Implementing Venture-driven Innovations within Airline Operations

A case study on implementing electric aircraft in airline pilot training

MOT Master Thesis

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Delft University of Technology

TU Delft

Implementing Venture-driven Innovations within Airline Operations

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by

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TU Delft

Preface

Dear reader,

Almost three years ago, I began my academic journey at Delft University of Technology. After completing my Bachelor's in Aviation Engineering, I entered the Pre-Master's program and officially joined the Management of Technology Master's in September 2023.

During my Bachelor's, I learned how airlines and aircraft function from a technical perspective. Along the way, I also worked with management teams in the aviation sector, where I discovered something fascinating: while engineers and managers closely collaborate, they often think and communicate in very different ways. Engineers focus on technical precision and system logic, while managers consider organisational feasibility, stakeholder dynamics, and long-term strategy. Both perspectives are essential in a safety-critical and complex industry like aviation, but they often speak different 'languages'. I found this gap both interesting and important, which inspired me to start this Master's to understand and bridge these worlds.

This is also reflected in the topic of my thesis. Innovation in aviation is more relevant than ever, given the sector's sustainability goals. While there is a strong willingness to innovate, translating promising technologies into day-to-day operations remains a challenge. This tension between ambition and operational reality made the topic both relevant and personally motivating. This thesis marks the final milestone of my degree. Over the past months, I have had the privilege of exploring this topic at Transavia, studying how new technologies from startups can be integrated into airline operations. During the case study on electric flight training, I experienced how complex but essential it is to bring innovation into practice.

I would like to thank my graduation committee. Victor, thank you for giving me the academic freedom to explore this topic and for your valuable guidance and feedback. Robert, thank you for your critical eye and for helping me raise the academic quality of this thesis. At Transavia, I am especially grateful to my company supervisor, Nico Gielen. I initially reached out via LinkedIn with just an idea, and I'm very thankful you gave me the opportunity to turn it into a full research project. Your enthusiasm and openness made this internship both inspiring and enjoyable. I also thank the Transavia colleagues who spoke with me. I was genuinely impressed by the working environment, the sincere interest people show in each other, and the openness to new ideas. As an intern, I felt welcomed and involved, with the unique opportunity to attend strategic meetings, pilot sustainability days, and insightful discussions that I will carry with me.

As I now prepare to continue my professional journey at Transavia, I feel proud and excited to contribute to the future of aviation. Writing this thesis has only strengthened my motivation to work within this unique industry. With pride, I present my Master's thesis. I hope this research offers a small but meaningful contribution to innovation in aviation, and that you enjoy reading it as much as I enjoyed writing it.

Merel van Paridon
Delft, June 2025

Executive summary

If airlines want their sustainable innovation investments to deliver real impact, they must look beyond the technology and focus on organisational implementation.

The aviation industry faces increasing pressure to achieve net-zero carbon emissions by 2050. To meet this challenge, airlines must adopt not only incremental improvements but also radical innovations. As airlines operate in structured operations, many innovate using an open innovation approach. Startups, with their flexibility and experimental mindset, are key drivers of such high-risk technologies. However, implementing these externally developed innovations within the structured and regulated environment of airline operations remains a challenge; promising initiatives often stall after the pilot phase.

This research investigates factors that support the implementation of venture-driven innovations within airline operations, using Transavia's pilot training program as a case study. The case study explores the integration of electric aircraft in flight training, provided by a startup. This case illustrates the broader challenge of translating early-stage technologies into operational practice. The central research question guiding this study is:

"What key factors are supporting the implementation of venture-driven innovative technologies into established airline operations?"

To answer this question, the study adopts a qualitative research design containing three main components: a systematic literature review, semi-structured interviews with stakeholders from both company and industry perspectives, and a case study analysis. The literature review identified nine key implementation factors, including Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, People & Skills, Knowledge & Learning, Communication & Buy-in, Market & Environment, and Network & Partnerships.

Based on interviews with internal stakeholders at Transavia and external experts across the industry, five of these nine factors were consistently validated as critical for successful implementation in practice. In addition, one factor (Interdepartmental Collaboration) emerged from the empirical data as a practice-based enabler that was not explicitly included in the literature but perceived as critical in the company's context. The six validated factors can be evaluated through the Multi-Level Perspective (MLP) framework, which analyses implementation dynamics across three organisational levels:

- **Macro-level (Organisational):** The factors Culture, Strategic Alignment, and Leadership & Governance reflect high-level organisational structures, strategic purpose, and executive commitment. These determine whether innovation is prioritised, supported, and resourced at the company-wide level.
- **Meso-level (Departmental):** Operational Readiness, Communication & Buy-in, and Interdepartmental Collaboration operate at the departmental level. They address how innovation is translated into daily operations, whether teams are equipped to integrate change, and whether collaborations across units support or hinder implementation.
- **Micro-level (Individual):** Although People & Skills and Knowledge & Learning are traditionally associated with the micro-level, they were not strongly emphasised across all interviews as important innovation factors. This suggests that while important, individual-level factors may be less of a bottleneck in this specific context compared to organisational and departmental topics.

The study contributes to both academic theory and practical implementation strategies. Academically, it extends on open innovation and corporate venture capital literature by focusing on the under-researched area of implementation. Practically, it offers airlines a set of factors to assess their internal conditions and readiness for innovation implementation.

For innovation and venture managers at airlines, this framework provides actionable guidance to improve implementation success. To realise the full value of venture investments, it is essential to strengthen the strategic alignment with operational goals. Innovation ownership should be formally embedded within departments through dedicated roles, rather than relying on individual enthusiasm, to ensure continuity and accountability. Effective implementation further requires strong communication and cross-functional collaboration to create a shared understanding and responsibility across teams. Small-scale pilot projects are recommended to demonstrate feasibility in a controlled setting, which would help lower resistance and build confidence. Moreover, Transavia should proactively plan for innovation capacity by allocating time and resources in annual department planning, so innovation does not fall victim to operational pressure. Finally, building awareness of the wider ecosystem by involving startups early in the process can enhance internal adaptability.

By applying these recommendations, Transavia can increase the impact of startup collaboration and become a frontrunner in translating radical innovation into real operational change, which is an essential step in reaching net-zero emissions by 2050.

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Nomenclature

Abbreviations

Abbreviation	Definition
ATO	Approved Training Organisations
BV	Besloten Vennootschap (Private Limited Company)
CIS	Continuous Improvement Specialist
CO_2	Carbon Dioxide
CV	Corporate Venturing
CVC	Corporate Venture Capital
IATA	International Air Transport Association
IL&T	Human Environment and Transport Inspectorate
IPO	Initial Public Offering
KLM	Koninklijke Luchtvaart Maatschappij
KPI	Key Performance Indicator
MLP	Multi-Level Perspective
MPL	Multi-Crew Pilot Licence
SAF	Sustainable Aviation Fuel
SME	Small and Medium Enterprise
TA	Transavia Airlines
TAM	Technology Acceptance Model
TU Delft	Delft University of Technology
TV	Transavia Ventures

1

Introduction

The aviation industry is a significant contributor to global carbon dioxide (CO_2) emissions. In 2023 alone, it was responsible for 882 million tonnes of CO_2, accounting for around 2% of all human-made emissions (Air Transport Action Group, 2024). In response, the industry has committed to achieving net-zero emissions by 2050 (IATA, n.d.). Achieving this goal requires not only incremental efficiency improvements, but also radical innovation (Rohacs, 2023). Therefore, the sustainability goals creates a need for technological innovation. While startups often develop high-risk technologies due to their flexibility and experimental mindset (Blank & Dorf, 2012), the actual integration of these innovations into airline operations remains a significant challenge.

To accelerate technological innovation, many airlines are introducing corporate venture programs. These programs aim to bridge the gap between early-stage technological development and operational implementation by providing funding, guidance, and strategic value (Burgelman & Sridharan, 2021). In aviation, initiatives such as Transavia Ventures are set up for investing in startups that focus on sustainability to drive long-term innovation. However, the literature on such initiatives mainly focuses on investment decisions and the importance of strategic alignment. Those articles focuses on venture creation and portfolio management, with limited attention to what happens after the investment, particularly when implementing the innovation within airline operations. This is important as studies suggest that the failure of innovation is more often caused by an ineffective implementation process than the quality of the innovation itself (Klein & Sorra, 1996). While the article of Durst and Ståhle (2013) focuses on open innovation sources with resource limits, it focuses particularly on small and medium enterprise (SMEs), as most of the literature does. Research specifically about the implementation of externally developed innovations in structured environments such as airline operations remains scarce.

This specific context is important to take into consideration as an airline is operating in industry-specific conditions. The aviation sector is characterised by long technology lifecycles, complex and precise processes and conservative cultures (Ahuja & Lampert, 2001; Geels, 2006). Airlines operate at minimal margins and with strict safety regulations, where philosophy dictates that *nothing is allowed unless explicitly permitted*. These factors make it important to consider the specific industry context when discussing the implementation of externally developed technologies into an organisation's operations.

To conclude, while research exists on corporate venturing and open innovation, little is known about how externally developed, venture-driven technologies can be successfully implemented in the structured and regulated environment of airline operations. This study addresses that gap by identifying key factors supporting the implementation of externally developed innovations, using the case of electrifying the pilot training program of Transavia. Transavia is a Dutch low-cost airline and a subsidiary of the Air France-KLM Group. As a well-established European airline with a venture program next to both commercial and training operations, Transavia offers a relevant context for studying innovation adoption in the aviation sector. In doing so, this study connects theoretical insights on open innovation and radical change with empirical insights from a real-world aviation perspective.

1.1. Problem Statement

While the aviation industry has made significant improvements in developing sustainable technologies, a critical gap remains in the implementation of these innovations within airline operations. Corporate venture programs offer opportunities for radical innovation, but many airlines struggle to implement externally developed solutions into existing processes.

Currently, no standardised set of factors exists to support the implementation of such innovations. As a result, even successful innovations struggle to pass the pilot or trial stage, which limits their potential impact. This implementation gap risks the progress of the sustainability targets, which increases fuel prices, carbon emission prices, regulatory penalties, reputational risks, or even the withdrawal of landing rights. These factors have significant consequences for the airline's competitive position in the market.

1.2. Research Objective and Questions

The main objective of this research is to identify key factors that support the implementation of externally developed, venture-driven innovations within established airline operations. To achieve this, several sub-objectives are defined.

- Identify key factors and challenges in the literature on outside-in open innovation.
- Evaluate the literature findings in airline conditions and comparable companies
- Evaluate findings through a case study at Transavia

The main research question guiding this thesis is:

What key factors are supporting the implementation of venture-driven innovative technologies into established airline operations?

The overarching question is addressed through three sub-questions:

1. What does the academic literature identify as key factors supporting open innovation implementation in established organisations?
2. Which of these factors can be confirmed in the airline context and industry context?
3. Which of these factors can be confirmed in a practical setting, using a case study on electric flight training?

1.3. Research Design

To answer these questions, the study conducts a qualitative research design. First, a structured literature review was conducted to identify key implementation factors from existing research on open innovation and organisational change. Second, these factors were tested through semi-structured interviews with internal stakeholders at Transavia and external experts in comparable companies. Finally, the study includes a focused case study on the implementation of electric aircraft in Transavia's pilot training program. This includes interviews with the startup partner and decision-makers at Transavia.

All the empirical findings are evaluated along the identified factors from the literature review, which serves as an analytical framework of this research. The findings are analysed using the Multi-Level Perspective (MLP), which distinguishes different organisational levels (Geels, 2006). This allows for a layered understanding of how innovation is supported across the organisation. The Technology Acceptance Model (TAM) (Davis, 1989) and Kotter's Change model (Kotter, 1996) are used to explain how certain conditions influence the success of implementation. An overview of the main objectives, methodologies, and the chapters is provided in Table 1.1.

Table 1.1: Thesis Structure Overview

Subquestion	Chapter	Objective	Methodology
SQ-1	Chapter 4	Identify theoretical framework of implementation factors	Systematic literature review
SQ-2	Chapter 5	Evaluate framework in airline conditions and comparable companies	Semi-structured interviews with internal and external stakeholders.
SQ-3	Chapter 6	Evaluate findings through a case study at Transavia	Case study using interviews with Transavia and startup.

1.4. Scope and Research Variables

This study focuses on the implementation of externally developed technologies into airline operations. Before implementation, the venture program had already decided to invest in the technology developed by a startup. The investment decision is considered a given, and the startup considers the technology as ready for implementation, so this study does not cover the innovation development or selection phases.

The dependent variable in this research is the implementation of the new technology. This is defined as the point in time at which a new technology becomes operational and replaces the old system as the new standard. The independent variables are the key factors supporting the implementation. Implementation refers to the successful integration of new technology into operations, such that it becomes the new standard. Those key factors evaluate whether the airline's internal conditions are suitable for implementing the innovation.

1.5. Study Relevance

This study is relevant from both a managerial and scientific perspective, as it addresses a practical implementation challenge for innovation managers in aviation while contributing to academic research on innovation implementation. For airlines, the ability to effectively translate externally developed technologies into operational practice is increasingly important, particularly as it contributes to the committed sustainability goals. As airlines expand their collaboration with startups via venture programs, understanding the internal conditions that influence implementation success becomes critical. Using Transavia's airline pilot training as a real-world case, this research provides a practical framework for assessing organisational readiness. These insights are directly applicable to innovation managers, venture leads, and decision-makers in the airline industry.

At the same time, this study contributes to academic literature by addressing a relatively underexplored area in innovation management: the implementation phases of venture-driven technologies within established airline operations. While prior research focuses on venture creation, investment selection, and portfolio management, limited attention is given to what happens after the investment, specifically, how innovations are integrated into core operations. By combining a literature-based framework with empirical confirmation through the interviews, this research extends existing theories on open innovation and implementation. It further extends the literature by identifying practice-based factors that not previously emphasised in literature.

1.6. Management of Technology Relevance

This thesis aligns with the core objectives and competencies of the MSc Management of Technology (MOT) program at TU Delft as the program educates to manage, analyse, and strategically apply technology in highly dynamic, competitive, and technology-driven environments. This study explores how externally developed, venture-driven technologies can be successfully implemented within the complex and highly regulated operational environment of an airline to maximise corporate productivity, profitability and competitiveness.

Through a case study, this research investigates both the external dynamics of technological opportunities and the internal organisational conditions for implementation. This reflects the MOT program, which focuses on understanding how technological developments relate to strategic decision-making, organisational readiness, and market impact. Moreover, the research is based on a sustainability driven context which demonstrates the broader social and environmental impact of the technology and translates them into the interests of the company. By doing so, this thesis aligns with the MOT program which aims to educate students to: a technology-oriented analysts who bridge innovation and implementation, while understanding the commercial, organisational, and strategic dimensions of technological change.

1.7. Thesis Structure

This thesis is structured into eight chapters, each contributing to the main question. Chapter 1 introduces the background, motivation, and relevance of the study. It defines the research objective, main question, and subquestions, and outlines the academic contributions of the research. Chapter 2 provides context for the study by presenting key concepts, aviation relevance, innovation types, and Transavia's position within the airline industry. Chapter 3 describes the research approach, including data collection methods, and data analysis. Chapter 4 introduces theories and models used to analyse the data. It provides a systematic literature review of the implementation factors that support innovation. This results in a framework that guides the empirical data collection and analysis. Chapter 5 presents the results of the interviews conducted for Transavia-specific analysis and the aviation-specific analysis. Chapter 6 evaluates the findings using a case study of electrifying Transavia's airline pilot program. Chapter 7 synthesises the three data analyses of the research. Chapter 8 answers the main research question and subquestions, discusses the managerial relevance, and provides practical recommendations for Transavia and other airlines to implement externally developed innovations. Finally, chapter 9 provides a discussion of the research, which covers limitations, generalisability, and recommendations for future research.

2

Contextual Background

This chapter provides the contextual foundation of this research by exploring the role of innovation in the aviation industry and the growing need for sustainable transformation. It outlines the innovation challenges faced by airlines and discusses the distinction between different types of innovation. The chapter explains the role of startups and venture activities in accelerating innovation. Finally, the chapter addresses the role Transavia can play in reducing its contribution to climate change.

2.1. Innovation within the Aviation Industry

The urgency of climate change has forced airlines to prioritise the development of sustainable operations. However, being innovative as an airline involves challenges since the aviation industry operates on minimal profit margins due to competitive ticket prices. Companies often struggle to balance short-term operational efficiency with competitiveness through continuous improvement in the long term (Matt's Moments, 2023). The strict regulations, long technology adoption cycles, and complex operations require significant effort to innovate as an airline. Achieving the net-zero goal requires a shift from traditional fuel-based aviation towards more sustainable alternatives. According to (Centre, 2022), radical innovation is essential for preserving the future of the aviation industry.

