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Horizontal Expansion of Multi-Sided Platforms

A Case Study of the Air Charter Industry

Master's thesis in Management and Economics of Innovation

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SUMMARY

During the last 20 years, multi-sided platform (MSP) companies, such as Amazon, Uber and Airbnb, have been able to transform several industries dominated by traditional pipeline businesses. Key factors behind the proliferation of MSPs are network effects, ecosystem advantages and lowered search and transaction costs. Many of these companies have rapidly expanded their platforms in different ways. However, the phenomenon when an MSP expands its platform horizontally, to a new value chain while utilizing existing platform architecture, has lacked attention within MSP research.

To shed light on this phenomenon, this thesis set out to answer two research questions. From a company internal perspective: *What factors influence an MSP's decision to expand its platform horizontally into a new but related market segment*? and from a company external perspective: *What precursors might influence the users in the new market segment to adopt the horizontally expanding MSP?*

To answer these questions, a case study was conducted on the company Avinode Group, which provides a digital marketplace MSP for the air charter industry that connects air charter brokers with aircraft operators. As Avinode is currently expanding its marketplace platform to also encompass the medical air transportation industry, this case provided an opportunity to study MSP expansion. Through semi-structured interviews with stakeholders in the company and in the medical air transportation industry, the factors underpinning the decision to expand and the precursors for adoption among potential users were explored.

The findings indicate that an MSP's expansion decision is framed by resource constraints that bound which expansion alternative that is possible and feasible. Furthermore, the potential to realize synergies and leverage complementary assets guides the decision. This potential can be high in an horizontally adjacent segment where the MSP's existing resources can be reused and there might arise network effects across the new and old user groups. Lastly, the expansion decision will be subject to a strategic and value evaluation. Users in the new industry that potentially will adopt are similarly looking to realize benefits from complementary assets and foresee the potential to achieve network effects within its own industry and with the MSP's existing users, this together with the prospect of a generally improved market overview can be precursors for adoption of an MSP that expands its platform to these new users.

The identification of the importance of complementary assets, that stems from the MSP's whole ecosystem, led the authors to formulate a concept dubbed *complementary network assets*. This concept encapsulates how assets within the MSP ecosystem that are not directly owned by the platform company can provide positive synergistic and complementary effects for an horizontal MSP expansion.

Keywords: MSP expansion, horizontal expansion, Complementary network assets.

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Alfred Lindén

Theodor Eliasson

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1 Introduction

Digital platforms are all around us. They help us source and select goods and services in an ever faster changing consumer landscape and they have arguably made life easier in many ways. Platform companies such as Amazon and Uber have seemingly overnight grown into some of the largest corporations on earth and expanded into multiple business areas (Kenney & Zysman, 2016). This study sets out to explore how digital platforms expand in order to enhance the understanding of this phenomenon. The company Avinode Group which provides an air charter sourcing platform will be used as a case study.

This chapter introduces the background, problem formulation and purpose. The background contains an overview of digital platforms and an introduction to the case company and its related industry.

1.1 Background

This section describes the background of the study and covers multi-sided platforms, the air charter industry, the medical air transportation industry and the case company Avinode Group.

1.1.1 Digital Platforms and Multi-Sided Markets

A multi-sided market (MSM) consists of two or more user groups that interact through a common intermediary referred to as a multi-sided platform (MSP). Often a MSM consists of two distinct sides and the term two-sided market is sometimes used interchangeably in the literature (Stummer, Kundisch & Decker, 2018). Many of the largest and fastest growing companies in later years are providers of platforms for MSMs, for example Facebook, Amazon and Uber. MSPs are often built on a digital intermediary but this is not always the case. An example of a physical intermediary are credit and debit cards which are regarded as a two-sided market with cardholders and merchants as the two sides while the cards and the issuer of these provide the common platform (Rochet & Tirole, 2003; Alstyne, Parker & Choudary, 2016).

An important question for a platform provider is how to set up a price structure. The platform provider can choose to monetize the different sides of the MSM in different ways depending on the characteristics of the marketplace. In some markets it can even make sense to subsidize one side of the market to increase adoption rate as network externalities from a large user base might in the end create greater value for the platform and its users (Rochet & Tirole, 2003; Parker & Van Alstyne, 2005). Facebook provides their social media platform for free to users and instead monetizes advertisers that pay for customized ads targeted at relevant segments of Facebook’s vast user base (Sherman, 2018).

In the last 20 years, MSP companies have been able to transform several industries dominated by traditional pipeline businesses, notable examples being Airbnb and Uber in the hotel and taxi industry (Stone, 2017). Key factors behind the proliferation of MSPs are network effects, ecosystem advantages and lowered search and transaction costs (Alstyne, Parker & Choudary, 2016; Hagiu, 2013). But as MSP solutions are becoming more pervasive, existing platform providers must also address how to tackle

increasing competition from other platform companies. Many popular digital platforms have tried to strengthen their dominance by extending their platform into new markets or segments (Bar-Gill, 2019). Uber introduced a food delivery service, Facebook introduced a dating and a marketplace service and Google has consistently added new services like Maps, Gmail and Drive (Staykova & Damsgaard, 2016).

1.1.2 Air Charter

Air charter refers to when an actor rents an aircraft to provide travel services for either private or commercial purposes. This thesis will focus on private air charter, that is rental of business jets and other fixed-wing aircrafts owned by either private individuals or larger operators such as Vistajet and Netjets (McGuire, 2019). The private air charter market is fragmented, consisting of a plethora of small and medium-sized operators organised in diverse ways. Some operators own their aircraft, while others specialize in purely managing and operating aircraft to minimize ownership costs for clients, thus offering them for charter when the owner is not flying. On the other side of this market are customers requesting air charter. Typically, professional brokers act on the behalf of clients that travel, due to the product having a high level of complexity because of availability, special requirements and large associated costs. Due to the fragmented structure of the industry, the industry has developed significantly with the introduction of online marketplaces. There are multiple types; customer-facing websites and apps that offer private individuals to request and book trips, and charter sourcing marketplaces (J. Sjöberg, personal communication, January 26, 2021).

Empty leg and *pooling* are two common air charter concepts that will be used frequently later in the report. An empty leg refers to an empty flight leg without a paying customer. This kind of leg arises when an aircraft needs to reposition between different locations, either to retrieve a customer or a flight back to home base after delivering a customer to his or her destination (Belorid, 2010). Pooling refers to coordinating and putting two or more customers travelling on a similar route on the same aircraft to share the costs (J. Sjöberg, personal communication, January 26, 2021).

1.1.3 The Medical Air Transportation Industry

Medical air transportation refers to the transport of patients, organs, medicine or medical equipment when ground transportation is inefficient or unavailable, such as when distances are large and locations remote. It includes fixed-wing (aeroplanes) and rotor wing (helicopters) aircraft. Helicopters are typically used as air ambulances when transportation by road to an adequate hospital is too slow or the emergency has occurred in a remote location only accessible by air (Steenhoff et al, 2020).

In a circumstance where a patient is far from home and has undergone an accident, emergency care is normally utilized in the host country. However, when there is a lack of adequate medical facilities locally, or due to cost considerations from insurance providers and in cases where immigrants or visitors are uninsured and unable to afford local medical care, patients can be transported urgently by air to their home country for further care. Patients with minor injuries will normally be repatriated on commercial flights. When this is not possible due to serious medical conditions, or when commercial flights are unavailable, smaller fixed-wing aircraft with specialized medical configuration are utilized (Zoellner, 2010). These flights will from now on be referred to as *medevac flights*. The medevac industry consists of medevac operators on

the supply side, that is companies operating purpose-built fixed-wing air ambulances or business jets that are convertible into a medical configuration. The demand (or buyer) side consists of actors requesting and using medical aviation services which includes professional brokers, insurance companies, assistance companies, hospitals, and national healthcare organizations (Steenhoff et al, 2020). The industry is fragmented with actors of many different sizes, operating through different business models and processes (J. Sjöberg, personal communication, January 26, 2021).

