident gevaarlijke stoffen	7	5	0	12	133,00
NBO1/05	Technische hulpverlening Storm en Instortingen	8	17	0	25	389,00
NBO1/06	Technische hulpverlening Verkeer	7	16	0	23	364,00
NBO1/07	Technische hulpverlening Water, Redding van Personen en Dieren	8	14	0	22	326,00
NBO1/08	Brandbestrijding	21	33	32	86	2.153,00
BO2/01	Bevelvoering	2	6	0	8	134,00
BO2/02	Arbeidsveiligheid	2	2	0	4	50,00
BO2/03	Coaching: werken met mensen	12	6	0	18	174,00
NMO1/01	Bevelvoering	8	4	0	12	116,00
NMO1/02	Brandbestrijding 1	19	5	0	24	181,00
NMO1/03	Brandbestrijding 2	15	11	0	26	291,00
NMO1/04	Compartment Fire Behaviour Training praktijk	0	0	38	38	1.634,00
NMO1/05	Industriële brandbestrijding	10	6	6	22	424,00
NMO1/06	Hulpverlening	14	18	0	32	434,00
NMO1/07	Gevaarlijke stoffen 1	16	8	0	24	232,00
NMO1/08	Gevaarlijke stoffen 2	18	10	0	28	282,00
NMO1/09	Geïntegreerde praktijkoefeningen (Alle voorgaande modules moeten behaald worden voor deelname)	0	8	16	24	856,00
	Totaal :	**198**	**210**	**92**	**500**	**9.158,00**

Opleiding tot het behalen van het brevet van middenkader NMO2

Mod.	NMO2	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NMO2/01	Statuut	8	0	0	8	32,00
NMO2/02	Arbeidsveiligheid	6	2	0	8	66,00
NMO2/03	Leiderschapsvaardigheden	4	8	0	12	184,00
NMO2/04	Bevelvoering bij grootschalige interventies	6	6	0	12	150,00
	Totaal :	**24**	**16**	**0**	**40**	**432,00**

Opleiding tot het behalen van het brevet van hoger kader NOFF1

Mod.	NOFF1	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NOFF1/01	Operationele benadering: Fire Dynamics	31	12	10	53	806,00
NOFF1/02	Operationele benadering: Incidenten Gevaarlijke Stoffen	24	8	0	32	264,00
NOFF1/03	Crisisbeheer - niveau 1 (CRI-1)	12	12	0	24	300,00
NOFF1/04	Coaching: omgaan met een groep	3	2	0	5	54,00
	Totaal :	**70**	**34**	**10**	**114**	**1.424,00**

Opleiding tot het behalen van het brevet van hoger kader NOFF2 via bevordering

Mod.	NOFF2 via bevordering	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NOFF2/01	Operationele benadering: Fire Dynamics	32	0	0	32	128,00
NOFF2/02	Crisisbeheer - niveau 2 (CRI-2)	20	20	0	40	500,00
NOFF2/03	Administratief management	30	0	0	30	120,00
	Totaal :	**82**	**20**	**0**	**102**	**748,00**

Opleiding tot het behalen van het brevet van hoger kader NOFF2 via aanwerving

Mod.	OFF2 via aanwerving	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
NBO1/01	Welzijn - Algemeen (verplicht als eerste module te volgen)	18	11	0	29	303,00
NBO1/02	Welzijn - Levensreddend handelen	11	12	0	23	296,00
NBO1/03	Welzijn - Adembescherming (verplicht om te slagen voor deze module vooraleer te starten met de warme praktijk van module NBO1/08)	2	18	0	20	386,00
NBO1/04	Incident gevaarlijke stoffen	7	5	0	12	133,00
NBO1/05	Technische hulpverlening Storm en Instortingen	8	17	0	25	389,00
NBO1/06	Technische hulpverlening Verkeer	7	16	0	23	364,00
NBO1/07	Technische hulpverlening Water, Redding van Personen en Dieren	8	14	0	22	326,00
NBO1/08	Brandbestrijding	21	33	32	86	2.153,00
BO2/02	Arbeidsveiligheid	2	2	0	4	50,00
NMO2/02	Arbeidsveiligheid	6	2	0	8	66,00
NMO1/01	Bevelvoering	8	4	0	12	116,00
NMO1/02	Brandbestrijding 1	19	5	0	24	181,00
NMO1/03	Brandbestrijding 2	15	11	0	26	291,00

NM01/04	Compartment Fire Behaviour Training praktijk	0	0	38	38	1.634,00
NMO1/05	Industriële brandbestrijding	10	6	6	22	424,00
NMO1/06	Hulpverlening	14	18	0	32	434,00
NMO1/07	Gevaarlijke stoffen 1	16	8	0	24	232,00
NMO1/08	Gevaarlijke stoffen 2	18	10	0	28	282,00
NMO1/09	Geïntegreerde praktijkoefeningen (Alle voorgaande modules moeten behaald worden voor deelname)	0	8	16	24	856,00
NOFF1/01	Operationele benadering: Fire Dynamics	31	12	10	53	806,00
NOFF1/02	Operationele benadering: Incidenten Gevaarlijke Stoffen	24	8	0	32	264,00
NOFF2/01	Operationele benadering: Fire Dynamics	32	0	0	32	128,00
NMO2/01	Statuut	8	0	0	8	32,00
NMO2/03	Leiderschapsvaardigheden	4	8	0	12	184,00
NMO2/04	Bevelvoering bij grootschalige interventies	6	6	0	12	150,00
NOFF2/03	Administratief management	30	0	0	30	120,00
NOFF1/03	Crisisbeheer - niveau 1 (CRI-1)	12	12	0	24	300,00
NOFF2/02	Crisisbeheer - niveau 2 (CRI-2)	20	20	0	40	500,00
NBO2/03	Coaching: werken met mensen	12	6	0	18	174,00
NOFF1/04	Coaching: omgaan met een groep	3	2	0	5	54,00
	totaal :	**372**	**274**	**102**	**748**	**11.628,00**