2.1.1. Types of Innovation Implementation

The degree of newness and degree of change of the innovation is defined into four categories: Disruptive, Radical, Incremental, and Architectural which are visualised in Figure 2.1. Incremental innovation refers to continuous improvements in existing technologies, such as optimising operations or improving engine efficiency. While these improvements contribute to sustainability, they do not fundamentally change the airline's operations. Architectural innovation often improves performance, efficiency, or functionality without a complete change of the underlying system, it uses existing technologies or components in a new way. Disruptive innovation refers to a new product, service, or business model that changes the existing market, for example, the introduction of low-cost carriers that forced full-service airlines to adjust. Radical innovation introduces entirely new technologies or business models that disrupt existing practices. Radical innovation often involves new technologies, introduces high-risk solutions, and creates entirely new market dynamics. Examples include electric and hydrogen-powered aircraft, autonomous ground handling systems, and new energy storage solutions. According to Rohacs (2023), radical innovation is essential for the long-term survival of the aviation industry, as incremental changes alone will not be sufficient to meet the net-zero goals. Therefore, this research mainly focuses on radical innovation.

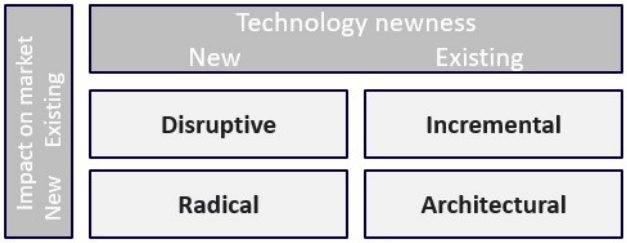

Figure 2.1: Different types of innovation

2.2. Product Pnnovation

Whether an innovation is considered successful after implementation can be assessed by the value it creates for the end user. In this study, the technology is developed by startups that have successfully overcome market and technological uncertainties and demonstrated commercial viability. The term product innovation refers to the introduction of new end-products to the market, rather than process innovation, which improves the performance or efficiency of existing products.

This distinction is crucial, as product and process innovations present different implementation challenges. While process innovation is typically about the organisation's internal operations and is at least one step removed from the final customer (Maine et al., 2011). Product innovation such as the transition from AVGAS aircraft to electric aircraft, involves a direct change in the core process. Electric aircraft require adaptations within the system, but the innovation itself just replaces an existing product.

Innovation literature highlights that new innovations often face challenges in gaining acceptance within the market, particularly during their early stages. As Mokyr (1990) describes, such early innovations can be perceived as "hopeful monstrosities" in which he means that they are promising ideas that initially underperformed compared to well-established technologies. This inferior performance can result from technical immaturity, limited familiarisation, or a lack of supporting infrastructure. However, market acceptance alone is not sufficient for successful implementation. Effective integration of innovation also requires alignment with the broader sociotechnical regime. This regime is a complex and interdependent network of elements, including organisations, engineering standards, professional skills, regulatory frameworks, financial systems and consumer practices. Together, these elements form the ecosystem that enables or constrains technological adoption. Therefore, for a new innovation to succeed, it must not only provide its technical economic value but also fit within the organisational and cultural structures of its operating environment.

Innovation in Established Organisations

The reason that airlines often struggle to implement radical innovative solutions is because they require a significant change in their operations. These operational adjustments, change management, and certification often take a lot of time. According to Ahuja and Lampert (2001), established firms often struggle with breakthrough innovations due to organisational challenges, including the familiarity trap (preference for familiar technologies), maturity trap (focus on stability and existing success), and propinquity trap (prioritization of solutions closely tied to current operations in location, time, or relationships). Another bottleneck for implementing innovations developed by startups can be resistance to change. Established organisations often have an administrative mindset that contrasts with the entrepreneurial approach of startups (Brown et al., 2001). Also, the hierarchical and rigid management structure within airlines can be a challenge that may stifle the creativity and adaptability of new technologies. According to the literature, venture activities adopt an entrepreneurial, effectual approach, focused on flexibility and opportunities. Airlines typically operate with a management mindset, a causal approach which is focused on structured planning and resource allocation (Sarasvathy, 2001).

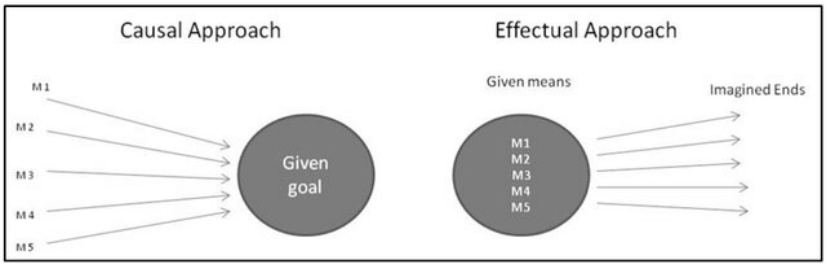

Figure 2.2: Causal (management) approach vs Effectual (entrepreneurial) approach (Qureshi & Mahdi, 2014)

As shown in Figure 2.2, the difference in mindset between airlines and venture programs extends to their organisational approaches. Airlines typically operate with a causal, resource-based approach because they prioritise efficiency. In contrast, venture programs are more opportunity-driven and use an entrepreneurial approach, which is often characterised by bottom-up innovation. This misalignment can potentially lead to resistance when venture-driven innovations are introduced within a structured airline environment.

2.3. Role of startups in Radical Innovation

According to Ries (2011) startups are ”human institutions designed to create a new product or service under conditions of extreme uncertainty” which emphasises their experimental and adaptive nature. Unlike traditional firms that prioritise operational efficiency and stable business processes, startups are driven by growth, innovation, and scalability (Blank & Dorf, 2012). Startups often drive radical innovation because they are free to experiment and introduce possible solutions to the market and because their small size and lack of bureaucratic structure allow them to change quickly and respond to market feedback (Ahuja & Lampert, 2001). Because of these characteristics, startups can support the development of innovation within an organisation as they work independently to develop and test technologies before implementing them into the aviation industry. By collaborating with startups, airlines can access cutting-edge technologies without the long internal development cycles.

Startup Phases

Startups typically grow through five key phases. Each stage has its own goals, challenges, and types of investors (Bass, 2018). The different phases are visualised in Figure 2.3.

1. **Ideation stage (Pre-seed):** This stage focuses on problem identification and searching for problem-solution fit. There is minimal growth but foundational learning occurs. Activities include market research, customer interviews, and conceptual framing. The team often consists of only the founders and is usually self-funded, known as bootstrapping. In this stage, they are mainly building a minimum viable product (MVP) and gathering user feedback to validate the idea to pitch it to pre-seed or seed investors.
2. **Validation stage (Seed stage):** In this stage, funding comes from angel investors or early-stage venture capitalists. The focus is on market validation by testing the MVP and refining product-market fit. The goal is to prove that the startup is solving a real problem so that people are willing to pay for the solution.
3. **Early growth stage (Series A):** Once product-market fit is achieved, the startup shifts to building a strategy to scale up and reach a broader market. This stage involves activities such as refining the product, expanding the customer base, and building infrastructure to develop a scalable business model.
4. **Expansion Stage (Series B/C):** The goal of this stage is to achieve a strong market position and move toward profitability or an exit strategy. Funding in this stage is from larger venture capitalists, strategic corporate investors, or private equity. An important activity in this stage is building partnerships.
5. **Maturity and exit stage:** Focus is on operational efficiency, sustained growth, and possible exit. In this stage, the funding comes from public markets and its goal is to deliver returns to investors through IPO, merger, or acquisition.

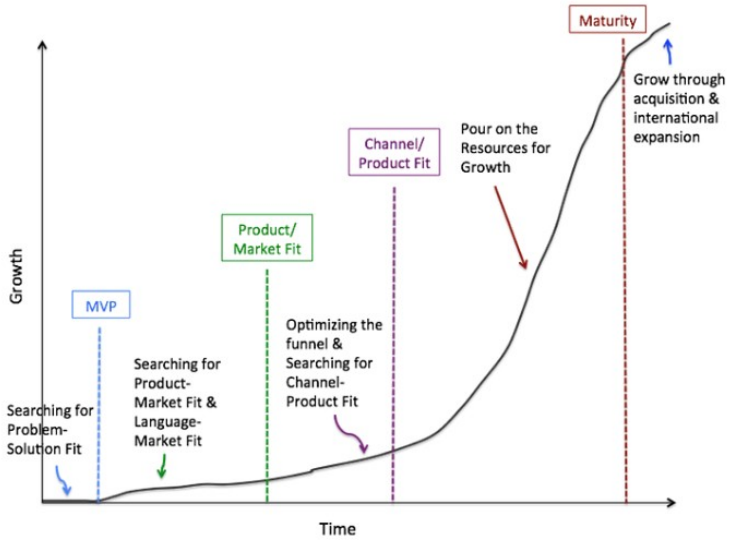

Figure 2.3: The five phases of the startup lifecycle. Adapted from Bass (2018)

Transavia is investing at a very early stage, which means they are often investing in the pre-seed stage. In this phase, they provide capital when the startup has limited or no market traction and is still in the process of validating its core idea. Investing in this stage involves a high risk but can also lead to high rewards when it succeeds. Early-stage investment plays an important role in the startup to transition from conceptualisation to realisation by funding product development, legal structures, and early market strategies.

2.4. Corporate Venture Capital

To accelerate innovation, Transavia established a corporate venture arm that invests in startups. Corporate Ventures (CVs) are typically categorised into internal and external approaches. Internal corporate venturing includes initiatives like entrepreneurship and spin-offs, while external venturing, such as Corporate Venture Capital (CVC), involves collaborating with startups to gain access to innovative solutions. Transavia introduced a venture program to foster innovation by collaborating with startups to develop new, sustainable technologies. According to the literature, Transavia's approach aligns with the CVC characteristics as it is an investment entity established by a corporation to support innovation by collaborating with startups. Generally, CVCs aim to align with the strategic goals and core business of the larger company (Venture Capital Careers, n.d.). Transavia Ventures currently has two core objectives. The first is achieving financial returns by investing in startups that align with Transavia's strategy. Secondly, driving organisational innovations to implement within the organisation and develop new revenue models that align with future industry trends (Engles, 2024). This approach bridges the gap between current aviation technologies and future possibilities, which is the mission of Transavia Ventures. They aim to achieve financial returns while driving innovation. The current focus areas include Sustainable Aviation Fuel (SAF), hydrogen and electric flying, noise reduction, alternative transportation models, and carbon-capturing technologies. They provide not only a financial investment but also operational expertise, industry knowledge, mentorship, and access to the corporation's resources as visualised in Figure 2.4.

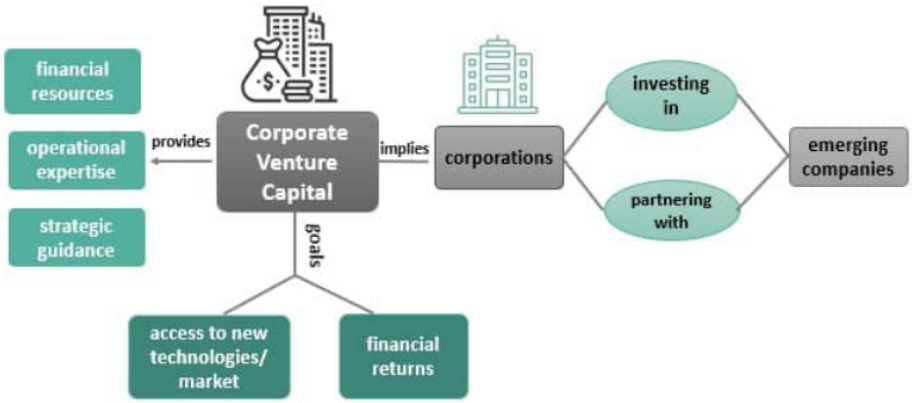

Figure 2.4: Overview of corporate venture capital. Adapted from Mehta (2024)

In a case study conducted at JetBlue Airlines, Burgelman and Sridharan (2021) identified three main strategic challenges for CVC initiatives. The first challenge involves balancing the investment portfolio between explorative and exploitative technologies. Explorative investments focus on radically new innovations for future operations, while exploitative investments optimise existing capabilities. Maintaining the right balance is critical to ensure that the CVC contributes both to long-term innovation and to short-term operational performance. The second challenge relates to the tension between autonomy and strategic alignment. When CVC operates independently from its parent organisation, it often has higher innovation performance and flexibility. However, this autonomy can also lead to misalignment with the company's core strategy. This misalignment increases the risk that innovations developed by the CVC will not be adopted internally, reducing the strategic value of the investment. The final challenge that this study highlights is the operational disconnection that often arises from early-stage investments. Startups are often in the conceptual or development phase, meaning their technologies are not yet mature or compatible with the parent company's processes, infrastructure, or regulatory constraints. This creates a temporary gap between the investment and implementation readiness. This makes it challenging for the company to integrate these innovations into its operations in a timely and effective way.

2.5. Sustainable Development within Transavia

In order to achieve the 2050 sustainability goal, there are currently three main technologies that achieve sustainable propulsion. The first one is Sustainable Aviation Fuel (SAF) which is a biofuel that reduces CO_2 emissions by 80% in its lifecycle but does not eliminate emissions during flight operations (European Union Aviation Safety Agency, n.d.-a). The second technology is a hydrogen-powered engine that offers a zero-emission solution since the production of H_2 does not create CO_2 as a byproduct, provided it is produced using renewable energy (European Union Aviation Safety Agency, n.d.-b). The last solution is the electric aircraft which has been developed since the 1970s, but so far it has only been used for recreational or demonstration purposes so far (Bauen et al., 2020). According to Bauen, electric aircraft could provide significant benefits to zero emissions and noise reduction.

2.5.1. Transavia Ventures

To drive Transavia´s innovation activities, they started a CVC to invest in early-stage startups with two main goals. First, to contribute to the strategy of sustainable development, which means for Transavia flying more sustainably and quietly. And second, as an investment tool to gain financial returns.

Transavia has invested in 10 different startups, which can broadly be divided into two main categories: travel experience improvement and sustainable aviation. Given that Transavia Ventures was initiated before the COVID-19 pandemic, when its focus was broader and more flexible, it made a strategic shift towards sustainability rather than travel experience in the period following COVID. The available investment capacity is now equally divided between startups focusing on sustainability and those enhancing the travel experience.

2.5.2. Innovation Path within Transavia

To research the implementation process of venture innovations, it is relevant to understand the process before implementation occurs. In this case, the innovation is developed externally by a startup, and Transavia determines whether to invest in it. The decision-making process for evaluating the investments follows the stages outlined in Figure 2.5, presented from left to right.

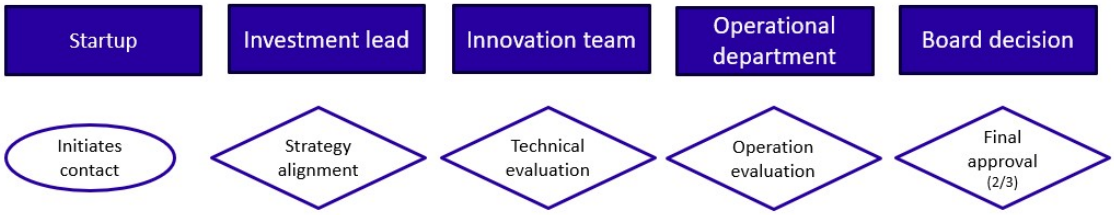

Figure 2.5: Stages for investment decision

Typically, a startup approaches Transavia Ventures, or in some cases, Transavia searches for a startup within its field of strategic interest. The investment lead at Transavia assesses whether the startup aligns with the company's strategic direction, which is quieter and cleaner operations, and whether Transavia can contribute relevant expertise. If these criteria are met, the innovation team evaluates the technical feasibility and potential impact of the proposed solution. When the team considers the innovation promising, the relevant department within the organisation is consulted to provide operational input. However, this role remains advisory, as operational teams primarily focus on daily operations, which may involve short-term constraints, whereas innovation efforts require long-term perspectives. Finally, the proposed investment must be approved by Transavia's Venture executive board. For venture investments, three board members are involved in the decision-making process. If at least two out of three members approve, the investment is authorised, and the collaboration will start. It is important to realise that this process precedes the implementation process analysed in this research. After the final approval, the innovation will be further developed by the startup, and implementation will follow.

2.5.3. Electrification Initiatives

As part of the airline's operations, the Transavia Airline Pilot Program also falls within the scope of the airline's climate objectives and therefore contributes to its net-zero CO_2 emissions goal for 2050. Transavia Ventures invested in a startup facilitating fully electric pilot training. The current flight training is done with the Tecnam P-Mentor, a fuel-powered aircraft with an average consumption of 14 litres of AVGAS per flight hour (Aircraft, 2023). Each student completes approximately 60 hours of flight time during their practical training phase, resulting in roughly 1950 kilograms of CO_2 emissions per student. With an annual average of 30 students, the pilot training generates an estimated of 58.500 kilograms of CO_2 emissions per year for the practical phase, also called the core-phase.

Transavia Ventures invested in a startup facilitating electric pilot training, which potentially results in the elimination of these emissions. The Pipistrel Velis Electro is currently the only EASA-certified electric aircraft which makes it a viable solution. This aircraft features two 11 kWh batteries and can fly for approximately 50 minutes with an additional reserve time, making it suitable for short training flights. Using this aircraft for flight training would fully eliminate CO_2 emissions from the training flight hours. Given the fact that the alternative solution as the use of Sustainable Aviation Fuel (SAF), currently has regulatory constraints, electric flying is the most immediately actionable solution to eliminate CO_2 emissions within the pilot training.