1.1.4 Case Company: Avinode Group

Avinode Group is an IT company that develops products and services for the air charter industry. Avinode was founded in 2001 by three students at Chalmers University of Technology, Gothenburg, Sweden which formulated the idea as a thesis project (Myrén, 2011). Today the company is a wholly-owned subsidiary of World Fuel Services (WFS). Avinode has around one hundred employees organized in three different businesses in Sweden and the US; Avinode Marketplace, Paynode and Schedaero. Avinode Marketplace is an online B2B MSP for air charter sourcing, connecting air charter brokers with aircraft operators. Brokers are in this case an intermediary between the end user that travels (who is the broker's client) and aircraft operators. Paynode is a payment service for the air charter industry, enabling end-consumers, brokers and aircraft operators to transfer payments instantly between each other across borders. Schedaero is a flight operations system (FOS) catered to aircraft operators. It enables their users to schedule flights, assign crew, fuel and other services to assist their operations. Paynode and Schedaero integrate with the Avinode Marketplace platform to compose a bundle of services for their users, but each of them is also offered stand-alone (Åkerberg, 2020). These three services are all in the same value chain, by providing services for the same set of users in the same industry. In addition, Avinode provides Application Programming Interfaces (API:s) and allows for integrations with their users' other services. (J. Sjöberg, personal communication, January 26, 2021; Avinode, 2021).

Avinode Group is currently in the process of expanding its Avinode Marketplace service offering to the medical air transportation industry. The expansion will therefore make the platform encompass new, but related user groups; medevac flight operators and buyers of medevac flights. This expansion initiative is called *Avinode Aid* and was in an ongoing exploration and customer onboarding phase during the time this thesis was conducted.

1.2 Problem Formulation

There is a rapidly growing scientific literature concerning MSP strategy. Within this area, Staykova and Damsgaard (2016) identified that platform expansion is an aspect of MSP strategy research that has not been covered enough in the literature. Staykova and Damsgaard identified two distinct expansion approaches called platform constellations and platform bundling, referring to either expanding by creating a connected structure of different platforms under the same brand umbrella or expanding by bundling more features and services to the initial platform. Eisenmann, Geoffrey & van Alstyne (2011) introduced the concept of platform envelopment, referring to a platform that combines the functionality of an incumbent platform with its own to overtake the market of the incumbent. Bar-Gill (2019) highlights that as MSPs are

becoming more pervasive in society and businesses, platform expansion usually results in an overlap with other MSPs without them pursuing a full-scale envelopment strategy. The author further addresses the strategic considerations and effects on profit potential as the competitive situation entails. McIntyre and Srinivasan (2016), after reviewing the literature on platforms, propose the research question *"How can platform firms extend their reach to newer markets by leveraging their existing architectures and complementor networks?"* as a suitable basis for future studies. In a paper made available 2020 (still in press) McIntyre, Srinivasan and Chintakananda explores the persistence over time of platforms. They note that what causes platforms to expand their boundaries has recently attracted more research but still lacks attention. They propose that firms that are able to leverage cross-platform network effects are more likely to persist.

The descriptions of platform expansion strategies that emerge from the literature are somewhat sprawling and an exhaustive topology seems to be lacking. This absence of a complete picture can in turn be understood by the complex nature of an MSP expansion compared to the expansion of a pipeline business into a new market or introduction of a new product. Platform expansion is happening in an interlinked context where the prospective user base and the expanding MSP are in a dynamic relationship as an MSP has a fundamental reliance on network effects and generativity to create value (McIntyre, Srinivasan and Chintakananda, in press). The authors of this study believe there is room for further research into the area of platform expansion.

Considering the status of research into platform expansion, this study sets out to further the knowledge of the phenomena by looking at horizontal platform expansion. This refers to when an MSP extends their existing platform to perform similar functions as in its current business area but in a new industry or segment, for example, if a marketplace platform expands to encompass buyers and sellers of new goods or services that have not been transacted before on the platform. This kind of move would imply that current platform systems or architecture can largely be reused but there might be smaller tweaks necessary to adapt the platform's functionality to the new user groups.

Vertical platform expansion would instead mean that the MSP expands its platform by offering more extensive services in their current market and to their current users, for example, if a marketplace platform starts offering payment solutions through the platform in addition to just searching for goods or services.

Organising expansion strategies into vertical and horizontal moves gives a structure that helps to delimit and define an expansion initiative in a clear way. The choice of looking at horizontal expansion is inspired by McIntyre & Srinivasan (2016) proposed area for research *"How can platform firms extend their reach to newer markets by leveraging their existing architectures and complementor networks?"*, but with a different framing by using the term horizontal instead to express the move to newer markets based on existing platform architecture.

Therefore, by using an abductive approach this study aims to investigate how potential synergies or complementary factors between the current business area and the new industry or segment influences the platform's horizontal expansion. Examples of synergies or complementary factors can include overlapping user bases, low need for

customization of platform design and systems or potential for network effects between the current and new industry. This aspect relates to McIntyre & Srinivasan (2016) notion of leveraging complementor networks and to the proposition of McIntyre, Srinivasan and Chintakananda (in press) that cross-platform network effect enhances persistence, but the focus is instead on the early stages and the decision to expand. In this report, a market segment or industry that has synergetic or complementary attributes will be called a related segment or industry.

The expansion concept of platform constellations, platform bundling and platform envelopment that has been highlighted in previous literature emphasized the top-down deployment of strategy. This study will explore the expansion process from both a perspective internal to the MSP company, and an external perspective that covers all the MSM-actors external to the MSP provider such as users and potential new users.

1.3 Purpose and Research Questions

The purpose of this master thesis is to explore the factors that influence an MSP's decision to expand horizontally and understand why the users in the new market segment would want to adopt the horizontally expanding MSP. Our final goal is to expand the knowledge of MSP expansion by proposing a set of factors with implication for both theory and practice. The subsequent research questions are:

- RQ1: *What factors influence an MSP's decision to expand its platform horizontally into a new but related market segment?*
- RQ2: *What precursors might influence the users in the new market segment to adopt the horizontally expanding MSP?*

The authors of this thesis were given the opportunity to conduct a case study of Avinode Group's initiative Avinode Aid. This is a horizontal expansion as Avinode are extending their current air charter marketplace MSP to perform similar functions but in the medevac industry instead. This case study will provide a basis to answer the research questions.

1.4 Delimitations

Due to the choice of an abductive approach, this study has delimited the selection of theory included. Why an MSP company decides to expand and why users might want to adopt are potentially very broad questions that can be approached from many different angles. There are a plethora of theoretical foundations that could provide a basis to address this. This study did not set out to investigate all different angles on the problem but has instead made a delimitation to approach the research question from an angle that was deemed to be the most plausible given the context and input from the literature, as it is developed in section 1.2.

The abductive research approach aimed to incorporate and expand the literature on how MSPs external network and internal resources frame companies' decision making and user adoption in terms of expansion initiatives. This study therefore aimed to go deeper in those dimensions and delimit from including other literature. For example, on the subject of RQ2, this thesis was delimited from including Rogers (1962) Diffusion of

Innovation theory, considering the study is aimed at exploring an early stage of an expansion and explores what precursors might influence a user to adopt this service in the future. Instead, theory related to value propositions and network externalities was chosen to understand the precursors for adoption.

Further, this study has delimited the amount of data collected. The phenomenon of horizontal MSP expansion was studied through a single case company, because the time constraint of five months for conduction the thesis delimited the scope from including multiple cases. Some social scientists argue that multiple case studies are more preferable, but that a single in-depth case study can have strong explanatory power and be generalizable if performed correctly. This is because social science is reliant on the context which makes predictive theories difficult to construct regardless of how many case studies are conducted. Thus. one in-depth case study providing deeper analysis can be equally fruitful in contributing to research (Flyvbjerg, 2006). Thus, the authors argue that the results and implications are valid given the case context.