Opleiding tot het behalen van het brevet van hoger kader OFF3

Mod.	OFF3	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
OFF3/01	Bestuurlijk recht	30	0	0	30	120,00
OFF3/02	Crisisbeheer – niveau 3 (CRI-3)	20	20	0	40	500,00
OFF3/03	Financieel management	30	0	0	30	120,00
OFF3/04	HRM	30	0	0	30	120,00
OFF3/05	Kwaliteitsmanagement	30	0	0	30	120,00
OFF3/06	Strategie en organisatie	30	0	0	30	120,00
OFF3/07	Leadership	30	0	0	30	120,00
OFF3/08	Innovatie en change management	30	0	0	30	120,00
OFF3/09	Communicatiemanagement	10	10	0	20	250,00
OFF3/10	Proces- en projectmanagement	30	0	0	30	120,00
	Totaal :	**270**	**30**	**0**	**300**	**1.710,00**

Opleiding tot het behalen van het brevet van hoger kader OFF4

Mod.	OFF4	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
OFF4/01	Strategie en Leiderschap	40	0	0	40	160,00
OFF4/02	Communicatie, onderhandeling en syndicaal statuut	32	0	0	32	128,00
OFF4/03	Management van processen, kwaliteit en risico	32	0	0	32	128,00
OFF4/04	Diversiteit, veiligheid en welzijn op het werk	16	0	0	16	64,00
OFF4/05	Stage – activiteiten – en analyseverslag (Alle voorgaande modules moeten behaald worden voor deelname)	0	100	0	100	2.100,00
	Totaal :	**120**	**100**	**0**	**220**	**2.580,00**

Opleiding tot het behalen van het brevet B Delta bestemd voor de titularissen van het brevet van brandweerman, voorafgaand aan de toegang tot de opleiding tot het behalen van het brevet BO2, bedoeld in artikel 26

Mod.	Oud brevet brandweerman → BO2	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
1	Hulpverlening	21	40	0	61	924,00
	Totaal :	**21**	**40**	**0**	**61**	**924,00**

Opleiding tot het behalen van het brevet NM Delta bestemd voor de titularissen van het brevet van sergeant, voorafgaand aan de toegang tot de opleiding tot het behalen van het brevet NMO2, bedoeld in artikel 28 en 29

Mod.	Oud brevet sergeant → NMO2	Theorie	Koude praktijk	Warme praktijk	Totaal	Subsidie
DMO2/01	Binnenbrandbestrijding	12	1	5	18	284,00
DMO2/02	Technische hulpverlening	3	12	0	15	264,00
NMO1/07	Gevaarlijke stoffen 1	16	8	0	24	232,00
NMO1/08	Gevaarlijke stoffen 2	18	10	0	28	282,00
	Totaal :	**49**	**31**	**5**	**85**	**1062,00**

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Executive summary

Objective: The purpose of this thesis is to analyze the first decade of reformation from local, municipal organized fire brigades to emergency rescue zones in Belgium. This analysis, focused on human aspects-management, is employed to give insight into the key factors in people management to become an ambidextrous organization combining both exploitative and explorative activities. The region South-Western Limburg is chosen as the use-case for the author's relevance and accessibility of information.

Approach & methodology: A literature review of organizational ambidexterity within the context of a high-reliability and public service organization is conducted first. These insights are compared to qualitative research within the region of South-Western Limburg started combining individual interviews with focus groups.

Key findings: This thesis underscores the importance of balancing formalization with flexibility. Secondly, the simultaneous pursuit of both exploitative and exploratory goals is supported by an elaborate use of after-action reviews, targeted training and flexibility in providing resources. Finally, fostering top-down and bottom-up information inflow of knowledge while avoiding silo-thinking is essential.

Practical implications: The findings offer opportunities for emergency rescue zones to implement or adjust certain practices in their pursuit of becoming an ambidextrous organization. To support this, a concrete framework has been provided.

Contribution: The field of organizational ambidexterity is ambiguous in its nature. This thesis adds knowledge within the specific context of a high-reliability organization in the public service sector, which is rather unique. Most findings align with those from earlier research however some nuances are made. The role of training for exploratory goals was striking and underexposed in existing literature.

Future directions: Several suggestions for future research are made. From the importance of a clear mission as a driver for combining exploitation and innovation over the role to the impact of more diversity in top-management teams. More specifically for emergency rescue zones, more research on the role of non-uniformed staff for organizational ambidexterity could deliver valuable insight.

Keywords: Ambidexterity, high-reliability organization, governmental, public service organization, fire and rescue services, exploration, innovation, exploitation, people management.

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