E-flight Academy is a Dutch startup founded in 2021, which is the first flight school in Europe focusing entirely on fully electric aircraft. E-flight is a fully certified flight academy and currently trains pilots using electric aircraft. A collaboration between Transavia and E-flight already exists. However, further steps need to be taken for the realisation of implementation. Training future Transavia pilots at E-flight is a potential step towards achieving the 2050 sustainability goals.

3

Methodology

This chapter first introduces the overall research design, followed by a description of the method used for the systematic literature review. The methodology used for the internal interviews at Transavia and the external interviews with industry stakeholders is then discussed. This is followed by the case study design. The chapter concludes with the approach to data analysis and a reflection on the methodological limitations that may affect the interpretation of results.

3.1. Research Design and Approach

This study aims to identify the key factors that support the implementation of innovation within Transavia. To achieve this, a qualitative case study approach was selected, as this aligns with the exploratory nature of the research and the need to understand innovation activities within a real-world organisational context.

The study combines three components: (1) a systematic literature review, (2) semi-structured interviews, and (3) a case study. The literature review forms the theoretical foundation, identifying key implementation factors from prior academic research. The semi-structured interviews serve two purposes: first, to explore how these theoretical factors are perceived within Transavia; and second, to compare these findings with external organisations facing similar challenges. Interviews were selected as a primary data collection method because they are particularly effective for capturing context-specific knowledge, and exploring perceptions that may not be visible through quantitative measures. The flexibility of semi-structured interviews allows respondents to reflect on their own experiences while still ensuring comparability across participants.

Finally, the case study focused on the potential implementation of electric flight training. This enables the research to evaluate and contextualise the previously identified factors in a concrete, real-life innovation project. This layered methodology ensures that the findings are both theoretically grounded and empirically tested across multiple levels of analysis.

3.2. Systematic Literature Review

A structured literature review was conducted to address the first objective of this study: identifying key factors that support the implementation of venture-driven innovations. This list of key factors served as a framework, functioning as an analytical tool, that is used throughout the entire research to assess findings against existing literature.

The literature search was performed using academic databases such as Google Scholar and ScienceDirect and included academic journal articles, industry reports, and case studies relevant to the open innovation context, which is about outside-in innovation processes. In total, ten articles were analysed in this structured literature review. This number was not fixed in advance but was determined based on the principle of saturation, the point at which new reviewed articles no longer introduced additional relevant factors. In advance, it was determined that a minimum of ten articles would be analysed. To ensure the robustness and relevance of the key factors, only factors that are mentioned in at least three different sources were included in the final list of analysis. This threshold was applied to reduce the influence of isolated findings and to ensure

the inclusion of factors that are more consistently supported across the literature, which improves the reliability of the analysis. Although literature exists on the implementation of externally developed innovations into established organisations, research specifically addressing implementation through venture programs in the aviation industry is limited. Therefore, identifying key factors was based on literature from outside the aviation sector. This broader scope allowed for selecting general success factors for open innovation implementation, which were later evaluated against the empirical analysis within the aviation industry. Importantly, only studies involving implementation into larger organisations were included, literature focusing specifically on the implementation into startups or small and medium enterprises (SMEs) was excluded. A full overview of the included articles and the factors they mention is provided in Appendix A.

Given the specific and unique circumstances of the context of this study, the availability of directly relevant sources was limited. To address this, a flexible and iterative search strategy was employed. This means that initially, search strings were developed based on the defined key terms. The resulting articles were subsequently screened and selected based on the following criteria:

- **Title relevance:** The initial screening was to evaluate the titles to assess their alignment with the implementation of innovation.
- **Abstract content:** Abstracts were critically reviewed to understand the scope and context. The important aspect here was that the article provided key factors that support the innovation.
- **Keywords:** Keywords provided were used to determine the relevance and identify for example the industry of the research.
- **Publication date:** Priority was given to recent publications (within the last 10 years) to ensure the inclusion of up-to-date research.
- **Full-text availability:** Only studies with full-text access were included to ensure a comprehensive understanding of the research.

Due to a rapid decline in the relevance of the search results, the search string was iteratively refined. This iterative approach was necessary given the broad searching scope and the critical selection criteria applied during the review process, which quickly decrease the relevance of the articles. Although this complexity reduces the rigidity of the research process, it allows for greater adaptability and reviewing relevant literature.

An overview of the search strings used with the corresponding articles evaluated is provided in Appendix A. The search strings included the following:

1. Drivers for open innovation implementation
2. Critical factors for open innovation
3. Technological innovation adoption in organisations

Table 3.1: Inclusion and Exclusion Criteria for Literature Selection

Criteria Type	Description
Inclusion Criteria	• Peer-reviewed journal articles, industry reports, academic theses, and case studies • Published between 2010 - 2025) • Focused on innovation implementation • Empirical research (qualitative, quantitative, or mixed methods)
Exclusion Criteria	• non-empirical evidence (conceptual or opinion papers without data) • Non-English publications • Articles lacking methodological rigour • Studies unrelated to innovation implementation • Papers solely focused on product development without organisational integration

3.3. Empirical Study - Interview protocol

For the empirical study, interviews were conducted in two different phases of this research, each targeting a different group of respondents. Despite the variation in the groups, the purpose of the interviews remained the same. Therefore, the same interview protocol is used for both interviews. The first phase involved interviews with company experts. In the second phase, interviews were conducted with employees from comparable companies within the industry to explore similarities and differences compared to the internal company findings.

All interviews followed a semi-structured format to ensure core topics were addressed while allowing respondents the flexibility to focus on topics based on their experiences and perspectives. The interviews were intentionally not fully structured as this approach allows a fair analysis of what respondents consider important and minimises researcher bias. A set of predefined questions was developed to ensure that all interviews addressed the same core themes relevant to the research objectives, this interview protocol is provided in Appendix B. These core themes were derived from the results of the literature review, which identified four overarching categories that support the implementation of innovation. The literature review concludes that four overarching categories influence innovation implementation:

- Culture
- Organisation
- Operational/Technical
- External

The literature study and this categorisation is further explained in section 4.2. During the interviews, it was actively monitored whether all key topics were discussed, ensuring complete data collection. The interviews were conducted in person or via Microsoft Teams. All interviews were recorded with consent and later transcribed for detailed thematic analysis.

3.3.1. Transavia Interviews

Internal interviews were conducted with Transavia employees to understand how innovation is integrated within the company. This interview discusses current factors that support innovation, barriers to innovation, and changes that would improve innovation. The goal was twofold: firstly, to determine whether the factors found in the literature align within Transavia's context, and secondly, to identify necessary improvements on these aspects to facilitate innovation implementation.

Participants for the internal interviews are selected via purposive sampling to ensure a representative group from multiple departments. Ten internal interviews were conducted across different hierarchical and functional levels. An overview of interviewees is presented in Table 3.2, including their department, position level, company experience, and interview duration. A distinction of three levels is defined: 1) The domain lead is the head of a specific department. This person is part of the upper management layer and reports directly to the board of directors. 2) The team lead has a mid-level management role and is responsible for an operational team within a department. Team leads report to the domain leads. 3) The operational level is employees who are not in a formal leadership position. They may be team members or specialised roles.

Table 3.2: Overview of internal interviewees

Level of position	Company experience	Interview duration
Domain lead	[Confidential]	32 minutes
Operational	[Confidential]	33 minutes
Team lead	[Confidential]	33 minutes
Operational	[Confidential]	35 minutes
Team lead	[Confidential]	25 minutes
Team lead	[Confidential]	35 minutes
Operational	[Confidential]	43 minutes
Domain lead	[Confidential]	26 minutes
Domain lead	[Confidential]	41 minutes
Team lead	[Confidential]	20 minutes

3.3.2. Industry-wide Interviews

Interviews with comparable companies within the industry were conducted to explore whether similar organisations encounter the same challenges or whether the identified factors are specific to Transavia. The interviews are done with experts from venture activities in similar industries (see Table 3.3). These interviews are used to understand whether certain factors identified in the internal interviews are company-specific for Transavia or not. Comparing the industry interviews with the interviews conducted at Transavia, together with the literature review, it provides contextual triangulation of the results.

Table 3.3: Overview of external interviewees

Company	Years of experience	Interview duration
Nederlandse Spoorwegen	[Confidential]	45 minutes
Schiphol Group	[Confidential]	46 minutes
KLM	[Confidential]	46 minutes
KLM	[Confidential]	42 minutes
KLM	[Confidential]	29 minutes

3.3.3. Validity of the Interviews

To ensure validity, the interview questions were based on the literature findings, which ensures the relevance of the topics discussed. Additionally, the expertise of interviewees was assessed by considering their roles within Transavia and their years of experience within the company. Their roles were not assessed based on the hierarchical level but rather on whether their position involved innovation-related tasks or should ideally engage with innovation but did not. This ensures relevant information on how innovation is structured within the company and where improvements can be made.

Relevant topics were consistently discussed in all interviews to ensure the interviews can be compared. A complete list of interview questions can be found in Appendix B. In general, all interviews had the following structure:

1. Innovation experience within Transavia
2. Barriers and success factors for innovation
3. Check their experience on general factors from literature (organisational, technical/operational, cultural, external)
4. Evaluate what changes would improve innovation

This approach ensured that all relevant information was covered and allowed for comparisons across interviews. Furthermore, certain definitions were clarified to avoid misinterpretations (innovation, implementation, culture, organisational, technical/operational, and external factors). To ensure the quality of the responses, certain questions were adjusted based on the expertise and background of the interviewee.

3.4. Case Study Design

To complement the internal and industry interviews and to test the applicability of the factors in a real-world setting, this study includes a case study. This case study aimed to assess the extent to which the theoretical implementation factors are present or lacking in a real-world context of electrifying the airline pilot program. The case study examines the proposed integration of electric flight training, developed by a startup, into Transavia's airline pilot program. This innovation was selected because it has already reached technical maturity, is already a partner of the venture program through investments, and aligns with Transavia's broader sustainability objectives, making it highly relevant for examining venture-to-operations translation. The goal of the case study is to assess whether the theoretical implementation factors identified are also applicable in the practical context.

Three semi-structured interviews were conducted, each interview lasted between 30 and 45 minutes and followed a flexible topic guide to allow for in-depth insight, these topics are mentioned in Appendix B. The interviewees were selected based on their functional relevance and experience, as stated in Table 3.4 one of them is responsible for the startup, and the other two are responsible for the pilot training program and the decision to electrify the program. The interviews are transcribed and analysed in a structured way around the nine implementation factors derived from the literature review. Transcripts are analysed to determine the presence or absence of each factor in the context of the case study.

Table 3.4: Overview of interviewees for the case study phase

Company	Years of experience	Interview duration
Transavia	[Confidential]	42 minutes
Transavia	[Confidential]	32 minutes
E-Flight Academy	4.5 years	46 minutes

3.5. Data Analysis

To ensure consistency and comparable results, all responses are transcribed and analysed using a structured, manual thematic analysis. A thematic analysis was done to identify recurring patterns from the interview data. This is done manually because it enables a more nuanced and context-specific interpretation of the data (compared to automated analysis), which is particularly important for an exploratory case study. Manual analysis allows for evaluating not just whether a topic was mentioned, but how it was discussed (positive or negative). This flexibility makes it easier to uncover underlying themes that may not be captured through predefined keyword-based methods.

Each interview transcript was analysed by manual highlighting emerging themes (inductive categories) and was linked again to the categories from the literature (deductive). Table 3.5 is used to analyse the interview data in a standardised manner. All general implementation factors from the literature were discussed and rated based on their perceived level of importance. Since each respondent interprets these factors slightly differently, a brief explanation is provided to clarify each individual's perspective.

Table 3.5: Standardised analysis design for each interview

Implementation Factor	Importance Score (1–4)	Explanation / Context
Organisational		
Culture		
Technical / Operational		
External		

One important aspect of the importance score in this analysis is that they reflect what the interviewee considers to be the most significant factors influencing the ability to adopt new innovations. However, the interviewees' responses are likely shaped by two overlapping perspectives: what they personally believe is most important to be innovative, and what they think Transavia has the most room for improvement. These are distinct considerations, but they are likely interdependent in the interviewee's response.

After analysing the interviews at the higher-level categories, the intended level of analysis is based on the analytical framework consisting of nine innovation factors derived from the literature. To achieve this, a qualitative analysis is performed for each interview transcript, focusing on identifying remarks and examples that align with one or more of these innovation factors. This involves a systematic manual coding process to determine which specific factors are discussed during the interviews. The coded statements of the interviewees are assigned to the corresponding key factors. The collective results are analysed using a table which has the format of the example visualised in Figure 3.1. This table is only for explaining the method and does not represent the results. In this table, each column represents an individual respondent, while each row corresponds to one of the nine innovation factors. A green cell indicates that the respondent referred to that specific factor during the interview, and red indicates it was not mentioned. The final column summarised the overall level of support for each factor, with the following thresholds:

- < 40% = weak evidence
- 40 - 70% = moderate evidence
- > 70% = strong evidence

Literature Factor	Interview X	Interview Y	Interview Z	# Mentioned	% of Interviews	Strongly Evident?
Factor 1	1	1	1	3	100%	✔ Yes
Factor 2	0	0	1	1	33%	✔ Yes
Factor 3	1	1	0	2	67%	✔ Yes

Figure 3.1: Interview data collection table

3.6. Methodology Limitations

Several methodological limitations should be considered when interpreting the findings of this study. First, the literature review was constrained by the limited availability of academic sources focused specifically on venture-driven innovation implementation within the aviation sector. To address this, relevant literature on open innovation and external innovation adoption from other industries was incorporated. While this broadened scope allowed for identifying key implementation factors, it may reduce the context-specific conditions. This limitation was partially mitigated by validating the identified factors through expert interviews within the aviation industry.

Second, the use of semi-structured interviews introduces some level of subjectivity, both in the responses of participants and in the thematic analysis conducted by the researcher. Interviewees may hold personal biases or organisational perspectives in their responses. To reduce this bias, a diverse group of respondents from different departments and roles was selected. Additionally, the data was analysed using a standardised coding approach and standardised tables improve objectivity and consistency to compare the results.

Finally, organisational bias may have influenced the findings. Internal respondents may have an interest in innovation or not. They can have experience in the success or failure of innovation initiatives, which potentially can affect their perspective.

3.6.1. Methodological Applicability

Although this research focused on a radical, externally developed innovation implemented through a corporate venture program, the chosen methodological approach can be applied more broadly. The structured combination of a literature-based framework, semi-structured interviews, and a case study offers a flexible method for exploring innovation implementation in different settings. In chapter 9, this will be discussed further. However, it is important to note that the implementation factors identified from the literature are specifically tailored to the contexts of externally developed technologies that need to be adopted by established organisations. As such, their applicability to internally developed innovations requires a new literature study with other searching strings but can use the same methodology in the following research phases.

4

Literature Framework

This chapter covers the literature-based framework that forms the foundation of this research. Therefore, this chapter answers the first research question of this study. First, it presents several models related to change management that are used to analyse the results of this study. It provides the results of a systematic literature review, which identifies a set of key factors. This list of factors serves as an analytical framework which forms the basis of the empirical analysis as described in section 4.2. Section 4.3 introduces several change management theories, which will be used to reflect the results in the following chapters.

4.1. Literature Study - Identifying Implementation Factors

By doing a structured literature review, key factors supporting implementation will be analysed. Ten academic articles are analysed that focus on the implementation of externally developed innovations intended to be implemented in an established organisation.

The literature review in this study focuses on the implementation of innovative technologies through open innovation rather than from CVC literature. While CVC is the context of this research, most academic literature about this topic is about investment decisions, startup selection, and portfolio management. These topics fall outside the scope of this research. In this study, the investment is treated as a given and the implementation of externally developed technologies is the interest. Therefore, literature on open innovation provides more relevant insights for this part of the analysis as it addresses how external knowledge and technologies are implemented within existing organisations.

Ten scientific articles were analysed to identify factors that support innovation. An overview of the factors identified in each article is provided in Appendix A. Through a structured cross-analysis of the articles, the identified factors were examined and redefined as nine overarching main factors. These nine factors serve as the analytical framework used to guide the following analysis in this study. Table 4.1 presents the defined overarching main factors, the corresponding factors as described in the literature, and their respective sources.