2 Theoretical Framework

The purpose of this section is to introduce and highlight the theory and frameworks used to analyse the results from the perspective of the research questions.

The authors believe the resource-based view can help understand the decisions and factors why an MSP expands horizontally and provide a more underlying explanation for choosing this specific type of expansion, rather than focusing on the general motive of business expansion, which is to increase profits, market share and shareholder value.

From an external perspective, the authors believe the value proposition framework can be used to understand why potential users would adopt a horizontally expanding MSP, since it communicates net benefits and helps potential MSP users realize the value it provides.

Before presenting the resource-based view and value propositions of MSPs the concept of network effects will be introduced, which is an essential MSP concept that will recur and be incorporated in different parts of this study.

2.1 Network Effects and Digital Platforms

Network effects is a fundamental cornerstone for understanding the nature of MSPs and how value is created for the different actors in a MSM and it is essential to understand how these effects work and how the concept has evolved (Yun, 2020).

The concept of network effects was developed and popularized in the 1980s by researchers such as Michael L. Katz, Carl Shapiro, Joseph Farrell, and Garth Saloner. Katz and Shapiro (1985) noted how the utility of many products increases as the number of users consuming the good increases, they referred to these users as a network. Similar ideas underpin Metcalfe's law which describes how the value of a telecommunications network is proportional to the square of the number of users connected to the system (Teigland et al., 2018). Network effects refer to this notion of how the benefit for existing users of a system increases as more users join (Yun, 2020).

These ideas have increasingly been carried over and used to understand the dynamics in internet applications and digital platforms to explain the increasing return to scale of onboarding more users that many MSP-businesses experience (Teigland et al., 2018). This is related to the interesting anomaly that digital MSPs often seem to discount or subsidize a certain side of their MSM. Parker and Van Alstyne (2005) explored this phenomenon and explained how the presence of network effects can explain why it is sometimes optimal and rational for platform companies to even give away its product for free to one user side of the MSM. In certain markets, network effects from increased adoption in one user group can drastically increase the value for another side of the market. When the marginal costs for adding more user is low, it can make sense to provide the platform service for free to one user group while pricing the other side of the market above cost price. Two examples of this are how Facebook provides their platform for free to the social media users while they monetize the advertisers (Yun, 2020), or how Adobe provides their PDF reader for free while the producers of PDF documents are charged for Adobe’s editing software (Eisenmann et al., 2006).

Network effects are usually divided into direct and indirect network effects. The early literature was mainly concerned with direct effects which refers to how increasing adoption of users of the same type increases the value for users on the same side in the network. This can be exemplified with the telephone network and how its utility increases with more users. Indirect network effects, or cross-group effects, on the other hand refers to how increasing adoption of one group of users entails greater incentives and benefits for another distinct user group (Yun, 2020). This can be exemplified with how the drivers on the Uber platform benefits from increasing participation of riders on the platform and vice versa. In contrast, the drivers do not experience many benefits from direct network effects when more drivers join the platform. It is important to understand the distinctions between these two types of network effects but both direct and indirect effects ultimately boil down to the same idea of how the value for users of a platform increases as more users join the network.

This section has provided an overview of network effects as it is an essential part of how MSPs work. The concept will also recur frequently in different parts of this study and it is incorporated in the theory below to make them better adapted to the MSP context that they will be used in.

2.2 Resource-Based View and Complementary Network Assets

For firms to ensure strategic competitiveness they need to recognise their internal resources and successfully match these with opportunities in the external environment. The resource-based view (RBV) provides a framework for companies to better understand their internal resources and capabilities. Resources can be divided into tangible, intangible and human resources. Tangible resources include financial and physical resources, such as cash, debt or machines and plant, property and equipment (PP&E). Intangible resources include technology (often software), reputation and company culture. Human resources include a firm's employees, skills and know-how as well as capacities of the employees in terms of communication and work motivation (Grant, 2018).

An important point Grant (2018) makes is that firms must appraise what opportunities that exist for economizing the usage of their resources. Sometimes firms may be able to provide the same output with fewer resources. Or their existing resources might be able to support more business if allocated and utilized differently.

Capabilities are the combination of different resources that in turn is used to complete organizational tasks. Employees are often considered to be the most valuable resource of a firm since they transform tangible and intangible resources into actual capabilities (Grant, 2018). One example is employed programmers transforming their skills and know-how with financial resources (paid as salary) into software development capabilities. Capabilities that are the source of competitive advantage are regarded as core competencies. Firms want to identify and cultivate current and potential core competencies to understand what sets them apart from their competitors which can subsequently guide their business decisions (Hitt, Ireland, & Hoskisson, 2017).

As RQ1 is centred around the company internal perspective, the authors believe the RBV framework can work as a useful toolbox when analysing why an MSP expands

horizontally. To understand the factors influencing the decision of entering a specific segment the concept of complementary assets is explored, which is elaborated below.

For an innovation or a new technical solution offered by a firm to be successfully commercialized it usually needs to be introduced in conjunction with other capabilities and assets of the firm. These supporting factors Teece (1986) labels complementary assets and they can be what decides if an innovation is successfully commercialized and ultimately renders profits. Complementary assets can include for example manufacturing and marketing capabilities, brand recognition or after-sale support (Tripsas, 1997). Rothaermel (2001) highlights how firms possessing complementary assets related to an emerging technology can exploit these even if they do not develop the technology themselves by establishing interfirm cooperation with the firms introducing the new solution.

In the context of MSMs and digital MSPs, the borders between internal and external resources of the firm are somewhat blurred. For example, the user base is sometimes regarded as a critical resource of an MSP (Sun & Tse, 2009) whilst this would be regarded as an external factor in a traditional resource-based perspective (Serkan, 2013).

In light of this the RBV, coupled with a complementary asset perspective, can be employed to better describe the value that is created in the ecosystem of an MSP when different network resources are employed in conjunction with a new technology. To describe this synergistic potential of resources within an ecosystem we propose the term **complementary network assets** (CNAs). By the addition of network to the complementary asset concept, we highlight that also assets within the ecosystem that are not directly owned by the platform company can provide positive complementary effects when coupled with a platform innovation or technical solution. This accounts for the fact that MSP value creation is usually heavily reliant on its ecosystem. In the context of platform expansion, the innovation or technical solution refers to the platform applied in a new area where it provides new and potentially better solutions to users. For an MSP provider to fully realize the value and potential of the platform, the provider needs to build an understanding of its CNAs. This can help to guide the MSP to make better business decisions.

2.3 Value Proposition of MSPs

The value proposition concept originates from the 1988 paper of Lanning & Michaels in which they defined it as “A clear, simple statement of the benefits, both tangible and intangible, that the company will provide, along with the approximate price it will charge each customer”. In its most basic form, it is a statement of benefits minus costs and the resulting value offered. The usage of the term has since become widespread but despite this, it is often poorly understood (Payne et. al, 2017).

The authors believe that the value proposition framework is suitable to address RQ2 considering that a key part of understanding why customers would adopt any product or service is to understand what value (or benefits) they perceive to receive from using it. The definition of value in this context is the aggregated sum of perceived value for the customer which envelops cost, revenue, network externalities, availability, switching costs and other factors.

The value proposition of an MSP is very dependent on network effects stemming from its user base and these compose a majority of the platform's value (McIntyre and Srinivasan, 2017). In turn, for its users, MSPs perform two main functions according to Hagiu (2009); *"reducing search costs, incurred by the MSP's multiple constituents before transacting, and reducing shared costs incurred during the transactions themselves. Any feature or functionality of an MSP falls into either of these two fundamental types"*. This essentially means that MSPs create value by enabling easier and less costly communication and interactions and increased market transparency by facilitating information exchange and the exchange of goods and services (McIntyre and Srinivasan, 2017). In the presence of network effects this value creation potential can have an increasing return to scale, meaning that the interaction on the platforms for each individual user becomes more valuable if the user base in the network increases.