Table 4.1: Overview of factors from literature

Main factors	Definition from literature	Sources
Culture & Mindset	Openness for external ideas, experimentation, risk-taking, overcoming 'not invented here' mindset, problem-solving mentality, flexibility	Sivam et al. (2019) Morta & Minshall (2011) Subtil de Oliveira et al. (2018) Hosseini (2017) Coates & Bals (2013) Durst & Ståhle (2023)
Strategic Alignment	Innovation strategy, alignment with business, clear goals, securing budget, commitment from management, feasibility awareness	Walter et al. (2021) Sivam et al. (2019) Subtil de Oliveira et al. (2018) Hosseini (2017) Durst & Ståhle (2023)
Leadership & Governance	Strong leadership, change management, innovation champions, resource allocation, clear governance structures, decentralised decisions	Sivam et al. (2019) Subtil de Oliveira et al. (2018) Durst & Ståhle (2023) Coates & Bals (2013) Robert (2009)
Operational readiness	Dedicated innovation projects, balancing daily operations with innovation, stable operations, improvement opportunities	Sivam et al. (2019) Robert (2009) Durst & Ståhle (2023) Hosseini (2017)
People & Skills	Skilled employees, diversity in teams, innovation motivation, willingness to learn, problem-solving mentality	Sivam et al. (2019) Talukder (2012) Durst & Ståhle (2023) Coates & Bals (2013)
Knowledge & Learning	Knowledge transfer, absorptive capacity, learning systems, R&D collaboration, evaluation of results, implementation policies	Walter et al. (2021) Sivam et al. (2019) Hosseini (2017)
Communication & Buy-in	Frequent communication with stakeholders, internal communication, maintaining management support, ensuring organisational buy-in	Coates & Bals (2013) Subtil de Oliveira et al. (2018) Walter et al. (2021)
Market & Environment	Market and technical characteristics such as speed, maturity, competitiveness; External environment including incentives, mandates, regulations, funding, government pressure	Schroll & Mild (2012) Robert (2009) Durst & Ståhle (2023)
Network & Partnership	Collaboration readiness, relational aspects, external partnerships, trust, shared goals, coordination, supplier networks	Walter et al. (2021) Sivam et al. (2019) Durst & Ståhle (2023) Subtil de Oliveira et al. (2018) Coates & Bals (2013)

To ensure clarity in the definitions of the factors that form the basis of the empirical analysis in this research, they are defined as follows:

- **Culture:** The organisation's openness to new ideas, its willingness to take risk, experiment, and adapt, and its ability to overcome internal resistance to externally developed innovations. A supportive culture fosters a proactive, problem-solving mentality and flexibility in dealing with change.
- **Strategic Alignment:** Strategic alignment captures the extent to which an innovation fits within the organisation's broader goals, strategies, and priorities. It ensures that innovation initiatives are purposeful and aligned with the long-term direction of the organisation
- **Leadership & Governance:** This category describes the role of leadership in driving innovation forward and the presence of structured governance to guide implementation. It includes the ability of leaders to champion change, allocate time and resources, and manage the innovation process effectively.
- **Operational Readiness:** Reflects the organisation's capacity to support innovation through its infrastructure, processes, and decision-making structures. It includes the ability to integrate innovation without disrupting core operations and the existence of clear governance mechanisms.
- **People & Skills:** People and skills refer to the human capabilities needed to implement and sustain innovation, including technical expertise, creativity, adaptability, and motivation. A diverse and competent workforce is essential for navigating the complexities of change.
- **Knowledge & Learning:** This category focuses on how well the organisation can absorb, transfer, and apply new knowledge. It includes internal learning, structured evaluation, and continuous improvement to ensure that innovation efforts are made.
- **Communication & Buy-in:** Communication and buy-in involve engaging stakeholders through transparent, consistent, and targeted communication efforts. Effective communication builds trust, aligns expectations, and fosters organisational support for innovation initiatives.
- **Market & External environment:** This category includes the external conditions that influence implementation, such as market dynamics, regulatory frameworks, technological maturity, and funding availability. Understanding these factors helps organisations anticipate challenges and leverage opportunities.
- **Network & Partnership:** Refer to the external relationships that support innovation, including collaboration with suppliers, ventures, regulators, and other stakeholders.

4.2. Literature Results used for Interview Protocol

This section elaborates on the methodology used for the interviews. The focus is on explaining the foundation of the interview protocol, which is created around the results of the literature study.

After identifying the nine innovation implementation factors through the literature review, these were further examined during the interviews. To guide these interviews in a focused and time-efficient way, the nine factors were clustered into four overarching categories. This offers several advantages in both data quality and the comparability of the data analysis. First, it enhances clarity for the interviewees, allowing them to more easily understand the topics. Given the average interview duration of approximately 30 minutes, discussing each factor individually would have reduced the structure and depth of the conversation. Second, the broader categories enabled the researcher to provide only minimal guidance, reducing potential influence on participants' responses. By framing the questions around general themes, participants could share their own perspectives on what they considered important for innovation within each theme. This approach helped minimise researcher bias while ensuring that all relevant topics were addressed. Additionally, the semi-structured interviews allowed for deeper exploration of each theme, resulting in richer and more detailed data. Third, the use of thematic categories improved the comparability of results across different interviews by providing a consistent analytical structure. Many of the individual factors are closely interrelated and can be difficult to separate during discussion, which increases the risk of subjective interpretation or miscommunication. By grouping them into four clearly defined categories, the boundaries between different types of factors were made more explicit, thereby increasing the reliability of the analysis.

The four categories, as visualised in Figure 4.1, form the basis of the interviews to identify key factors that support innovation in an empirical context. The figure provides an overview of which specific factors fall under the overarching categories. The conclusion of this literature review is the basis of the interview protocol, which is provided in Appendix B.

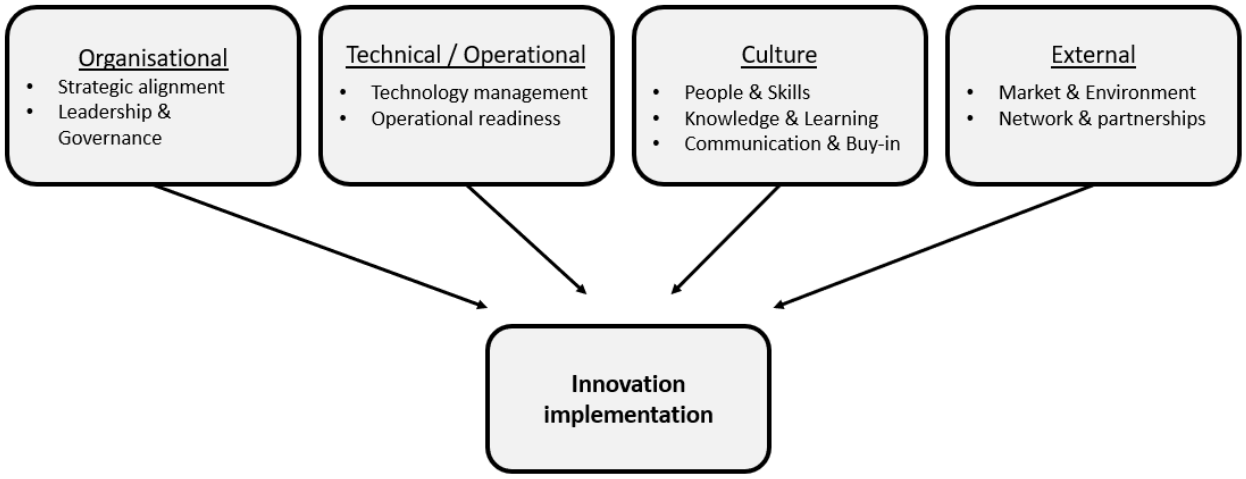

Figure 4.1: Four categories of key factors

4.3. Change Management theories

In order to analyse the results of this thesis, the findings of these nine factors will be analysed using some theories about organisational change management. This section will introduce those theories and will be used to reflect on the empirical findings in the following chapters.

Implementing radical innovations in aviation requires more than only technological improvements, (Lai et al., 2021) highlight that the primary challenges in reducing the aviation industry's climate impact are mostly socio-economic or political in nature. Because of the high demand, slow technological progress, regulatory barriers, and economic considerations, introducing radical innovation requires not only new technologies but also a change in its environment. Research of Geels (2006) explains this by using the case of the transformation of aviation in the shift from propellers to turbojets. He discusses the importance of multi-level dynamics in transformation and provides an overview to illustrate the different elements that should be considered when introducing radical change. Geels (2006) introduces a multi-level perspective with different levels that work together to drive these changes. Instead of applying the traditional Multi-Level Perspective (MLP) framework, which consists of the niche, regime, and landscape levels, this study slightly changes the definitions of the different levels that better fit the context of innovation implementation within aviation organisations: the individual, departmental, and organisational levels as visualised in Figure 4.2. This adjusted approach allows for an analysis of the internal dynamics that influence innovation processes within the company.

1. **Organisational level (macro):**
   This level covers the broader organisational structure of the entire company. It includes the broader strategy, culture, organisational structure, and innovation policy of the airline. Factors such as board decisions, partnerships, and innovation integration into core business determine whether and how innovations can be successfully implemented within the company. This level also includes external influences such as regulations and market dynamics.
2. **Departmental level (meso):**
   Departments play a critical role in translating strategic goals into operational practices. These departments are often a connection between high-level vision and operational execution. This is a crucial layer of analysis as it can either accelerate or hinder the implementation of innovations, depending on their structure, operational readiness, and innovation mindset.

3. **Individual level (micro):**
   At this level, the focus is on the individual, which is the employee within the organisation. This can be a pilot, technician, cabin crew, or innovation lead, who is directly involved in adopting and working with the new technologies. Successful implementation of radical innovation often requires a change in behaviour, the development of new skills, and a willingness to change.

By analysing innovation processes across these three internal levels, this adapted MLP framework provides an understanding of how new technologies can be adopted within airline operations. Innovation does not occur in isolation, it depends on the alignment and interaction between individuals, departments, and organisation. Therefore, it is important to analyse factors across the different levels and include the dynamics between the different levels. External pressures, such as environmental interests, regulations, or customer expectations, can also support a change across these levels.

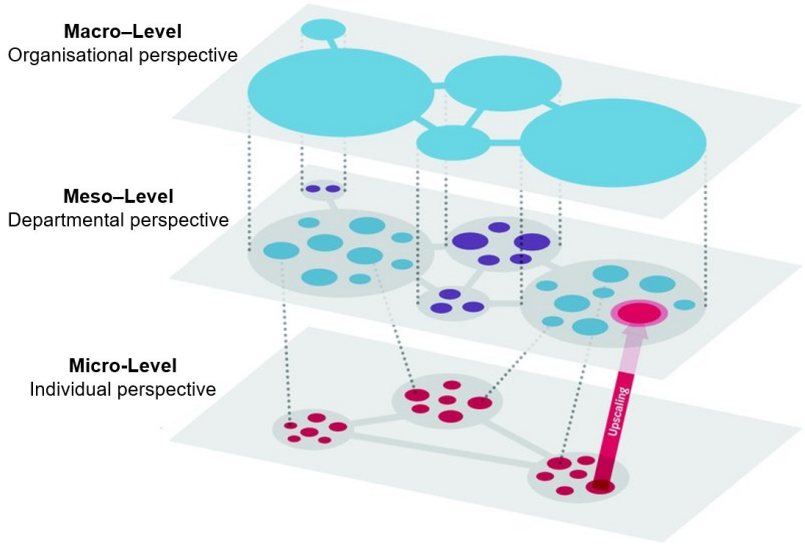

Figure 4.2: Multi-Level Perspective theory adapted from Garcia et al. (2020) (adjusted text)

4.3.1. Influencing Factors at Macro-Level

The macro-level in this study refers to the organisational level, which covers the overall structure, strategic direction, internal policies, and investment decisions. These internal factors influence and shape how innovation is perceived, prioritised and implemented into the company. Therefore, it influences both innovation activities at micro-level (individuals) and meso-level (departments). Many airlines are heavily reliant on conventional aviation technologies and legacy systems. Airlines often invested in traditional systems and have long-standing partnerships with manufacturers which makes a shift toward radically different technologies financially risky and operationally complex. Strategic decisions can influence innovation, but is influenced at the same time by return on investment expectations, fleet planning, and operational priorities which can hinder the ability to implement new technologies. In addition, external pressures as climate policies and public expectations, are changing, which may lead to the internal policies no longer being aligned. The implementation of innovation requires organisational commitment, strategic vision, and the ability to allocate resources. Therefore, this level is critical for both the departmental and individual levels.

4.3.2. Influencing Factors at Meso-Level

The meso-level is defined as the socio-technical system in which the innovation is implemented, in this case the departmental level. It also involves the dominant structures, rules, and practices that determine the way of operating. Examples include operational systems, infrastructure, and organisational culture.

Change Management

Kotter's 8-step change model provides a structured approach to overcome resistance and ensure long-term integration of new technologies. This framework is visualised in Figure 4.3 and outlines key factors that support successful implementation on an organisational level.

The first step in the model is to create a sense of urgency within the organisation. Employees must recognise why the new technology is necessary. This can be achieved through an assessment of competitive advantages or by identifying inefficiencies in the current technology. This first step can help convince employees of the perceived usefulness of a technology, which refers to the TAM model discussed on the following section. The second step is to build a group of influential employees who support and advocate for change. Managers can play an important role in this and within Transavia Continuous Improvement Specialists (CISs) play a key role in driving bottom-up innovation. A strong coalition ensures that innovation initiatives receive broad support across the organisation. The third step involves developing a strategic version that helps employees understand how the technology will benefit the organisation and their role in its adoption. The fourth step is to communicate the vision through different channels to reduce uncertainty and resistance. The fifth step focuses on removing barriers that may hinder implementation. Addressing obstacles such as lack of training, technical challenges, or internal resistance early in the process stimulates a smoother transition and increases perceived ease of use among employees. The sixth step is to set goals that can be achieved quickly, such as small pilot projects or early adopters demonstrating positive results. The seventh step is to sustain acceleration and drive continuous change. In this step, it is important to avoid the risk of the organisation returning to the old habits. The eighth and last step is to ensure that the new technology becomes a standard part of the operations.

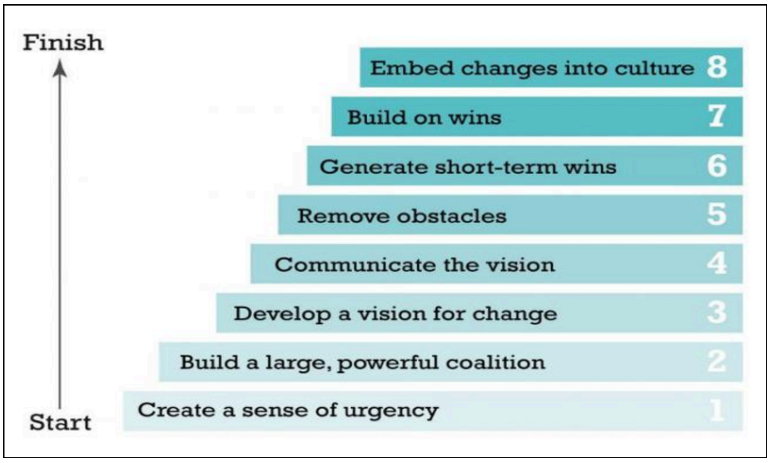

Figure 4.3: Kotter's 8-step change model. Figure adapted from Walker (2023)

4.3.3. Influencing Factors at Micro-Level

The micro level analyses the individual perspective who are directly involved in adopting and working with the technology. Some models from the literature are relevant to include in this level of analysis.

Technology Acceptance Model

One aspect of the micro-level is the individual acceptance of the technology. The Technology Acceptance Model (TAM) examines how employee perceptions impact the success of new technology adoption. The core argument of TAM is that two primary factors determine user acceptance of technology: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which a person believes that using a technology will improve their job performance, which refers to the first step of Kotters' model as well. The perceived ease of use relates to the degree to which the technology is seen as effortless to operate. This model is visualised in Figure 4.4.

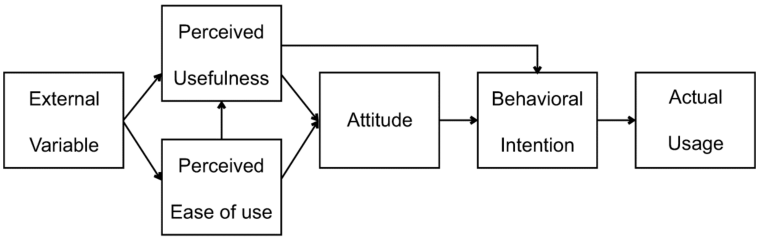

Figure 4.4: Technology Acceptance Model, Adapted from Park and Park (2020)

This perspective aligns with a curve that Transavia's innovation team is internally using to understand the importance of innovation awareness. This curve (Figure 4.5) highlights the relationship between the motivation to change and the ability to change as key determinants in the adoption of innovation. The balance between these two aspects is critical: even if employees recognise the usefulness of a new technology (high motivation), they may still resist its adoption if they lack the necessary skills or confidence (low ability to change). Conversely, if employees have the technical know-how but do not see the added value, adoption will be challenging. The curve illustrates this as a "line of action" which is visualised in Figure 4.5 and shows that for successful innovation implementation, organisations must balance motivation (which aligns with perceived usefulness in the TAM model) and capability building (which relates to perceived ease of use in the TAM model).

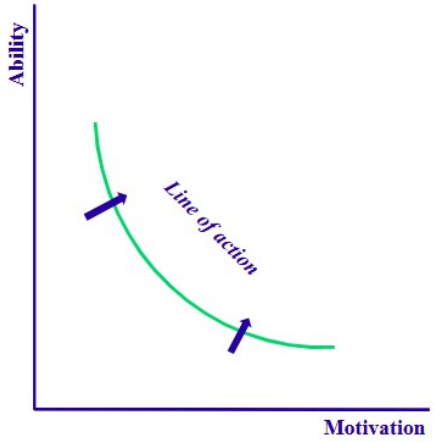

Figure 4.5: Line of action graph

Beyond individual adoption, organisational culture plays a significant role in shaping perceptions of usefulness and ease of use. Employees' willingness to embrace innovation is not only influenced by their own experience with the technology but also by social and cultural factors within the organisation. Although organisational culture is covered in the meso-level as it involves change management, routines, and shared norms, (Venkatesh & Davis, 2000) extended TAM by highlighting the impact of social influence and cognitive instrumental processes in shaping technology acceptance. Their findings indicate that job relevance, output quality, and social norms impact how individuals perceive the usefulness of technology. In an environment where employees collectively doubt the relevance of an innovation, or where key influencers in leadership positions resist change, overall acceptance across the organisation is likely to be hindered (Venkatesh & Davis, 2000).

Moreover, (Venkatesh & Davis, 2000) found that as users gain experience with a technology, their reliance on social influence diminishes. This suggests that hands-on experience and training can mitigate resistance by increasing perceived ease of use and perceived usefulness. When employees become more confident in using the system, their adoption is driven by personal experience rather than external pressures. This insight highlights the importance of pilot projects and leadership support to facilitate a smoother innovation implementation process. By integrating TAM with the line of action curve, it becomes clear that successful technology adoption requires a dual focus on increasing motivation and enhancing user capability. Organisations that proactively manage these dimensions are more likely to achieve innovation implementation.

5

Empirical Findings

This chapter answers the second sub-question of this research by presenting the empirical findings derived from the interviews. The goal is to explore which key factors identified in the literature (provided in chapter 4) are also relevant for the implementation of innovation within the airline-specific context, and whether these factors also exist across the industry. To confirm this, a Transavia-specific analysis is conducted, followed by an industry analysis. In doing so, the aim is to reflecting the theoretical framework with practical insights.

The chapter begins by presenting Transavia-specific findings based on the four overarching categories derived from the literature: Culture, Organisation, Technical/Operational, and External. Subsequently, a more detailed analysis is carried out using the full analytical framework consisting of the nine factors. After the Transavia-specific analysis, the same analysis will be discussed for the industry-specific analysis to compare findings within Transavia with comparable companies. This enables a comparison that reveals whether a factor is specific to Transavia or whether it is a recurring factor across other companies in the industry. Together, these two sections form the basis for the case study analysis discussed in chapter 6.

5.1. Transavia-specific Analysis

The Transavia-specific analysis is based on ten semi-structured interviews conducted across various departments within Transavia. These interviews were guided by the four overarching categories developed from the literature review: Organisational aspects, Operational/Technical aspects, Cultural aspects, and External environment (as described in section 4.1). During the interviews, participants were first asked to reflect on each of the four themes and rank them based on their perceived importance for the successful implementation of innovation. A ranking scale from 1 (least important) to 4 (most important) was used. Although the initial objective is not to rank the categories by importance, the results provide insight into which areas interviewees believe should be prioritised to improve innovation. This approach allowed for a comparative evaluation of the priorities across respondents and allowed to identify which areas were collectively considered as most important.

To quantify the responses, an importance score was assigned to each category based on the average ranking scale provided by all interviewees. The results indicate that organisational aspects were perceived as the most critical factor in the innovation implementation process (see Figure 5.1). Using a structured table, all the interviews are analysed, which is provided in Appendix C. In this appendix, both the respondent's understanding of the category is summarised, and the importance score is given for each of the ten interviews. An overview of the averaged importance scores is provided in the table below.

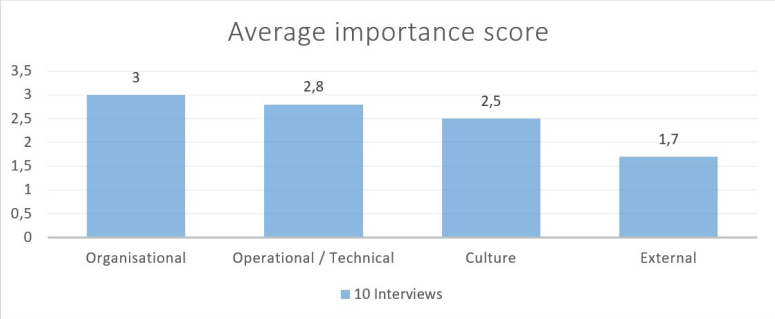

Figure 5.1: Average importance score of categories received from Transavia interviews

In the following section, a written summary of the interviews is provided per category. These findings are based on the information provided in Appendix C.

Organisational Aspects

Interviewees consistently highlighted organisational challenges that limit the successful implementation of innovation. A recurring theme was the lack of strategic prioritisation, as innovation is not part of KPIs or management mandates, making it less urgent than daily operations. Another barrier is the disconnect between business needs and the innovations introduced, which limits the effective implementation of external solutions. This disconnect is particularly evident in venture-driven initiatives, which are often positioned further away from the day-to-day business. As a result, they tend to reflect different priorities and interests than those of core operational teams, reducing the likelihood of successful integration. Respondents stressed the need for a clear innovation strategy, with defined priorities and supporting instruments, to bridge this gap and improve implementation success.

While some teams explore innovation independently, these efforts are not structurally supported or integrated across the organisation. Silo-thinking, limited cross-departmental communication, and inconsistent commitment were frequently cited as obstacles. Even departments with annual strategic plans often lack the flexibility to integrate innovation unless included from the start. Respondents questioned the effectiveness of central coordination, as cross-departmental implementation typically requires substantial time and effort, which is only more feasible when resources are allocated in advance. The maturity of innovation efforts also varies significantly between departments, contributing to fragmentation. A unified organisational approach by leadership, governance, board-level mandate, and communication was seen as essential to embed innovation structurally.

Leadership is considered a key enabler for innovation and currently a bottleneck. Particularly in decision-making, where approval is often needed from non-innovation-oriented managers, it limits the innovation opportunities since it slows progress and limits agility. A “healthy scarcity of time” makes innovation less priority unless it is both solving an immediate problem and is driven by leadership. Several respondents noted that no formal leadership or ownership exists for innovation, resulting in poor resource allocation. As a result, employees often lack the capacity to dedicate to radical innovation activities.

To address this, employees emphasised the need for better governance and structured planning. Suggestions included appointing Continuous Improvement Specialists or new innovation roles within teams to balance innovation with daily work. These individuals should be embedded in the department and have operational knowledge to set the right priorities and translate innovation initiatives into the department. Introducing this role helps bridge the gap between the goals and purposes of innovation teams and operational departments. The absence of such roles currently hinders innovation due to the different understandings and priorities of innovation.

Operational and Technical Aspects

A recurring theme across the interviews is the importance of practical feasibility and seamless integration of innovation within existing operational and technical systems. Several respondents noted that innovation efforts often fail when the proposed technology does not complement or align with the current operational processes of systems.

Technical readiness and system compatibility emerged as significant barriers to innovation. Multiple experts pointed to a persistent technical backlog, including the reliance on legacy IT infrastructure and manual processes in certain departments. Integrating startup innovations into a highly regulated and complex operational environment requires a significant amount of time and resources. Furthermore, the organisation's limited availability of modern digital tools hinders both operational efficiency and stability. Moreover, a major bottleneck identified is all types of innovation that need to be integrated into IT components, especially when new innovations must interface with legacy systems or meet strict safety and regulatory standards. Interviewees emphasised that technical innovations are only viable if they can be safely and effectively integrated into existing processes. The effort required to make external partners, such as startups, aware of the organisation's technical constraints, compliance standards, and system complexities was often mentioned as a challenge.

Another obstacle is that many innovative solutions currently being explored do not directly support the core operations of the organisation, which reduces the perceived value. Several respondents noted that successful innovation is more likely when it is closely aligned with core operational functions and when it clearly improves efficiency, usability, or cost-effectiveness. Additionally, stability within daily operations is seen as a precondition for innovation, as operational pressure ("the run mode") has prioritised focus.

Cultural Aspects

While individual employees within the company generally have an entrepreneurial spirit, problem-solving capabilities, and openness to improvement, this behaviour typically emerges in response to short-term problems rather than as part of a broader, proactive innovation culture. Innovation is often perceived as a "nice-to-have" rather than a "need-to-have," and tends to occur within isolated teams rather than across the organisation.

Several experts noted that collaboration and innovation efforts increase during moments of operational disruption, but this mindset rarely translates into long-term or strategic innovation. Topics like sustainability receive less attention than immediate process optimisations, which are easier to implement and offer more direct operational benefits.

A clear sense of ownership or responsibility for innovation is lacking. No specific individuals or roles are consistently accountable for driving innovation at the department level. At the same time, some departments do show a more innovative culture, where leadership supports experimentation, open discussion, and pilots of new ideas—indicating that innovation culture depends strongly on leadership, team dynamics, and time availability.

Cultural barriers such as the "not invented here" mindset were also observed. Teams often show resistance to ideas developed outside their own department, reflecting a broader pattern of departmental isolation and scepticism toward externally introduced innovations. Radical innovations are frequently perceived as risky, leading to a preference for established methods, especially among long-serving employees.

Teams that build trust, involve members early in the decision-making process, and keep innovation tangible and aligned with team objectives are more likely to support innovation. However, under current operational pressures, innovation remains a low priority. Respondents noted that improved communication, visibility, and a formal mandate at the organisational level would help strengthen the innovation culture.

External Environment

External influences—particularly political pressures and sustainability targets—are seen as important drivers of innovation. Clear sustainability KPIs set by the board, along with expectations from AF-KLM and Transavia France, create a sense of urgency for change. Competitor behaviour and broader market dynamics also motivate the organisation to participate in pilot programs, explore sustainable solutions, and align with evolving customer preferences. However, experts generally agree that while these external influences are acknowledged, their translation into internal action can be improved.

Externally developed innovations often encounter barriers related to the regulatory and safety requirements of the aviation industry, which startups are not always aware of. This misalignment complicates integration. Strict compliance standards and the complexity of aviation regulations can lead to delays. Additionally, new partnerships may conflict with existing collaborations, and working with familiar partners tends to be more efficient and accepted. Successful collaboration with external parties—such as startups—requires clear communication, early involvement of procurement, and mutual understanding of expectations.

Cost considerations also strongly affect whether external innovations move forward. As one of the interviewees said: ”Money is the language we all understand”. If the expected return on investment is lower than the associated costs, innovations are unlikely to progress, according to the interviews. A clear business case is essential to gain investment approval, build conviction, and encourage collective support. The potential cost savings and operational benefits must outweigh the effort required to implement the innovation successfully. However, from an objective perspective, this suggests that future innovative and sustainable solutions, especially those that are less financially attractive in the short term but offer significant environmental benefits, are unlikely to succeed under current conditions.

According to the interviews, aligning innovation with customer expectations and market needs is also critical. The COVID-19 pandemic, for instance, showed how changing customer preferences can rapidly trigger innovation. External innovation tends to be more effective when it addresses a specific internal problem or need. Without a clear problem to solve (and given the limited resources), externally developed innovations are unlikely to be prioritised or implemented. While keeping updated with the market developments and emerging technologies is considered important, externally driven innovation currently plays a limited role at Transavia, according to the interviews. This limits the organisation’s ability to leverage external solutions to contribute to the sustainability goals. Most (incremental) improvements are currently initiated internally, where there is greater control and alignment with operational priorities.

5.2. Evaluation of Transavia-specific Analysis using Framework

While the interviews were structured around the four high-level categories of innovation, derived from the literature, the underlying theoretical framework identified nine innovation factors. These factors serve as an analytical framework for understanding conditions that support innovation implementation. As discussed earlier, the definitions of these factors are based on the literature review, which is summarised in Appendix A.

The intended level of analysis for the interviews is based on the framework consisting of the nine innovation factors. To achieve this, a qualitative analysis was done for each interview transcript, focusing on identifying remarks and examples that aligned with one or more of these factors. This involved a systematic manual coding process to determine which specific factors were referenced during the interviews. Appendix D provides supporting evidence for the validity of linking the interview results to the nine-factor innovation framework. The coded statements of the interviewees are assigned to the corresponding key factor that was discussed. This structured overview in the appendix supports the transparency and traceability of the thematic coding.

The results of this coding process are visualised in Figure 5.2. In this figure, each column represents an individual respondent, while each row corresponds to one of the nine innovation factors. A green cell indicates that the respondent referred to the factor in their interview, and red indicates that it was not mentioned. The final column summarises the overall level of support for each factor.

Literature Factor	Team lead	Domain lead	Team lead	Team lead	Employee	Employee	Domain lead	Team lead	Domain lead	Employee	# Mentioned	% of Interviews	Strongly Evident?
Culture	1	1	1	1	1	1	1	1	1	1	10	100%	✔ Yes
Strategic alignment	1	1	1	1	1	1	1	1	1	1	10	100%	✔ Yes
Leadership & Governance	1	1	1	1	1	1	1	1	1	1	10	100%	✔ Yes
Operational readiness	1	1	1	1	1	0	1	1	1	1	9	90%	✔ Yes
People & Skills	0	1	0	1	0	1	0	1	1	0	5	50%	– Moderate
Knowledge & Learning	0	1	0	1	1	1	0	0	1	0	5	50%	– Moderate
Communication & Buy-in	1	1	1	0	1	1	1	1	1	1	9	90%	✔ Yes
Market & Environment	0	0	1	0	1	1	0	1	1	1	6	60%	– Moderate
Network & Partnerships	1	0	0	0	1	0	1	0	0	0	3	30%	✘ Weak

Figure 5.2: Interview results of nine factors

The results show that Cultural, Strategic alignment, and Leadership & Governance were discussed by all participants (100%), indicating that these factors are considered essential for successful innovation implementation. In addition, Operational Readiness and Communication & Buy-in were also mentioned by most participants (90%). This indicates that these factors are not only theoretically but also practically recognised within the organisation as important for supporting innovation.

Other factors such as People & Skills, Knowledge & Learning, and Market & Environment, were mentioned by around half of the interviewees, showing that these are considered important by some of the employees, but not by everyone. The factor Network & Partnerships was mentioned the least (40%), suggesting that external collaboration may be seen as less directly influential compared to internal organisational conditions, or this factor is less top-of-mind among employees.

5.2.1. Practice-based Insights beyond Framework

In addition to the factors identified in existing literature, the interviews analysed important practice-based insights that are not explicitly addressed in the literature review. Factors that are often discussed during the interviews, while not directly covered by the literature are:

- Interdepartmental collaboration
- ”Run mode”
- Internal alignment across units

Interdepartmental collaboration was mentioned by many participants, which refers to the ability of different teams and units within the organisation to effectively work together. Many interviewees emphasised that successful innovation efforts often depend on collaboration across departments, particularly when knowledge, responsibilities, or decision-making are distributed or transferred across departments within the organisation. Despite its importance in practice, this factor is only indirectly addressed in some of the literature articles.

Another frequently mentioned theme is time pressure, often described by participants as the organisation being in a constant ”run mode”. This refers to the fact that day-to-day operational demands dominate, leaving little room for reflection, experimentation, or innovation. The urgency to deliver short-term results is seen as a major barrier to long-term innovation efforts. There are some literature articles discussing this topic, but it is not mentioned explicitly as a factor. This factor is closely related to both the availability of resources and operational stability.

Finally, internal alignment across units emerged as a key concern. This factor relates to the consistency of innovation goals, resources, and motivation across the organisation. This is partly related to Communication & buy-in, Leadership & Governance, and Culture, but highlights a specific focus within these factors. Several respondents noted significant differences between departments in terms of readiness and willingness to innovate, which leads to fragmentation and inefficiencies.

5.3. Industry Research

This section covers the external industry research analysis. It aims to confirm the findings of the previous part and checks whether the findings are company-specific for Transavia or whether they also hold for companies in comparable industries. Five external interviews were conducted using the same method of analysis as for the interviews conducted at Transavia internally. A summary of the respondents is provided in Appendix E and follows the structure of the four overarching categories together with the corresponding important factor.

As shown in Figure 5.3, the results from the industry interviews show a strong emphasis on organisational aspects, with an average importance score of 4 out of 5. This highest score aligns with the results of Transavia’s interviews, where organisational aspects also received the highest score. However, external experts perceived operational/technical aspects as less important (1.8), compared to Transavia’s respondents (2.8). This suggests that internal stakeholders, who are more involved in daily operations, have a higher priority on these aspects. The interview sample of industry analysis is mainly innovation experts and had a higher value on strategic structure and ownership. Cultural and external factors received moderate attention in both groups.

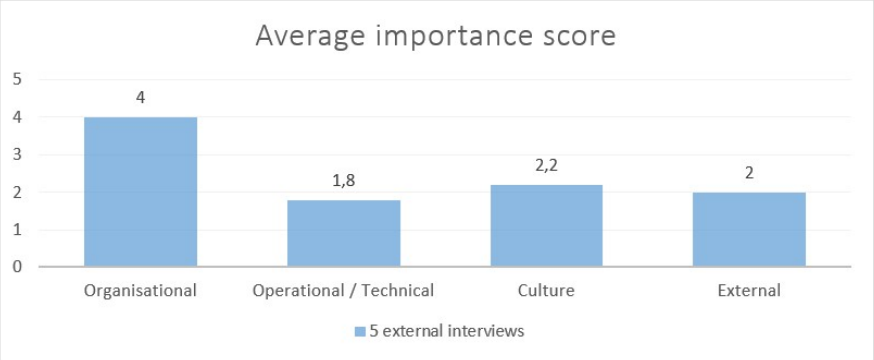

Figure 5.3: Importance score according to external interviews

In the following section, a written summary of the interviews is provided per category. These findings are based on the information provided in Appendix E.