MSPs, like other businesses, do not have a fixed value proposition, but it rather evolves over time. Muzellec, Ronteau, and Lambkin (2015) expand by stating that this phenomenon can be described as a life cycle in which both the business model and value proposition evolves as an MSP matures. In their case studies they find that in MSPs' early and emerging stages, the focus is on subsidizing the user side (often the consumer side in B2C MSPs) and constructing an attractive value proposition for this user side, usually by providing the MSP for free. At later growth stages when a sufficient user base is established, the focus is shifted towards attracting business customers (or users) who instead pay for the service. Therefore, the value proposition develops to encapture and communicate the value its user base constitutes. Further developed MSPs reaching the maturity phase are characterized by a value proposition and business model that has been influenced by all actors; users on all sides, not only the provider of the platform. This is because the network of the MSP provides interaction that enables users to contribute to the development of new services which they also pay for. Muzellec, Ronteau, and Lambkin (2015) find that business users (or business partners) are most involved in co-creating and developing the business model, value proposition and MSP in general.

To enable successful adoption in new segments when an MSP expands, Hagiu (2009) highlights that a platform should utilize different sides for expansion, depending on where current strengths and capabilities are located. It also takes risk in consideration, warning that certain expansions can lead to conflicts of interest in the network of the MSP.

3 Methodology

This chapter introduces how the study was conducted by presenting research strategy, research design and the research process as well as motivations for why the selected approach was used. It also covers how data collection was conducted and how the results have been presented.

3.1 Research Strategy

In social science research, the social scientist's objective is to describe, explore and explain the "inside view" of a phenomenon and related activities. By presenting relevant information for non-observers social science describes social life with technical descriptions (Lewis et al., 2014). This thesis was exploratory since it was derived from the observation of a phenomenon, and where existing literature exploring the subject were limited resulting in a need for further enlightenment. Thus, the description of this thesis fitted the objective of social science research since the aim was to explore and describe.

To find answers to the research questions and put identified implications within reach, a qualitative method was chosen where a case study constituted the primary source for data collection. A qualitative method was deemed appropriate since decision-making within companies is of subjective nature due to humans being stakeholders. Therefore, decisions will seldom be purely motivated by quantifiable and objective facts. Likewise, the precursors an actor identifies as reasons to adopt an innovation or invest in a product or service are subjective, which made a qualitative method appropriate for this thesis (Bryman & Bell, 2015).

The study has employed empirical data collected through a single case study that has been analyzed in conjunction with relevant theory. The analysis was performed under the assumption that a platform's horizontal expansion decision is influenced by potential synergies or complementary factors between the current business area and the new industry or segment being expanded into. Hence, this method of utilizing theory combined with empirical data to re-conceptualize and extend existing theories makes the research approach abductive (Rashid et al., 2019). The usage of case studies as qualitative methods is widespread in sociology and is commonly implemented in strategic management studies (Danneels, 2002).

3.2 Research Design

The chosen research design was a direct result of the strategy derived from an abductive approach. Therefore, a theoretical framework was constructed from several fields combining network effects and the resource-based view with theory on complementary assets to frame MSPs in the context of horizontal expansion, forming the term *complementary network assets*. This was mainly to understand what factors might influence an MSP's decision to expand horizontally. The value proposition framework was included in the context of platform evolution literature that could construct a plausible understanding of the precursors that might influence the users in a new market to adopt an MSP that has expanded from a similar market segment.

The second part of the research design included data collection, which was facilitated through the case study of Avinode Group and its expansion initiative Avinode Aid which is a horizontal MSP expansion of the Avinode Marketplace. Interviews were conducted with both company internal stakeholders of Avinode to address RQ1, and company external stakeholders in the medical air transportation industry to cover RQ2.

Interview questions were generated based on the theoretical framework and the authors' general knowledge of business expansion as Industrial Engineering and Management students. Interview questions were slightly adapted after the first interview in each type of company external and company internal to enhance the phrasings after industry language. The initial interview guides can be found in Appendix A.1 for company internal interviews and A.2 for company external interviews. Some of the questions in the company external interview guide were used for the authors to build an understanding of how the medical air transportation industry operates since there was sparse secondary data about the industry in general.

3.3 Research Process

This section outlines the research process and method of data collection to answer the previously outlined research questions. This section also outlines how the subsequent analysis of the results was conducted. A summary of the process can be seen in Figure 1 below.

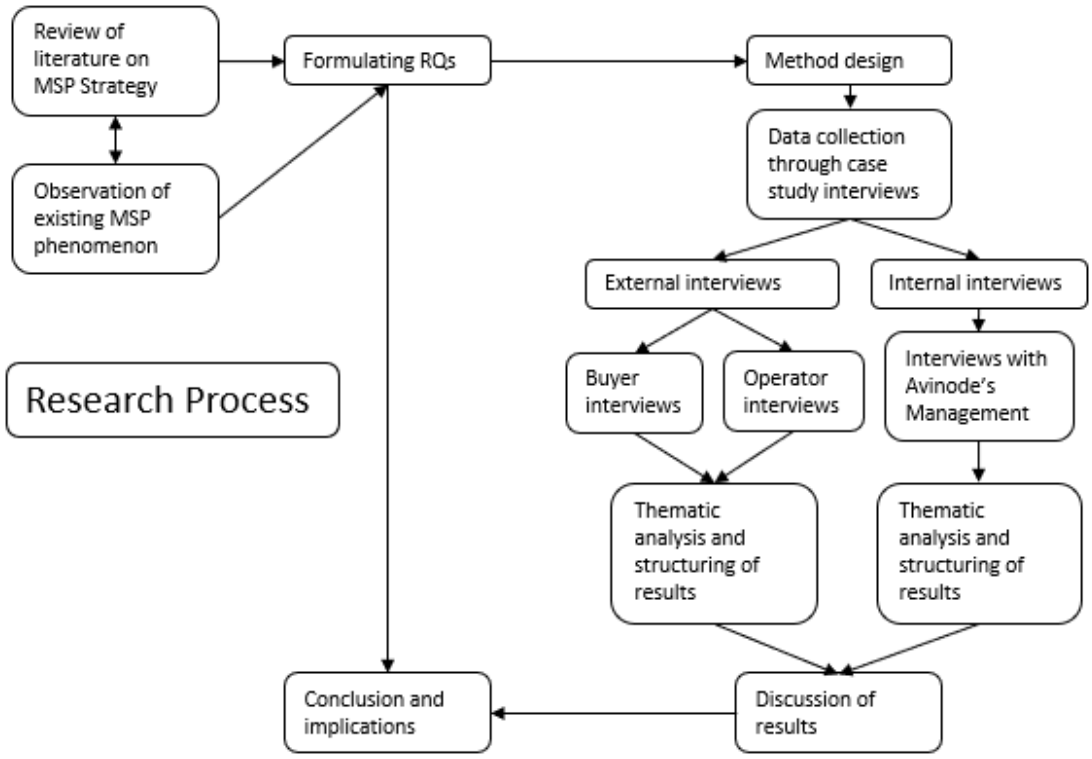

Figure 1: Flow chart over the research process.

3.3.1 Data Collection

Primary data were collected through semi-structured interviews. The usage of semi-structured interviews has several advantages according to DiCicco-Bloom and Crabtree (2006) since they offer the freedom and flexibility to adapt questions as insights are

learned during the process. This was utilized on multiple occasions to explore new unexpected themes that emerged during the interviews.

The interviewees were sampled based on different criteria, depending on if they were company internal or company external. Company internal interviewees were selected based on seniority and availability. The objective was to find employees with a mix of external commercial focus and internal product focus, preferably on an executive level with decision-making authority. Company external interviewees were selected based on snowball sampling, which according to Hancock and Gile (2011) allows for the uncovering of unexpected interview subjects. We started based on one of Avinode's employees' external networks in the medical air transportation industry. We wanted to get a mix of operators and buyers to receive an understanding of both sides of the market of medevac flights, which is why we asked each interviewee to suggest another subject from the opposite market group if interview counts were uneven between the two groups. There was no premise for the selection of the company the interviewee worked for, and the structure of the industry enabled us to receive interviewees in both Europe and the Americas. Some interviewees were or had previously been users of Avinode products, and others had very little previous knowledge of Avinode's air charter marketplace.

The data collection consisted of a total of 13 semi-structured interviews of which 5 were with stakeholders within Avinode (company internal), and 8 were with stakeholders in the medical air transportation industry (company external). There were a total of 14 interview subjects since one of the interviews was conducted with 2 people from the same organization at the same time. The interview subjects are presented in detail in Table 1 below through their role, location and company/type of company. We have also categorized each subject as a buyer or operator (or both) since their results are presented in different sections. All external subjects have been anonymized, which was a prerequisite for them to participate. The interviews were conducted through video calls, which according to Bryman & Bell (2015) brings forth another dimension in the research method since non-verbal communication can also be analysed when participants see each other, which allows for more accurate interpretations and facilitation of clarifications. All interviews were recorded to provide a verbatim transcript, thus ensuring an accurate analysis (Denscombe, 2010).

The company internal interviews provided the authors with the data set to answer RQ1 which includes the company's ongoing internal decision-making process of the horizontal expansion to facilitate medevac flights through Avinode Aid. All interview subjects responded to all questions and were forthcoming with clarifications. There were a few instances when interview subjects were followed up with clarification questions by email after the authors encountered ambiguities when transcribing the data.

The company external interviews with stakeholders in the medical air transportation industry provided the authors with the data set to answer RQ2. They provided elaborated answers and were forthcoming and positive towards answering all questions. The authors received good explanations for medevac topics and industry mechanisms previously unknown to us.

Table 1: Company role and location of Interview subjects, the type of company they represented and stakeholder category.

Role	**Location**	**Company/ type of company**	**Interview category**
Business Development Manager, former director Shedaero	Sweden	Avinode	Internal
CTO	Sweden	Avinode	Internal
SVP Product	Sweden	Avinode	Internal
Co-founder and CRO	United States	Avinode	Internal
Product Owner	Sweden	Avinode	Internal
Aviation Consultant, former GM for an air charter company	Denmark	Consultant/Air charter broker/Air ambulance operator	Buyer and Operator
Head of International Medical Network	France	Large international insurance company	Buyer
International medical network manager EMEA	France	Large international insurance company	Buyer
Aviation and Evacuation Planning Manager	United Kingdom	Global assistance company	Buyer
Director	Germany	Air charter broker	Buyer
Sales & Marketing Director	Benelux	Air Ambulance Operator	Operator
CEO	France	Air Ambulance Operator	Operator
Sales Director	United States	Air Ambulance Operator	Operator
Commercial Manager	Mexico	Air Ambulance Operator	Operator

3.3.2 Data Analysis

The results of the case study interviews are presented in line with the suggestion of Rashid et. al. (2019) which starts with a description outlining the context of the case in which the interviews were set.

The results were structured and analysed using the thematic method suggested by Braun & Clarke (2013). Raw interview transcripts were created using the software tool Otter.ai, which were adjusted into actual transcripts after manually listening through the recordings and making adjustments to the errors produced by the software. After transcription, the authors read through the transcripts multiple times individually, making notes on insights and suggestions for concepts and themes to later compare. Afterwards, the work of coding the transcriptions and grouping quotes into concepts began. Concepts are summaries of different quotes with some degree of interpretation. Concepts were then organized into first-order themes that are related to the theoretical framework, but themes may also constitute common denominators of certain types of concepts, such as *minimum viable product*. Themes were subsequently organized into organising themes, which act as an overarching categorization of the data. How concepts organize into first-order themes and subsequent organising themes can be seen in Figure 2 for the company internal data and Figure 3 for the company external data. Motivations for the generation of the themes are clarified in each section under the results. The reason for dividing the thematic analysis into two is because the two research questions are rather independent and involve different data sets. The thematic categorization of company external data is organized from two angles to reflect the two-sided market of medevac flights. Concepts from the buyer and operator sides are therefore separated but merged together since they have common organising themes.

The results are presented separately into company internal and company external results which address RQ1 and RQ2 respectively. The structure follows the thematic analysis, which is explained in detail under each section in the results. The results were then discussed and analysed using the theoretical framework in the discussion section. Conclusions derived from the discussion are presented in the end, together with elaborations on the limitations of the study, as well as suggestions for further research.

3.3.4 Research Quality

Judging the quality of qualitative research can often be based on authenticity and trustworthiness, which according to Bryman & Bell (2015) consists of four aspects: transferability, credibility, dependability and confirmability.

Transferability refers to the degree of which the researcher has made a thorough description of the assumptions and research context in which the research was conducted. A high degree of transferability ensures that other future researchers can compare their own results with a different context to draw conclusions (Guba and Lincoln, 1981). The researchers have thus made extensive descriptions of the case company Avinode Group and the current context in which the research is set in section 1.1 Background.

Credibility is an assessment of the believability of the research findings and that it is properly derived from the data and the participants in the study (Guba and Lincoln, 1981), in this case the interviewees. To ensure the authors made correct citations the

interviewees were frequently asked about their phrasing during interviews to ensure it was what they actually meant.

Dependability refers to the extent to which the study describes the conducted method to ensure it is valid and replicable (Guba and Lincoln, 1981). Subsequently, the authors of this study have made thorough descriptions of how the research process was conducted, which is outlined in this and previous sections.

Confirmability refers to a research study's implications to be confirmed by others. This includes confirming that no negative cases contradicting the conclusions and implications of the study exist (Guba and Lincoln, 1981). As the study is exploring an under-researched area, the motive to conduct the study ensures there are no research studies published contradicting our findings.

4 Results

In this chapter, the results from the interviews are presented. The chapter is split into two main parts. In 4.1 the findings connected to RQ1 are presented, these are based on five interviews with internal stakeholders at Avinode. Section 4.2 outlines the findings related to RQ2 based on the eight interviews with company external stakeholders in the medical air transportation industry.

4.1 Company Internal

The internal perspective of horizontal MSP expansion covers RQ1:
What factors influence an MSP's decision to expand its platform horizontally into a new but related market segment?

The question is set in the context of an MSP that has the option to expand in several different ways; geographically, vertically by encompassing other services in the existing value chain, or horizontally by providing similar services to new user groups or a new market.

The Case company Avinode is exploring a horizontal expansion, that is they want to expand Avinode Marketplace by providing the same service in the value chain but for the medical air transportation industry. This initiative is called Avinode Aid. Applied in this context, the answers outlined in the following sections explain which factors influence Avinode to make this horizontal expansion in particular.

The results below are based on the five interviews with internal stakeholders at Avinode, labelled as 'internal', presented in Table 1. The results are structured in the organising themes subdivided by first-order themes generated from the interviews, which can be viewed in Figure 2.