Organisational Aspect

The industry-perspective interviews identified several key organisational factors that strongly affect the implementation of innovation. A major theme is the need for clear ownership and defined responsibilities. Without someone accountable for moving ideas forward, even promising innovations often stall. Cross-functional teams and motivated internal champions (those who connect business needs with innovative solutions) were seen as essential for gaining support. Strategic and organisational alignment was also emphasised. Innovation must fit with broader goals, while many experts acknowledge the current lack of central coordination, which leads to fragmentation and unclear priorities. A comprehensive feasibility study, including technical, social, and economic aspects, was suggested to help guide alignment and decision-making. Limited time, budget, and resources are common barriers. Leadership commitment is, therefore, crucial in resource allocation and decision-making. Early involvement of business and technical teams supports feasibility and builds ownership. A clear problem definition and the value of the solution were identified as important success factors. Demonstrating solutions through prototypes to create conviction is an effective way to build trust and interest.

Technical and Operational Aspects

The interviews highlight that alignment between new technologies and existing operations is a crucial factor for successful innovation implementation. Experts stressed that a solution must address a concrete problem in the business or deliver clear operational benefits. Even if a technology is promising, it will not be adopted unless it meets actual organisational needs.

While technical feasibility is relevant, it was not identified as the main barrier. Many startup solutions are technically innovative, but are often too immature or incompatible with the strict regulatory requirements in the aviation industry. In highly regulated and safety environments like aviation, proving the reliability and safety of new technologies is particularly difficult. New systems must integrate seamlessly with existing operations, backup protocols, and meet strict safety standards. This makes it hard for startups to gain trust and approval.

Innovation Culture

The interviews showed that organisational culture plays an important, but also complex, role in innovation. While several experts noted that their company does not currently demonstrate a strong innovation culture, they emphasised that factors such as ownership, problem-fit, leadership, and visible demonstrations can influence culture over time. Currently, there is a “not-invented-here” mindset and low willingness to engage with externally developed ideas. When innovation processes take too long, employees tend to disengage. Innovation is often driven by enthusiastic individuals rather than a company-wide strategy or mindset. Some experts reported success by selectively involving individuals with a more exploratory and open mindset. A lack of urgency and a “too big to fail” mentality as a company are barriers to cultural change. Furthermore, it is recognised that the aviation sector is conservative and risk-averse by its nature, which further supports this culture.

External Aspects

External actors such as startups, venture funds, universities, and regulatory bodies play a crucial role in innovation. However, their impact is highly dependent on internal readiness, alignment of expectations, and the ability to build partnerships. Several experts noted that while startups can offer fresh ideas, they often struggle to implement them in large organisations. Challenges as internal scepticism, lack of central coordination, and limited follow-up planning make it difficult for external companies to work effectively. Moreover, differences in mindset and working pace between startups and established corporations are often mentioned as a hindrance to collaboration.

Experts also stressed the importance of collaborating with governments, OEMs, and airports in shaping regulations, securing funding, and defining shared innovation goals. Since aviation is a highly interconnected and regulated industry, innovation cannot happen in isolation.

5.4. Evaluation of Industry Analysis using Framework

After addressing the four overarching categories, the interview results are re-evaluated using the framework of nine innovation factors. A structured qualitative coding approach was applied to systematically link the interview transcript to the nine factors. Appendix F provides an overview of the specific words and phrases from the interviews that support the interpretations and linkage to the defined factors.

The cross-case comparison table (Figure 5.4) illustrates the degree to which each literature-based innovation implementation factor was discussed across the five external interviews. Leadership & Governance, Knowledge & Learning, and Communication & Buy-in were mentioned consistently by all interviewees, confirming that these factors are strongly evident. Culture, Strategic Alignment, Operational Readiness, and Network & Partnerships were each mentioned in 80% of the interviews, also indicating strong relevance. People & Skills and Market & Environment were mentioned by only three out of five interviewees (60%), making them moderately evident. Given that all interviewees have innovation-related roles and are personally involved with innovation, this may reflect the results. Each of them is actively involved in introducing innovative ideas within their organisation. It is therefore likely that they consider factors such as leadership, communication, and knowledge & learning important, as these elements are closely related to their daily responsibilities.

Literature Factor	KLM	KLM	KLM	NS	Schiphol	# Mentioned	% of Interviews	Strongly Evident?
Culture	1	1	0	1	1	4	80%	✔ Yes
Strategic alignment	1	0	1	1	1	4	80%	✔ Yes
Leadership & Governance	1	1	1	1	1	5	100%	✔ Yes
Operational readiness	0	1	1	1	1	4	80%	✔ Yes
People & Skills	1	1	0	1	0	3	60%	— Moderate
Knowledge & Learning	1	1	1	1	1	5	100%	✔ Yes
Communication & Buy-in	1	1	1	1	1	5	100%	✔ Yes
Market & Environment	0	1	1	0	1	3	60%	— Moderate
Network & Partnerships	1	0	1	1	1	4	80%	✔ Yes

Figure 5.4: Industry-specific interview results of nine factors

5.5. Comparison Analysis Transavia-specific vs. Industry-specific

This chapter presents the empirical findings of both the Transavia-specific analysis and the industry-specific analysis. The aim was to reflect on the findings of the nine innovation implementation factors identified in the literature. A comparison of the findings is summarised in Table 5.1. The results show a strong degree of overlap between the practical experiences of Transavia and industry stakeholders.

Table 5.1: Comparison of Evidence Strength Between Transavia-Specific and Industry-Specific

Literature Factor	Transavia-specific Factors	Industry-specific Factors
Culture	Yes	Yes
Strategic alignment	Yes	Yes
Leadership & Governance	Yes	Yes
Operational readiness	Yes	Yes
People & Skills	Moderate	Moderate
Knowledge & Learning	Moderate	Yes
Communication & Buy-in	Yes	Yes
Market & Environment	Moderate	Moderate
Network & Partnerships	No	Yes

Five of the nine factors Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, and Communication & Buy-in were consistently identified as critical factors by both Transavia and the industry.

While five factors align, some differences are also identified. While Knowledge & Learning was recognised by other companies as strongly evident, it was only moderate at Transavia, suggesting knowledge and learning is not the most important factor for supporting innovation within Transavia. Notably, Network & Partnerships was not mentioned in the Transavia interviews, whereas other organisations in the industry highlighted this as a key enabler for innovation. This difference can be explained by the interview sample, as the external interviewees have the role of innovation managers, which often involves external collaborations. While Transavia's interviews were focused on people within the operations of the airline, which are more focused on internal improvement without collaborating with external partners. This indicates a potential improvement within Transavia regarding the awareness of the value of external collaboration and ecosystem engagement throughout the organisation. While innovation-focused employees, do collaborate a lot with partners, internal operations employees are not always aware of this.

Factors such as People & Skills and Market & Environment were moderately evident in both settings. Indicating they reflect a shared lower priority on people skills and market dynamics.

5.6. Conclusion of Empirical Results

After identifying and assessing the nine key innovation implementation factors through empirical interviews, it can be concluded that only five of the nine factors are supported with strong evidence by both Transavia-specific and industry-specific analysis.

These factors can be positioned within the MLP framework which is introduced in chapter 4. The MLP distinguishes between macro (organisational), meso (departmental), and micro (individual) levels, allowing a structured understanding of where and how innovation support or resistance emerges within the organisation. Table 5.2 categorises the innovation factors into the different levels of perspectives in the MLP model.

This chapter demonstrated that at the macro level, two innovation factors are consistently recognised as critical for innovation implementation, both within Transavia and in comparable organisations. Although Market & Environment and Network & Partnerships are also positioned at the macro level, these factors received weak or moderate evidence in at least one of the two analyses.

At the meso-level, the factors Operational Readiness and Communication & Buy-in were strongly supported by both Transavia and the industry interviews. This level reflects how innovation strategy is operationalised within departments, and the results suggest that departmental capacity, alignment, and internal engagement are crucial for effective implementation.

In contrast, micro-level factors (People & Skills and Knowledge & Learning) were not fully supported in both analyses. People & Skills perceived a moderate score in both analyses. While Knowledge & Learning is discussed often by other companies, it received less attention during the Transavia interviews.

Comparing both analyses, overall, the results confirm that Transavia aligns with many of the same innovation factors as similar companies. Knowledge & Learning and Network & Partnerships were both discussed often during the industry interviews, while perceived as less critical from Transavia's perspective.

Table 5.2: Innovation Factors Categorised by Multi-Level Perspective (MLP) Model

MLP Level	**Innovation Factors**
Macro	Culture, Strategic Alignment
Meso	Leadership & Governance, Operational Readiness, Communication & Buy-in
Micro	/

In addition to these five factors, several practice-based themes were discussed, three most frequently mentioned in the interviews are: smoother interdepartmental collaboration, reducing the pressure of operating in a "run mode", and the issue of internal alignment across units. As the later two are covered in the factors "Operational readiness and Strategic alignment, only the interdepartmental collaboration will be added to the analysis as a practice-based factor.

From the empirical analysis, it can be concluded that the following factors are considered important for both Transavia's perspective and industry perspective:

- **Culture**
- **Strategic alignment**
- **Leadership & Governance**
- **Operational readiness**
- **Communication and Buy-in**
- **Smoother interdepartmental collaboration**

6

Case Study Transavia

In this case study, the proposed framework is applied to a real-world innovation initiative: the electrification of Transavia's pilot training program. This chapter presents the results of this case study, which explores the practical conditions that enable the potential implementation of electric aircraft within Transavia's training operations. The innovation originates from a partnership with E-Flight Academy, a startup that provides pilot training using fully electric aircraft. To assess the relevant implementation factors, three semi-structured interviews were conducted with key stakeholders directly involved in the innovation process. The resulting insights are analysed using the analytical framework developed in this study.

6.1. Summary of the Interviews

This chapter starts with a summary of the interviews to provide insights into the key messages shared by the respondents.

Startup

The interview with the co-founder of the startup revealed a strong belief in the technical and operational feasibility of implementing electric flight within Transavia's airline pilot training program. The interview concluded that there are no major technological barriers, as 50,7 out of 56,9 required flight hours can already be conducted using electric aircraft, and the remaining flights can be covered using fuel-efficient aircraft with emission compensation. Despite this confidence, it identifies several potential barriers. First, the lack of capacity and high workload at Transavia was noted, which leads to hesitation in prioritising the implementation. While only equipment and flight scheduling would change, not the learning objective, it requires regulatory approvals from the IL&T for changing the training program. Additionally, although costs have not been formally calculated, it is expected that the electric program would be more expensive than the current training (in current conditions).

Transavia

One of the program leads at Transavia provided insights from an internal perspective. The interview revealed a significant shortage of internal resources, which was identified as a key barrier preventing concrete steps toward implementation. In addition, a lack of top-management commitment was noted which leads to a shift in prioritisation. Although there appears to be individual support for the idea, sustainability in flight training is currently not considered a strategic priority, and electric flying is not perceived as part of Transavia's core business. Consequently, the project does not receive prioritisation compared to other ongoing initiatives. Additionally, several operational barriers were identified, including the perceived risk of poor student outcomes within an experimental training program, contracts with existing partners, and technical limitations such as weight restrictions, which would exclude some students. These factors contribute to a sense of risk aversion within the organisation.

Nevertheless, there is a willingness to further explore the concept through a pilot initiative. A small-scale trial involving a small number of students was suggested as a valuable opportunity to generate practical insights and assess feasibility in a controlled setting.

Transavia

The interview with a Transavia employee involved in the pilot training further confirms the internal challenges of the implementation of electric flight training. A key insight is the misalignment between strategic ambitions and operational priorities. Although sustainability is part of the broader corporate strategy, it is not one of the strategic pillars within the flight training department. As a result, it is difficult to allocate time, attention, or resources to such initiatives. Furthermore, there is also a lack of leadership. While some individuals are committed to innovation and there is a real willingness to work on those initiatives, it is not driven by top-down formal priority, and no one is officially responsible for it. Moreover, the potential internal resistance to change, particularly in very specific roles, represents cultural conservatism.

Another challenge is the bureaucratic complexity involved in this implementation. Whereas the startup can move quickly, Transavia must engage multiple internal and external stakeholders before taking action. This makes even relatively simple changes difficult to execute within a reasonable timeframe. Although this initiative creates a clear opportunity for brand positioning, it also raises the issue of greenwashing: improving sustainability in only one part of the training program, while classrooms and simulators remain the same, makes communication a critical factor to avoid greenwashing. Despite these challenges, cautious optimism is expressed about piloting the concept. A small-scale trial with a few students could help overcome internal resistance and build evidence of feasibility.

6.2. Framework Analysis

Since the interviews primarily focused on why implementation has not yet occurred, this section concentrates on the barriers and challenges related to the specific case. To identify overlapping and distinct factors, the interview data were systematically compared. Table 6.1 presents a structured overview of the key challenges mentioned by the three interviewees. The table shows whether a specific barrier or challenge was discussed in each interview. This allows a comparison between the interviews and highlights where perceptions align and differ. Several challenges, such as limited internal capacity, uncertainty around change, and lack of clear internal commitment, were mentioned across all three interviews.

Other challenges, such as regulatory complexity, greenwashing risks, or technical limitations like weight restrictions, were raised by individual interviewees, which can be caused by their specific roles and perspectives on the innovation. Notably, while technical feasibility was a concern for some, the startup emphasised confidence in the readiness of the technology.

Table 6.1: Overview of overlapping and distinct barriers and challenges identified in interviews

Barrier or Challenge	**Startup**	**Transavia**	**Transavia**
Limited internal capacity	Yes	Yes	Yes
Regulatory complications	Yes		Yes
Financial feasibility	Yes		
Instructor capacity when scaling	Yes		
Unclear commitment from Transavia	Yes	Yes	Yes
Training location preference	Yes		
Technical limitations	No	Yes	
Risk and fear of negative pilot skills		Yes	
Cultural conservatism and resistance		Yes	Yes
Lack of leadership and decision-making		Yes	Yes
Lack of strategic priority		Yes	Yes
Risk of greenwashing			Yes
Existing collaborations / satisfaction with current partner		Yes	Yes

By coding the interview transcripts along these nine categories, this chapter provides insight into which factors are applicable to innovation implementation in this specific case. Appendix G provides an overview of the specific words and phrases from the interviews that support the interpretation and assignment of the data to the innovation factors of the framework. To systematically assess how the barriers and challenges identified in the interviews relate to the literature framework, Table 6.2 presents a matrix that maps each empirically observed barrier to the nine innovation factors from the literature. This overview clarifies which of these innovation factors are discussed in the interviews and by how many. It visualises how the topics discussed by interviewees are linked to the theoretical framework by the researcher. Each row represents a specific barrier or challenge mentioned in the interviews, while each column corresponds to one of the nine innovation factors. The numbers in the table indicate the number of interviews in which a particular barrier was discussed.

A threshold of 2 out of 3 interviews was applied to determine whether a factor is confirmed within the case study. Thus, a factor is considered empirically supported when the corresponding cell contains a value of ”2” or ”3”. For transparency and traceability, supporting evidence for these linkages is provided in Appendix G, where the coded interview statements are categorised under each factor.

Table 6.2: Matrix of barriers linked to nine innovation implementation factors. Abbreviations: Govern = Governance, Oper. = Operational, Commun. = Communication, Envir. = Environment, Partner. = Partnerships.

Barrier or Challenge	Culture	Strategic Alignment	Leadership & Govern.	Oper. readiness	People & Skills	Knowledge & Learning	Commun. & Buy-in	Market & Envir.	Network & Partner.
Limited internal capacity				3					
Regulations								2	
Financial feasibility		1							
Instructor capacity				1					
Unclear commitment		3					3		
Training location				1					
Technical limitations				1					
Risk / fear negative skills					1				
Cultural resistance	2								
Lack of leadership			2						
Lack of strategic priority		2							
Risk of greenwashing							1		
Existing partnerships									2

By applying the framework to the case study on electrifying Transavia´s pilot training, it assesses the presence of each factor in a practical context. The analysis revealed that seven of the nine literature-based implementation factors were identified as critical for enabling the innovation in this specific case. This shows the practical applicability of the framework and highlights the specific conditions required for successful implementation. Table 6.3 categorises the factors into the MLP model. The following factors support the implementation of the innovation from the startup, according to the case study results:

- **Culture**
- **Strategic Alignment**
- **Leadership & Governance**
- **Operational readiness**
- **Communication & Buy-in**
- **Market & Environment**
- **Network & Partnership**

Table 6.3: Factors from case study categorised by Multi-Level Perspective (MLP) Model

MLP Level	Innovation Factors
Macro	Culture, Strategic Alignment, Network & Partnership, Market & Environment
Meso	Leadership & Governance, Operational Readiness, Communication & Buy-in
Micro	/

7

Interpretation of the Results

This chapter provides an interpretation of the empirical findings presented in chapter 5 and chapter 6 by reflecting on their alignment with the theoretical framework established in chapter 4. The purpose is to explore what these findings imply for the implementation of venture-driven innovations within established airline operations. The analysis highlights whether the identified factors are perceived as important across Transavia, the industry, and the specific case analysed.