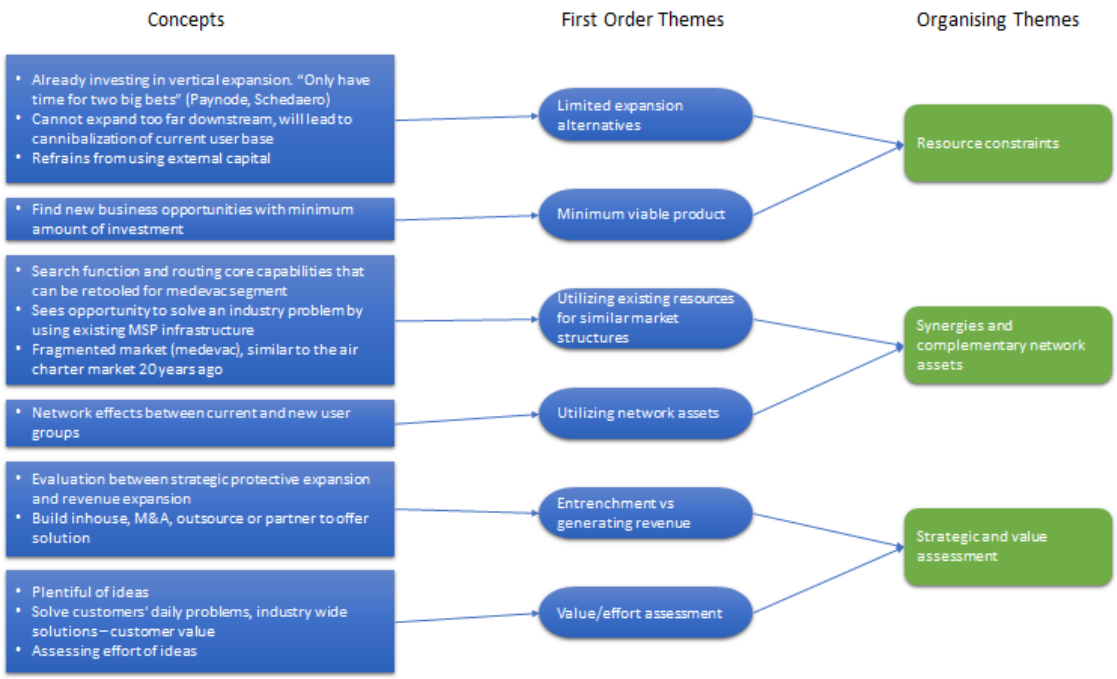

Figure 2: Thematic categorization of findings from internal interviews concerning RQ1

4.1.1 Resource Constraints

An organising theme that emerged from the interviews was how resource constraints bound Avinode in regard to how and where they can expand. The expansion alternatives they can actually act on are limited by several factors highlighted from different perspectives by the interviewees. Historically Avinode have grown organically by bootstrapping their new initiatives without taking in external capital. This tradition has shaped the organisation's mindset regarding resource bounds and they try to create a minimum viable product to show proof of concept before devoting further resources. The first order themes are elaborated below.

4.1.1.1 Limited Expansion Alternatives

A recurring pattern in the interviews regarding expansion opportunities was that Avinode is constantly evaluating and assessing several different expansion alternatives. To what extent they choose a certain alternative is however limited by several factors. A summary together with quotes is provided below that present the alternatives the interviewees discussed and the reasoning for why or why not Avinode chooses to expand in a certain direction.

The main Avinode platform has been around for 20 years, and one of the co-founders and current CRO introduces their reasoning regarding expanding the scope of the current platform in terms of geography and user base:

> *"The maturity of the market is very important to consider, Europe and the US are very mature - well suited for Avinode, especially Europe which is very fragmented and spans several cultures and languages etc. Europe has also grown a lot, the US has been established for a long time. Private air charter in South America and Asia was forecasted to grow rapidly 20 years ago, aircraft*

per millionaire/billionaire was low. Despite this, the growth did not really materialise. Other factors have counteracted. China's regulatory environment is very restrictive of how you can fly private jets. In certain countries it's not good politically or culturally to own jets. Time zones are also challenging. Avinode can not create a market from scratch, certain things need to be in place."

Avinode has historically started with exploring and expanding upon the existing mature markets in Europe and subsequently the US. Other parts of the world that have seen explosive growth in wealth and previously were seen as growth opportunities have not experienced the development of the air charter business as forecasted. Geographical expansion is therefore limited by external factors, which is outside of Avinode's control. In other words, regardless of Avinode's efforts, they cannot expand in a market where supply and/or demand for air charter is structurally limited. The CRO elaborated further that Avinode should not focus on addressing industry problems they cannot actually solve, for example a few years ago the industry experienced problems with pilot shortages, but this was not a problem Avinode could or should address.

The CRO continued with elaborating on Avinode's usage of M&A activities to expand. Avinode previously expanded their core user base through acquisition of a competitor in the US, CharterX to capture market share. After the acquisition, they have grown their user base in the US progressively through the years by trying to convince prospective users to change their behaviour. The COVID-19 pandemic has had an impact on these efforts in the US:

"Initially we had only competition from CharterX in the US. In 2006 we opened an office in the US to establish a presence and eventually got ⅓ of the market. Charter X had ⅓ and ⅓ were on both platforms. We ended up acquiring them, rather than merging the companies because Avinode had more resources."

"(...) they all speak the same language [in the US] - one country - and the people are more social, which has been a barrier of getting people off the phone and onto the platform. (...) pandemic has been a bonus with 80-100% growth in the US because of social distancing - meaning more companies have resorted to a platform infrastructure."

Avinode has managed to attract more users in their existing developed markets, by getting prospective users off the phone and onto the platform, the development has been accelerated by the COVID-19 pandemic.

Geographical and current user market expansion are not the only alternatives Avinode have considered. The interviewees elaborated on how Avinode are currently expanding vertically in the air charter value chain, but also why they avoid expanding too far downstream towards the end customer.

The CRO explains that the potential for downstream expansion closer to the end customers is limited, since the next step in the value chain of brokering air charter is acting as brokers. Avinode has no intention of competing with their own customers. They do however provide tools and APIs that enable air charter brokers to create digital customer-facing solutions, powered by Avinode's marketplace MSP:

> *"We want to be the engine behind our customers' offering, but we don't want to be the customer organisation that deals with end-customers"*

End-customers refers to the people who actually fly on chartered aircraft.
In terms of vertical product expansions, Avinode is offering Schedaero and Paynode, which are under constant development and therefore occupy a significant share of the company's internal resources. The CRO describes their different business offerings using the following analogy:

> *"The marketplace is the big sister, who's graduating university and has a first job and has a good vision of where she will be. Schedaero flight operations is the teenage brother who is emptying the fridge in terms of growing very rapidly and consumes a lot of resources in the process. And then Paynode is the baby brother, which was started about five years ago and is still the toddler, who hasn't yet started to walk properly, and is still tumbling around, but we have an idea of what it will become of him as well."*

In addition, just keeping the main Avinode Marketplace platform up and running requires an entire software development team (typically 3-9 people), according to the CRO. They have a backlog and roadmap that is filled for the next year with features that they plan to roll out for their products. What they do have is room to implement tactical features, something a product owner elaborates on:

> *"Tactical features are features that require very little software development and which can be added outside of the product roadmap and backlog."*

But these features are very small extensions of existing products. Additional product expansion, regardless if it is a vertical product expansion, or extension of the current products, that requires large development resources is currently less feasible. Especially software development capacity is considered a major bottleneck that restricts how Avinode can expand.

Summarized, Avinode's decision-makers are aware of and consider several different expansion alternatives. What they can do is however limited by external factors mostly outside their control, but also limitations on organizational resources in terms of software development capacity and that they do not want to compete with their users in the downstream customer-facing parts of the value chain.

4.1.1.2 Minimum Viable Product

Another first-order theme that was generated from the interview data was that Avinode tries to develop a minimum viable product to consume minimal resources when initially testing business ideas. Resources here refers to time, financial, software development and human resources. A summary of the answers is provided below.

Avinode's Business development manager elaborated about how his directive is to identify expansion opportunities that require limited resources to reach proof of concept, or a minimum viable product. This is due to software development resources being employed elsewhere, and every decision that involves investments in more staff

or deployment of financial resources requires approval by the parent organization World Fuel Services.

This is partly how the Business Development Manager identified the Horizontal Avinode Aid expansion. He recognised that expanding the Avinode Marketplace to also encompass medevac flights would require small initial resources. He has largely been able to reach proof of concept by talking to potential new users, showing them the current Avinode Aid marketplace and describing how it can be tailored to suit their needs in later stages, which ultimately will require small software development resources.

The CRO explained that they try to quickly reach a minimum viable product, but if it shows promise they need to be prepared to step up investments in the initiative so it can actually become useful and you can get over the chasm from early adopters to the majority of the market.

4.1.2 Synergies and Complementary Network Assets

While Avinode's stakeholders recognize the limitations of the ways they can expand through geographical expansion, current user market expansion, M&As and investments in new downstream or upstream products, they have elaborated ideas regarding how they can utilize and leverage their existing assets. Moreover, they extend their existing assets to also include the network of users with thinking regarding how they complement potential new initiatives, and how these complements provide more value together through synergistic effects. These are key points that underpin the initiative to expand horizontally with Avinode Aid and therefore the organising theme *synergies and complementary network assets* was identified. The first order themes underpinning this organising theme are elaborated below.

4.1.2.1 Utilizing Existing Resources for Similar Market Structures

How to utilize existing resources for new expansion initiatives was a recurring topic discussed by the interviewees, as this was central in the identification of the medevac industry as an expansion opportunity. Avinode's Business Development Manager elaborated that after some initial research into the medevac industry he realized that the market structure was very fragmented with many smaller operators in different shapes and forms. This resembled the private air charter market 20 years ago, when Avinode first launched their marketplace platform, this led him to believe there was a potential for a similar platform solution within the medevac industry.

The co-founder and CRO explained that they always try to find expansions or additions which together with existing products create a combined value larger than the sum of each component's value.

> *"We say that 1 + 1 = 3 or 1 + 1 + 1 = 9 in the sense that different parts of our products work great together as there are a lot of synergies and capabilities that operators might not be familiar with today, because they are so used to all the manual processes."*

In terms of the Avinode Aid expansion, the stakeholders recognize that they can reuse the Avinode Marketplace product and just make smaller tweaks to make it serve the

new market segment. This is because the industries of air charter and medical air transportation have similar structures with many aircrafts dispersed throughout the globe, where both operators and buyers can gain from better coordination and market overview.

4.1.2.2 Utilizing Network Assets

Another first-order theme that was identified concerns how Avinode thinks regarding how to utilize network assets, that is their existing users and ecosystem. Avinode's Business development manager expresses his thinking regarding the collective buyer power Avinode can generate for its customer: For example, help smaller operators with just a few aircraft to purchase fuel, catering, ground transportation services and insurance through Avinode together with other operators.

> *"My sort of general thinking regarding this is that we have 3000+ aircraft and 700 operators. What do each of them do every day individually which we can help them with collectively and take a small cut in between?"*

Furthermore, the exploration process for new expansion opportunities is frequently described by the interviewees as a combination of push and pull factors, meaning that Avinode is combining the daily input from their users about their needs and problems with input from product development and other internal sources about Avinode's capabilities to find suitable opportunities. Sometimes the users are not explicitly expressing their needs as they are not aware of them themselves. In the case of expanding the Avinode Marketplace to also facilitate medevac flights, Avinode's Business Development Manager observed that many operators on Avinode Marketplace also had medevac aircraft in their fleet which were not listed. The operators had not explicitly expressed this as a problem, but this posed as an opportunity to tweak the current marketplace platform to offer a new product and potentially secure new revenue streams:

> *"Some operators have 70% of their aircraft (the passenger charter aircraft) on the platform, how do we add the remaining 30% (the medevac aircraft)?"*

The operators which already used Avinode in some parts of their business also provided a good starting point for Avinode when they started sensing and researching the medevac industry as they willingly provided industry insights.

In summary, the input about the exploration process highlights how Avinode tries to find synergies and leverage network resources in their new expansion initiatives which has influenced the decision to expand their MSP horizontally with the Avinode Aid initiative

4.1.3 Strategic and Value Assessment

The final organising theme that was identified from the internal interview data was how Avinode makes a strategic and value assessment of every new initiative depending on if the expansion is generating revenue or entrenchment (or both) while also assessing the effort an expansion initiative would take. The first order themes are elaborated below.

4.1.3.1 Entrenchment vs Generating Revenue

The Business Development Manager described how he sees two different main categories of Avinode's expansion initiatives: Strategic projects to protect and reinforce Avinode's current business and market position (entrenchment), and on the other hand initiatives to create new revenue streams. Historically it has been important to create integrations and establish customer lock-in to prohibit competitors from capturing market share. In his view, the Avinode Aid initiative is mainly aimed at creating new revenue streams.

The Co-founder and CRO elaborate on his view about strategic projects:

> *"We try to create stickiness and engagement. I mean, switching costs it's a little bit of a negatively loaded word implying that you try to lock them (the users) in. I'm of course a salesperson trying to pitch it as stickiness and the more you can do, and the more complex offering you have the harder it is to compete"*

SVP Product explains that he also thinks in terms of "protect what you have"-initiatives and revenue expansions but highlights that these two options are not mutually exclusive, initiatives can have the purpose to both entrench your current position and generate new revenue:

> *"You have "protect what you have" and you have vertical and horizontal expansion (...) "protect what you have" is in a way what we are doing now with Paynode, but at the same time it is a vertical expansion (...) we are adding one more vertical layer (payments) to our marketplace offering"*

4.1.3.2 Value/Effort Assessment

The final first-order theme that was identified from the internal interviews is that Avinode makes a *value/effort assessment* of each new idea or initiative to determine if it is worth undertaking. SVP Product explains about the consideration between different expansions opportunities:

> *"When weighing between a horizontal or a vertical expansion, it is a question of what are the opportunities, it will be some kind of value/effort assessment, where is it easiest to achieve something"*

Within the company, they have had discussions regarding how Avinode's platform and systems could be utilized in other industries. The discussions have been with regards to industries with similar problems as the air charter industry: Services of high complexity with multi-sided markets. The feasibility of entering those markets are a concern, as SVP Product elaborates:

> *"The issue is not opportunity identification, the issue is to say no to initiatives and limit yourself, it's about selecting the right opportunity and being able to invest into this in the right way. (...) we need to question ourselves if we have the ambition, opportunity and bandwidth to build up a brand new organisation for this new market (on the example of boat charter)"*

This refers to if Avinode were to offer their marketplace MSP, but in a very different context, such as in the boat charter industry, they would have to make serious new commitments. Even though the platform would provide the same functionality, the complexity of being in a different industry would likely force Avinode to employ new people and build know-how they currently lack in addition to investing financial resources. The value effort assessment would then be employed to judge if Avinode has the ambition and capability to commit to such an expansion. The interviewees imply that the horizontal expansion initiative Avinode Aid is much more feasible because, at its current state, it does not require much effort in terms of developing new capabilities or building a larger organisation, since it involves a related industry segment to air charter.

In summary, the horizontal Avinode Aid product expansion was considered the right strategic fit in terms of being able to generate revenue with the right amount of effort in relation to Avinode's business as a whole.

4.2 Company External

The external interviews with stakeholders in the medical air transportation industry provide a basis to answer RQ2: *"What precursors might influence the users in the new market segment to adopt the horizontally expanding MSP?"*. Here *the horizontally expanding MSP* refers to the Avinode Marketplace which is expanding with the Avinode Aid initiative.

The research question is set in the context of what precursors might influence users in a new market segment to adopt an MSP that has expanded from a related market to also encompass and provide service for the new segment. In the context of businesses, the question has to be considered from two perspectives, depending on the status of a company/user:

- The proposed new market segment (users) currently lack access to a tool or existing service that the expanded MSP provides - therefore the new service which solves a problem could provide value if exercised right.
- The proposed new market segment (users) are currently using an existing tool or service from a different MSP but may consider a new offering by the expanded MSP if it provides a perceived better value proposition that also exceeds potential associated switching costs.