7.1. Comparison Analysis of Empirical Results and Case Study

A visual overview of the results of previous chapters is provided in Table 7.1. This table synthesises the empirical support of the nine-factor framework with the practice-based factor, Interdepartmental Collaboration. It visualises which of the three analyses support the literature by assessing the factors according to Transavia-specific findings, broader industry insights, and a targeted case study. The table illustrates that six factors (Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, Communication & Buy-in, and Interdepartmental Collaboration) are consistently supported across all three perspectives. This strong alignment indicates that these factors are fundamental enablers for innovation implementation, both in the context of Transavia and across the wider aviation industry. Interdepartmental Collaboration, which emerged inductively from the data, is strongly supported across all three levels. This highlights the importance of internal cooperation across departments as a crucial enabler of innovation success.

In contrast, factors such as People & Skills, Knowledge & Learning, and Market & Environment show more nuanced or context-dependent support. For example, while these are strongly recognised at the industry-level, they are perceived as less critical within Transavia's context. This suggests potential blind spots or areas for internal development. The Network & Partnerships factor shows a clear distinction between Transavia internal and external perspectives. Stakeholders consider it essential, while it receives weak internal emphasis.

Table 7.1: Empirical Support for Innovation Implementation Factors

Factor	Transavia-specific	Industry-specific	Case study
Culture	Strong	Strong	Relevant
Strategic Alignment	Strong	Strong	Relevant
Leadership & Governance	Strong	Strong	Relevant
Operational Readiness	Strong	Strong	Relevant
Communication & Buy-in	Strong	Strong	Relevant
People & Skills	Moderate	Strong	Role-specific emphasis
Knowledge & Learning	Moderate	Strong	Not mentioned
Market & Environment	Moderate	Moderate	Relevant
Network & Partnerships	Weak	Strong	Relevant
Interdepartmental Collaboration	Strong	Strong	Relevant

To conclude, this table shows that five out of nine literature-based innovation implementation factors are strongly confirmed according to empirical findings. These five factors were consistently acknowledged by all the analyses. This shows that while the framework of nine factors is largely confirmed by empirical research, it also shows several important nuances. Additionally, one new factor emerged from the empirical data (inter-departmental Collaboration) which was not included in the initial framework but is evidently a critical enabler in the implementation of innovation. Therefore, the six supporting factors to implement innovation are:

- **Culture**
- **Strategic Alignment**
- **Leadership & Governance**
- **Operational Readiness**
- **Communication & Buy-in**
- **Interdepartmental Collaboration**

Importantly, the relative lack of strong support of the remaining four factors (People & Skills, Knowledge & Learning, and Network & Partnerships) should not be interpreted as irrelevant. These factors were indeed mentioned during interviews, but the level of emphasis placed on them was lower, with fewer than 70% of respondents identifying them as essential. This suggests that while they may play a secondary role in the current context, their importance depends on the type of innovation, and the role of employees.

When positioning the factors within the Multi-Level Perspective (MLP) framework, the factors will be assigned as shown in Table 7.2.

Table 7.2: Innovation Factors Categorised by Multi-Level Perspective (MLP) Model

MLP Level	Innovation Factors
Macro (Organisational)	Culture, Strategic Alignment, Leadership & Governance
Meso (Departmental)	Operational Readiness, Communication & Buy-in, Interdepartmental Collaboration
Micro (Individual)	/

This multi-level perspective provides insights into how different factors are important across different layers of the organisation. The findings suggest that the implementation of radical, venture-driven innovations in an airline environment requires alignment at the organisational level and engagement at the departmental level.

7.2. Important Implementation Factors for Transavia

This section interprets the empirical findings using the six innovation implementation factors: Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, Communication & Buy-in, and Interdepartmental Collaboration. These identified factors are in the macro- en meso-level of MLP, which represent, respectively, the organisational and departmental perspectives. Therefore, these factors are discussed through relevant theoretical models (Kotter's change model and TAM-model) about organisational change to understand the underlying dynamics and to position the findings across the organisations.

1. Culture

Transavia demonstrates a generally open attitude towards innovation, particularly when it comes to initiating pilot tests and exploring new technologies. Many employees expressed enthusiasm for trial projects, indicating a willingness to experiment. However, this mindset is not yet part of a long-term innovation culture. Innovation is still often seen as an "add-on" or "nice-to-have" rather than a core responsibility, especially when operational pressure increases. Resistance to permanent change remains strong, with a tendency to rely on familiar routines. Furthermore, many employees have a conservative attitude, a risk-averse mindset, and a strong scepticism toward changing processes that have remained unchanged for years. This tendency is particularly noticeable among employees who have worked in the industry for a longer period. It hinders innovation within Transavia, as these long-standing employees often hold positions where their approval is required for change to occur. As a result, innovation is regularly not supported within the organisation. For this reason, the culture aspect is commonly discussed as a critical enabler for innovation within the airline. This topic was

not only discussed at Transavia, but also supported by KLM and Schiphol Group. This cultural inertia reflects a weakness in Kotter's steps 7 and 8: sustaining acceleration and embedding change in culture.

To overcome this, Transavia should move from a reactive to a proactive culture in which experimentation is structurally supported, and innovation is perceived as integral to job roles. This includes building confidence through internal success stories and creating a belief in the value of innovation.

2. Strategic Alignment
One of the key potential improvements is the alignment between venture investments and departmental priorities. While Transavia Ventures actively funds early-stage startups, operational departments often do not perceive these innovations as useful or relevant in their current context. Departments often lack clarity on how these external technologies fit within their existing goals and workflows. This results in low perceived usefulness (TAM) and a lack of urgency (Kotter, Step 1).

Although Transavia Ventures aims to focus on the long-term future of sustainable aviation by investing in future technologies, it is reasonable that this does not align with the mindset of employees who are responsible for daily operations. A potential solution is to categorise investments into two types in terms of time. The first category would focus on improving and making current operations more sustainable. In these investments, a clear need should originate from the business, after which a suitable startup can be selected to address this need. While this type of investment may be less focused on radical innovation, it can still contribute to sustainable development and strengthen organisational stability, both of which create room for further innovation.

The second category would involve investments in radical innovations. In this case, it should be clear that limited support or integration from the business side is required, as these investments align with Transavia's long-term strategic vision. The value of such investments lies in staying engaged with the future of aviation, without requiring changes to daily operations. Examples include research into hydrogen-powered flights or carbon capture technologies, which do not need immediate integration into airline operations.

Another way to address the disconnection of investments and operational priorities is the early involvement in investment decisions and use of feasibility assessment that helps translate strategic intent into practical outcomes. All the external stakeholders interviewed in this research mentioned this as one of the most important enablers of innovation. They suggested that involving the right people with an innovative mindset from the beginning of the collaboration improves the likelihood of successful implementation by creating ownership, insights into its value and removing the potential obstacles together (Kotter's step 2 and step 5).

3. Leadership & Governance
Leadership emerged as a key enabler of innovation progress. While employees show enthusiasm about innovation, a lack of prioritisation and top-down support can stall implementation. A common theme in both Transavia's interviews and the case study was the absence of leadership commitment to drive decision-making and resource allocation. This aligns with Kotter's Step 2: Build a powerful coalition, and Step 3: Develop a vision for change.

One of the first steps in realising implementation, as indicated by interviewees, is creating a strong business case. This creates the need for Step 1 (Create urgency) and Step 6 (Generate short-term wins). Without a clear strategic and visible leadership involvement within departments, projects lack the authority to be prioritised against ongoing daily activities.

Implementing innovation into yearly planning and assigning formal ownership are necessary to create structured governance. To achieve this and creating priority on innovation, it must be positioned as a strategic priority through roles, KPIs, and decision frameworks. Although the higher level strategy includes innovation and sustainability, it is unclear how this is translated into the departmental level.

4. Operational Readiness
A persistent challenge at Transavia is the limited capacity within departments to support innovation alongside day-to-day responsibilities. Employees reported being in constant "run mode", where short-term performance has priorities. This constrains time and space for experimentation, evaluation, and collaboration with startups. Early involvement and communication could help to allocate resources in the yearly plan. However, a sense of urgency is needed to prioritise the initiative and allocate resources to it.

Moreover, operational systems are often outdated, which makes it harder to integrate startup-developed technologies, especially under the strict regulations. According to the MLP, this represents a meso-level barrier where departmental infrastructure and routines constrain change. Improving the internal operational systems may require stable operational conditions which support innovative activities.

5. Communication & Buy-in
The success of innovation implementation at Transavia is significantly influenced by how well the vision and purpose of innovation are communicated across departments. Interviews show that communication is often inconsistent, and employees may not fully understand the goals or relevance of proposed innovations. When employees are not involved early in the process, scepticism increases and perceived usefulness declines (as shown in the TAM-model).

Kotter's fourth and fifth steps (communicating the vision and removing obstacles) are essential here. Improvements could include more visible internal storytelling about innovation successes, clear messaging about how innovations will benefit teams, and two-way communication from operational teams and the innovation team about the need for improvement. Creating clarity and involvement early will help foster stronger organisational buy-in.

Furthermore, pilot projects were highlighted as useful tools for communicating feasibility. One interviewee noted: *"It's about not making the small steps too big. Because if you try to change everything at once, people hit the brakes, and that's when progress stops."* This aligns with Kotter's Steps 6–8: showing progress, building on wins, and embedding changes into daily routines.

6. Interdepartmental Collaboration
A critical practical insight that emerged from the research is the lack of effective collaboration between departments. While some teams are more engaged in innovation, other operate in isolation or resist externally introduced ideas. This structural disconnection hinders shared improvements and slows down implementation efforts that are cross-departmental. This silo-thinking was mentioned in almost every internal interview within Transavia as a bottleneck. Not only Transavia interviews mentioned this, KLM also discusses the fact that departments do not know from each other what they are working on. This leads to ineffective innovation efforts.

Interdepartmental collaboration was not explicitly emphasised in literature but was strongly supported in empirical findings, making it a relevant practice-based addition to the framework. A lack of coordination between departments leads to bottlenecks in the innovation process. To mitigate this, Transavia could introduce embedded innovation coordinators within each department, responsible for bridging innovation initiatives into operational execution. These roles can enhance trust, improve internal communication, and build shared responsibility across teams. An alternative solution is to have a responsible representative from the startup work temporarily within Transavia for a set number of weeks, to assess and adapt technical components to ensure that innovation fits within Transavia's operations. This approach supports alignment with technical and operational feasibility, but it does not address other important aspects such as internal communication, creating buy-in across teams, and making decisions about resource allocation, topics that an innovation coordinator would be better able to manage.

7.3. Interaction between Key Factors

While the six implementation factors are discussed individually, the empirical findings show that these factors interact in important ways as they do not operate in isolation.

Across multiple internal interviews, it became clear that leadership behaviour directly shapes the culture within departments. In teams where leadership supported experimentation and visibility of innovation, employees had a greater willingness to engage with new ideas. For example, one team lead mentioned: *"I intentionally involve my team early and create a shared vision for innovation"*. This creates cultural conditions where team members feel engaged to propose and explore ideas. Conversely, in departments where leadership in innovative ideas was not engaged or daily operations were prioritised, employees described innovation as a "nice-to-have" rather than a responsibility.

A second key interaction was found between Strategic Alignment and Communication & Buy-in. While strategic alignment involves setting long-term innovation goals, these goals are often challenging to translate into departmental teams. Several interviewees noted a disconnection between the ambitions of different teams and the perceived usefulness of innovation. One respondent mentioned: *"Sometimes innovation feels like something that happens far away from our daily work"*. This quote illustrates how a lack of clear communication and visibility undermines strategic alignment, which reduces internal motivation to engage with innovation.

The factor Interdepartmental Collaboration, identified from the empirical data, influences multiple factors of the framework. Many interviewees explained that innovations often involve multiple departments, but siloed structures, unclear roles, and a lack of coordination limit the effectiveness of these initiatives. One domain lead stated: *"Departments often don't know what others are working on. That leads to double and missed opportunities"*. Without clear leadership to facilitate coordination, and without a shared culture, and clear communication, interdepartmental efforts stall, especially when innovation requires shared resources.

The case study further shows how these interactions are present in practice. Although stakeholders individually supported the idea, the lack of top-down leadership, ownership, and prioritisation contributed to implementation delays. One respondent noted: *"There is no real commitment from board level. We have other priorities"*. Simultaneously, internal resistance, regulatory uncertainty, and concerns about quality created a conservative culture that makes implementation challenging. This shows how multiple factors influence each other and must align before innovation can progress: Strategic commitment, cultural openness, communication, and collaborative capacity.

To conclude, the results suggest that innovation implementation is best understood as a system of conditions. Strong leadership can support culture, bridge strategy with daily operations, and foster collaboration. Similarly, effective communication increases buy-in, which creates strategic alignment. These factors work in a system, as a weakness in one factor can influence other factors in the system.

8

Conclusion

This thesis aimed to identify key factors that support the implementation of venture-driven innovations into established airline operations. Through a combination of systematic literature review, interviews within Transavia and with the broader industry, and a practical case study at Transavia, nine key implementation factors are identified and assessed within the context of innovation in aviation. Based on the study, six factors are confirmed to be perceived as important according to the empirical findings. The case study focused specifically on the implementation of electric flight training in Transavia's airline pilot program, offering a concrete example of venture to operations translation. This concluding chapter answers the sub-questions and main question, outlines the managerial relevance, and provides recommendations for practice.

Sub-question 1: What does the academic literature identify as key factors supporting open innovation implementation in established organisations?

The structured literature review analysed ten scientific articles about implementing open innovation within established organisations. The results of this literature review identified nine key factors that support the implementation of externally developed innovations: Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, People & Skills, Knowledge & Learning, Communication & Buy-in, Market & Environment, and Network & Partnerships. These factors were grouped into four overarching categories to support clarity and consistency during empirical analysis. The framework was mapped across the Multi-Level Perspective (MLP) model, which distinguishes macro-, meso-, and micro-level conditions to understand the implementation dynamics in different levels of perspective.

Sub-question 2: Which of these factors can be confirmed in the airline context, and industry context?

The internal interviews at Transavia confirmed partly the relevance of the literature-based factors. Five factors: Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, and Communication & Buy-in were consistently supported. Transavia's employees emphasised the need for leadership, prioritisation, and operational feasibility, while also identifying barriers such as resource scarcity, isolated departments, and lack of formal ownership. Interviews with innovation experts from KLM, Schiphol, and NS confirmed the importance of these factors and further highlighted the importance of Knowledge & Learning and Network & Partnerships, which were less emphasised within Transavia. This comparison indicated that while Transavia aligns with general innovation conditions, it pays less attention to external collaborations.

Sub-question 3: Which of these factors can be confirmed in a practical setting, using a case study on electric flight training?

The case study on electrifying Transavia's pilot training program demonstrated how the nine factors are reflected in practice. The results shows that seven of the nine innovation implementation factors were confirmed through practical evidence: Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, Communication & Buy-in, Market & Environment, and Network & Partnerships. In addition, the practice-based factor: Interdepartmental collaboration was also mentioned as critical for innovation implementation.

The case study shows that innovation implementation depends not only on technical readiness but also on the organisation's ability to adopt the technology.

Main research question: What key factors are supporting the implementation of venture-driven innovative technologies into established airline operations?

Five key factors from literature were strongly supported by empirical findings: Culture, Strategic Alignment, Leadership & Governance, Operational Readiness, and Communication & Buy-in. Additionally, one practice-based factor was identified within the empirical data results, and confirmed by the case study: Interdepartmental Collaboration. These six factors form the core conditions that support the successful implementation of externally developed, venture-driven innovations into established airline operations. To understand their level of perspective, the six factors can be evaluated using the MLP framework as provided in the table below.

Table 8.1: Innovation Factors Categorised by Multi-Level Perspective (MLP) Model

MLP Level	**Innovation Factors**
Macro (Organisational)	Culture, Strategic Alignment, Leadership & Governance
Meso (Departmental)	Operational Readiness, Communication & Buy-in, Interdepartmental Collaboration
Micro (Individual)	/

Managerial Relevance

As airlines increasingly collaborate with external startups to drive sustainable innovation, it becomes essential to understand how early-stage technologies can be effectively implemented. This research provides a practical framework that helps managers assess whether their organisation is ready to adopt such innovations. For innovation and venture managers at airlines like Transavia, using this framework offers a structured way to identify strengths and weaknesses in internal conditions

To achieve this, managers should actively involve key departments early in the innovation process, align new initiatives with strategic goals, and ensure there is clear ownership and communication around implementation. This approach can improve investment decisions and increase the success rate of translating startup-driven technologies into operational practice.

Practical Recommendations

Based on the findings of this research, the following recommendations are proposed to support the implementation of venture-driven innovations within airline operations:

1. **Strengthen strategic alignment between venture investments and operational priorities**
   Ensure that investment decisions reflect departmental needs and operational feasibility, not solely long-term potential. Engage operational teams early in the investment selection process.
2. **Establish formal innovation ownership within departments**
   Introduce roles such as innovation champions who bridge strategic goals and daily operations, and ensure innovation initiatives are not dependent on individual enthusiasm alone, but become a standard activity.
3. **Prioritise communication and cross-functional collaboration**
   Increase visibility of innovation efforts, particularly those from venture activities. Encourage early involvement of key stakeholders to improve buy-in and minimise resistance to change.
4. **Use small-scale pilots to demonstrate feasibility**
   Start with controlled trials that allow operational teams to test new technologies in practice. This reduces risk aversion and supports organisational learning and confidence building.
5. **Enhance internal capacity and reduce operational pressure (*run mode*)**
   Allocate dedicated time and resources for innovation activities early in the process and include them in departmental yearly plans to prevent them from being reduced in priority under operational workload.
6. **Promote ecosystem awareness and external partnerships**
   Encourage departments to collaborate with external actors, such as startups, research institutions, and

regulatory bodies. This helps leverage external knowledge to improve internal processes.

7. **Create innovation KPIs and link them to strategic planning in departments**
   Embed innovation-related targets into departmental planning, performance reviews, and resource allocation processes to ensure structural support beyond the pilot stage.

9 Discussion

This chapter reflects on the findings of the study and their broader implications in both practical and academic aspects. It reflects on the limitations of the study, the generalisability of the results, and the applicability of the research method to other contexts. Finally, it outlines practical and academic directions for future research.

9.1. Implications of the Study

This study shows that successful implementation of venture-driven innovations in the airline industry is not only a technical challenge but also organisational. Translating early-stage startup innovations into airline operations requires structural leadership, internal ownership, and alignment across strategic and operational levels. For airlines, the results highlight the importance of stronger integration between corporate venture activities and operational departments. Implementation success depends on six key conditions: a supportive culture, strategic alignment, strong leadership and governance, operational readiness, communication and buy-in, and interdepartmental collaboration. These factors enable airlines to turn strategic ambitions into actionable innovation. For innovation managers, this thesis provides a practical framework to assess the internal readiness for implementing new technologies. The results offer a practical framework consisting of factors to assess the internal conditions, these factors can be used as a checklist to evaluate internal conditions that support the implementation of the new technology.

From an academic perspective, this research extends the open innovation literature by shifting the focus from investment theories to the implementation phase within organisations. While prior studies mainly focus on venture creation, investment selection, or portfolio strategy, this thesis explores the venture-to-operations transition. Notably, the emergence of one of the factors Interdepartmental Collaboration, as a critical enabler, suggests that existing literature may overlook practical organisational dynamics required for successful implementation.

9.2. Limitations of the Study

Several limitations should be acknowledged for interpreting the results of this study.

- **Context-specific focus:**
  The study is centred around one airline and a specific type of innovation (electric flight training), which may limit the generalisability of the findings to other industries or types of innovation.
- **Interview sample bias:**
  Most internal interviewees held operational roles, often with leadership responsibilities. This could potentially affect the results as factors such as strategy, leadership, and culture were frequently discussed by those employees. However, given that these roles are closely connected to daily operations, this may have led to less focus on certain external factors. These topics may be considered highly relevant by other employees within the organisation who are more involved in strategic planning or external collaborations.

- **Timing and maturity:**
  Given that the innovation was still in a pre-implementation phase, the study could not measure long-term outcomes or full-scale implementation results. As a result, the findings reflect perceived conditions and expected challenges rather than actual performance or organisational impact. Monitoring how perceived barriers evolve and whether supporting conditions remain effective over time can create valuable insights in assessing the readiness for implementation.
- **Ambiguity in the Definition of Innovation:**
  Despite clarification during interviews, respondents interpreted ”innovation” in varying ways, ranging from minor process optimisations to transformative, radical changes. This conceptual variation made it more difficult to standardise responses.
- **Interdependency between factors:**
  Although the framework defines nine distinct factors, overlaps exist in practice. For instance, Leadership & Governance is closely linked to Communication & Buy-in which together influence the innovative culture, and Strategic Alignment could depend on Operational Readiness. These interdependencies limit strict separation in analysis and highlight that innovation implementation is shaped by a system of interacting conditions. Success depends not on optimising individual factors in isolation, but on understanding their combined effect.

9.3. Generalisability of the Findings

While this study offers empirically grounded insights into the implementation of venture-driven innovations within Transavia, the generalisability of the findings requires critical reflection. The case study focuses on the electrification of Transavia’s airline pilot training program, a sustainability-driven, externally developed, and product-based innovation for internal use. Several factors influence whether the findings can be applied to other venture activities within Transavia or to other airline contexts.

Within Transavia, the case study shares characteristics with other venture-driven projects, including early-stage startup involvement, strategic sustainability objectives, and a need for operational integration. The core implementation conditions, such as interdepartmental collaboration, leadership, and strategic alignment, are not unique factors to the electric pilot training case and are relevant across other venture initiatives. However, electrifying pilot training affects a very specific domain (training operations), with specific actors (e.g. IL&T, ATO governance, pilots) with high safety standards. Other venture innovations, such as digital booking solutions or increasing the amount of SAF, may involve different stakeholders, value drivers, and challenges in IT infrastructure, which could shift the relative importance of certain factors such as External Partnerships and People & Skills. Overall, the findings of this study are applicable to most of Transavia’s externally developed innovations, while their importance weights might differ for other innovation projects.

In relation to corporate venture activities in general, this case reflects common challenges in venture-to-operations translation, strategic misalignment is often discussed in literature, and limited operational ownership and difficulties in integrating startup technologies into regulated systems are common challenges. These findings are confirmed by three different Dutch corporate organisations within the same industry. Therefore, it suggests that the same factors exist in other organisations within aviation where CVC initiatives are introduced. Still, generalisation assumes similar conditions: (1) external innovation development, (2) early-stage technology, (3) the need for internal resource allocation and cross-functional execution. Where these conditions do not apply, such as purely financial CVC goals or internal R&D-driven innovation, the framework may be less relevant.

9.4. Applicability of Research Method to other Innovation Contexts

Although this research focused on a radical, externally developed innovation implementation through a corporate venture program, the methodological approach can also be applicable for analysing other types of innovation. The structured combination of a literature-based framework with semi-structured interviews and a case study provides a flexible method to explore implementation enablers and barriers across different perspectives of the context. This approach could be adapted to explore:

- **Incremental innovation** within operational departments, where factors such as operational readiness, leadership commitments, and interdepartmental collaboration may remain relevant but manifest differently"
- **Internally developed innovations,** where the importance of external factors may be lower, and internal knowledge-sharing and skills development could play a larger role.
- **Different levels of integration** between startups and airline operations, such as joint ventures of standalone pilots.

Furthermore, the use of the MLP allows the method to be applied across organisational hierarchies, whether the innovation is bottom-up or top-down. The methodology is not limited to radical or venture-driven cases, but can be used to assess organisational readiness and the interaction of factors of innovation implementation.

9.5. Recommendations for Future Research

Building on the insights of this study, several opportunities exist for future research within Transavia and beyond. These suggestions can help validate the framework developed in this thesis, address its current limitations, and offer actionable guidance for airlines like Transavia and other organisations in similar contexts:

1. **Conduct multi-case studies across different airlines and innovation types**
   To assess whether the six identified implementation factors are consistent across different contexts, further research should apply the framework across different contexts and innovation types. Case studies could evaluate other venture-driven innovations within Transavia, as well as implementation in other airlines with corporate venture programs. For instance, EasyJet, Lufthansa Group, or KLM also invest in early-stage startups to integrate sustainable innovations. By studying how these airlines manage internal ownership, technical integration, and strategic alignment, researchers can test the generalisability of the framework and identify additional factors. A comparative study could also explore how innovation maturity or airline size influences the implementation process.
2. **Examine departmental implementation dynamics within Transavia**
   A practical next step for Transavia would be to examine how the six implementation factors manifest across different departments, such as Operations, IT, and Engineering. Differences in innovation culture, communication habits, and operational stability may affect how innovations are received. A targeted internal study across different departments using the framework as an assessment tool could help identify the organisational areas of resistance. This would also support more tailored implementation strategies and improve internal coordination when working with startups.
3. **Compare alternative zero-CO_2 pilot training methods**
   While this case focused on electric flight training, there are multiple alternative approaches for reducing carbon emissions in pilot training. Future research could compare the feasibility, cost-effectiveness, and operational integration of the use of SAF, hybrid aircraft, or advanced flight simulators. Such comparative research could provide Transavia with a broader evidence base for strategic decision-making around its sustainability goals.
4. **Longitudinal studies of innovation implementation over time**
   This study took place before the actual implementation of the innovation. A follow-up study could track the same innovation over time, from pilot trial to full adoption, to understand how internal perceptions change, what new barriers arise, and which factors become more or less important over time. This would provide valuable insights into how initial expectations evolve, what challenges change, and how organisations adapt their goals over time. It also provides information about scaling innovation beyond the pilot stage and embedding it into the organisation's daily routines.
5. **Design and test an internal "Innovation Readiness Scan" tool**
   Based on the six factors from this research, Transavia could develop a structured implementation readiness scan. This tool would allow innovation managers and operational teams to assess current conditions before committing to implementation. Future research could pilot this tool in new innovation projects. It could serve as a decision-support instrument, improving the internal alignment and offering a method to prioritise projects with higher organisational fit.

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A

Innovation factors from literature review

Article	Success Factors	Explanation
Search string: Drivers for open innovation implementation		
Walter et al. (2021)	Strategy	A structured and focused innovation strategy enhances implementation success
	Knowledge transfer	A combination of inbound and outbound knowledge flows enhances innovation capacity
	Absorptive capacity	Enables integration and utilisation of external knowledge
	Readiness for collaboration	Willingness and preparedness to engage with external partners
	Human resources	Quality and role of HR more critical than sheer numbers
Schroll & Mild (2012)	Market & tech characteristics	Influenced by tech maturity, speed, competitiveness, uncertainties
	Organisational capabilities	R&D, size, strategic breadth, location, design
	HR capabilities	Champions, risk culture, leadership focus
Sivam et al. (2019)	Culture	Adaptability, learning, experimentation, internal communication, risk tolerance
	Leadership	Empowering staff through autonomy and responsibility
	Strategy	Clear and measurable innovation goals
	Human capital	Staff training and support for creative initiatives
	Competencies	Structured identification and development of key competencies
	External relations	Systematic cooperation and extensive networking
	Structures	Dedicated teams, knowledge management systems
	Development management	Structured development pipelines, interdepartmental routines
	Learning systems	Devices enabling continuous learning and best practices
	Assessment	Intellectual capital protection and evaluation systems
Morta & Minshall (2011)	Innovation need	Clear motivation and rationale for open innovation
	Timing	Early or late adoption influences strategy
	Culture	Internal norms around openness, collaboration, and flexibility
Search string: Critical factors for open innovation		
Durst & Ståhle (2023)	Relational aspects	Trust, shared goals, mutual support, open communication
	People	Diversity, commitment, willingness to learn and adapt

Continued on next page

Article	Success Factors	Explanation
	Governance	Defined roles, coordination, performance evaluation, IP handling
	Facilitators	Innovation brokers, team training, champions, collective centres
	Resources	Time, staff, equipment, balancing innovation vs operations
	Strategy	Strategic alignment, feasibility awareness, cultural transformation
	Process understanding	Awareness of lifecycle, types of innovation (radical/incremental)
	Leadership	Leading change and managing transitions
	Culture	Encouraging open knowledge sharing and collaboration
Subtil de Oliveira et al. (2018)	Leadership	Encouraging innovation through guidance and empowerment
	Innovation capability	Strong internal R&D capabilities
	Networks	External partnerships and stakeholder relationships
	Strategy	Clearly aligned innovation strategies
	Technology management	Effective tech adoption and integration
	Culture	Openness, experimentation, internal support for innovation
Hosseini (2017)	Strategic alignment	Sync open innovation with business and IT strategies
	Governance	Role clarity, decision-making, partner and IP management
	Methods	Knowledge exploration, retention, and exploitation techniques
	IT	Facilitates knowledge processing and collaboration
	People	Key individuals as tech experts, brokers, leaders
	Culture	Mindset shift toward openness, new ways of working
Coates & Bals (2013)	Company culture	Must be receptive to external innovation sources
	Innovation relevance	Must directly fulfill internal needs
	Project management	Clear goals and time to experiment
	Communication	Champions and senior buy-in are crucial
	External partnerships	Strong collaboration and knowledge exchange
	Team skills	Multidisciplinary, experienced teams
	Scientific mindset	Enthusiastic scientists open to external input
Search string: Technological innovation adoption in organisations		
Robert (2009)	Organisational resources	Time, staff, funding, infrastructure, decentralised decision-making
	Receptive context	Strong leadership, risk-tolerant culture, shared goals
	Innovation readiness	Fit with existing workflows, support from champions
	Political/social factors	Power dynamics, resistance from hierarchy, influence of champions
	Process factors	Iterative, flexible methods and stakeholder management
	External environment	National incentives, policy frameworks, budgeting flexibility
Talukder (2012)	Organisational	Training, managerial support, incentives
	Individual	Innovativeness, motivation, perceived benefits
	Social	Peer influence and network effects
	Demographics	Age, gender, role, qualifications affect adoption attitude

B

Semi-structured interview questionnaire

Interview questions empirical study:

- Can you describe your role within the organisation and your involvement with innovation initiatives?
- In your experience, how does the process of implementing innovation typically work within Transavia?
  - Through which channels or departments is innovation usually introduced? (such as upper management or an innovation team)?
- In your view, what are the key factors that contribute to the successful implementation of innovation?
  - Can you give examples of conditions that have supported innovation?
- What are the current barriers or difficulties you observe in implementing innovation?
  - To what extent do challenges relate to:
    - the technology or process itself?
    - the innovation culture within Transavia?
    - the organisational structures of management practices?
    - the influence of external factors?
- Which of the factors we discussed do you think are most important for realising the implementation of new ideas?
- How do you see the role of Transavia Ventures in supporting innovation within the organisation?
- Are there specific ways in which the venture collaboration strengthens or complicates implementation?
- How do you think innovation should be positioned within the organisation going forward?

Interviews for case study

- What is the view of the proposed innovation?
- What is currently a hindrance or bottleneck for implementing this innovation?
- Is the existing organisational culture influencing the adoption of innovations like this?
- Who do you think should be responsible for driving this innovation?
- Is there clear leadership or ownership in this specific case?
- Is there clear commitment and a goal defined for this innovation?
- Are there technological or operational challenges?

C

Results internal interviews

This appendix provides the standardised table to analyse the internal interviews that are done with company experts to gain insights into factors that support innovation implementation.

For confidentiality reasons, this thesis version includes only a single example of the interview analysis. The original appendix contained ten tables, of which one is shown here as an illustrative example.

Implementation Factor	**Importance Score**	**Interpretation / Context**
Organisation	3	Innovation isn't driven by KPIs or management assessments, making it a lower priority compared to daily operations, and there is no prioritisation or leadership in innovation. As a result, there is no capacity in terms of man-hours for innovation. Additionally, the misalignment between business needs and innovations introduced by ventures blocks implementation.
Technical / Operational	4	The expert highlights the need for practical feasibility and operational integration. However, challenges arise in integrating the interactions between different processes. The expert has experience with the introduction of a new innovation in which the proposition didn't work alongside the existing proposition, leading to integration failure. When there isn't a problem to solve, implementation is likely to fail. The expert also mentions that good technology is crucial for successful implementation.
Innovation Culture	2	While individual employees at Transavia show entrepreneurial spirit and problem-solving abilities, the expert indicates that the organisation as a whole isn't innovative. Innovation is considered a nice-to-have rather than a need-to-have. Collaboration is strong during crises but not proactive in long-term innovation. Especially, sustainability is a less popular topic compared to innovation in process optimisation.
External	1	The expert believes that external influences, especially sustainability initiatives driven by political pressures and clear KPIs from the board, are critical drivers. Adapting to changing market needs, such as offering flight-free holiday options during COVID-19, also plays a key role in change and innovation. When the costs are higher than the returns, innovation is likely to fail. Furthermore, collaboration with different partners can cause delays or block innovation.

Table C.1: Implementation Factors and Insights according to Team lead

D

Internal interview analysis on framework level

This appendix provides supporting evidence for the validity of linking the interview content to the nine-factor innovation framework. The table outlines each of the nine key factors alongside specific statements made by interviewees. These statements have been interpreted by the researcher as indicators that the corresponding factor was discussed.

For confidential reasons, this appendix is hidden in this thesis version.

E

Results external interviews

For confidentiality reasons, this thesis version excludes the interview analysis. The original appendix contained five tables used to structurally analyse the interviews.

F

External interview analysis on framework level

For confidential reasons, this appendix is hidden in this thesis version.

G

Analysis case study interviews

For confidentiality reasons, this appendix is hidden. The original version contained three tables presenting the coding analysis of the interviews, illustrating how the identified codes are linked to the framework's factors.