The results in this section are based on the eight interviews with company external stakeholders in the medical air transportation industry, labelled either 'buyer' or 'operator', presented in Table 1. The section is divided into findings from operator interviews and buyer interviews. These two subgroups were found to have common organising themes in relation to RQ2; *Complementary Assets and Network effects* and *Lack of Market Overview* as answers to why these users would adopt Avinode's horizontally expanded MSP offering. The results are structured in these organising themes under each user category; 4.2.2 for operators and 4.2.3 for buyers. The organising themes are subdivided into first order themes generated from the interviews on each user side, which can be seen in Figure 3. The current industry practices regarding the buy and sell process of medevac flights, which is applicable for both

operators and buyers, is outlined first in section 4.2.1 below to provide background and context.

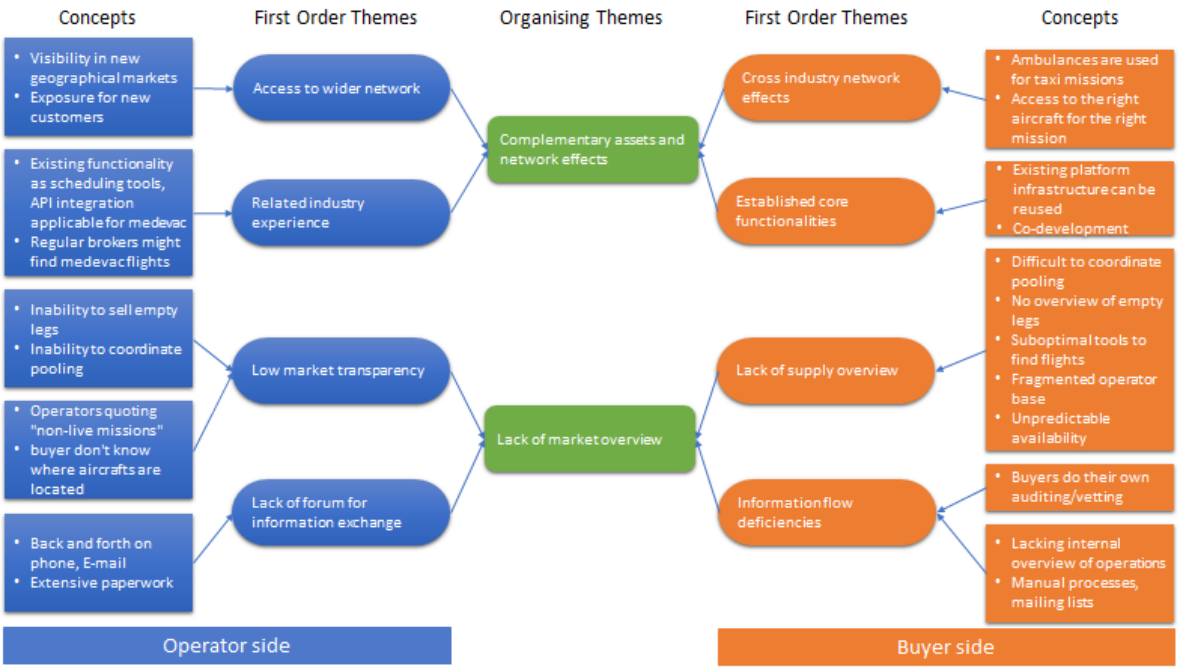

Figure 3: Thematic categorization of findings from external interviews concerning RQ2, input from operators on the left side and input from buyers on the right side.

4.2.1 Current Industry Practices

All operators stated that secondary transports were the dominant form of medevac flights they were conducting. This refers to a transfer from one hospital to another because a patient needs to be repatriated to care in its home country because of insurance policies or moved to a hospital with better medical facilities. The buyer of a medical flight is typically an insurance company of the patient. The actual request for a flight is conducted by an assistance company, this can be an external company working with the insurance company or an internal assistance division if the insurance company is large enough and decides to set up the function internally.

A request to conduct a medevac flight with a patient can be referred to as a mission and these can be either *contracted* or be requested on an *ad-hoc* basis. Contracted missions refer to when there is a long-term contract between a buyer and an operator to use that specific provider when the need for transport surfaces, this is a common setup for governments. Ad-hoc missions refer to when the buyer sends out a request for quotes to a number of different operators and then picks a provider depending on price, availability and other factors. Based on the interviews, ad-hoc missions are the most common type and the general industry trend is that ad-hoc missions are becoming even more prevalent. Concerning the Avinode marketplace MSP, the ad-hoc missions are the type that is of interest as the platform's functionality is focused on matching buyers and operators. This type of market matching is not applicable when the flights are arranged on a contractual basis with a fixed provider. Subsequently, the type of missions that the interviews were centred around concerned the industry practises of the ad-hoc setup.

Concerning the request process, the operators and buyers gave a similar description of the different steps involved.

1. A patient falls ill abroad and is taken to a local hospital. The insurance provider of the patient will be contacted for consultation.
2. The medical team at the insurance company or at the assistance company and the doctor at the local hospital make a decision concerning if the patient can receive local care or need to be moved to another country, typically the home country of the patient.
3. If it is necessary to move the patient the insurance company contacts an internal operational division or an external assistance company, depending on their setup, which books an appropriate transport.
4. If it is not feasible to transport the patient on a commercial flight because of the medical needs or the location of the patient a request will be sent out to a number of air ambulance operators.
5. The inquiry from the assistance company to the operator is typically mediated by email or phone and contains initial medical information, location, height/weight of patient, if there are accompanying passengers and related information.
6. The operator then sends a quote with price and preliminary availability.
7. The assistance company takes in quotes from a number of operators and selects one depending on price, availability and medical capabilities.
8. The assistance company sends full medical information to the selected operator and they proceed with the operational coordination.

This is how the interviewees described a typical request process from a typical buyer. Insurance companies consisted of 55 to 95 percent of the customer base for the operators that were interviewed. Other types of customers are governments, hospitals and private individuals. In the coming sections the operator- and buyer-specific findings are presented.

4.2.2 Operators

The findings regarding the supplier side in the medical air transportation industry is based on five semi-structured interviews with managers at companies operating medevac aircraft. The companies were based in either Europe or the Americas (Table 1). The findings are structured in the organising themes and subdivided in the first-order themes on the operator side which can be viewed in Figure 3.

4.2.2.1 Complementary Assets and Network Effects

The first organising theme that was generated from the external interviews related to the question of what precursors might influence operators to adopt the expanding MSP Avinode Aid. Recurring patterns in the operator interview led to the first-order themes: Getting *Access to a Wider Network* and that Avinode has *Related Industry Experience* and subsequently the organising theme *Complementary Assets and Network Effects* was formulated. Below the first-order themes are elaborated.

4.2.2.1.1 Access to Wider Network

One operator highlighted that Avinode's success in the passenger charter industry is reliant on the large user network they have built up. Similarly, this will be a key factor for the Avinode Aid expansion to gain traction as well:

> *"It doesn't matter what your software is going to do, the key issue is how many people it will reach, that's it. Avinode is successful because it's reaching a lot of brokers. so it depends on how many people you reach, it doesn't matter what colour, what format, what he does, you know all that you can work the kinks out after that, the problem is, who is going to be looking at this in the medical side. (...) So if any of these brokers (on the passenger charter side) are also involved in somehow someway in the medical aspect, that will be beneficial, but then Avinode is going to have to go and start researching a whole brand new line of business."*

This operator emphasizes how the value an MSP creates strongly depends on network effects and that Avinode has to figure out how to onboard enough users in the medical air transportation industry as well, also the current Avinode users might provide some overlapping business opportunities. The interviewee sees the potential for Avinode to enable access to a wider network. However, the fact that Avinode has to learn about a new industry will also pose challenges.

Another operator explains how he sees several interesting synergies between Avinode's position in the private air charter industry and with the medical air industry. He sees a value in Avinode's large network of air charter brokers and sees that, through the Avinode platform, his company can gain exposure to new potential customers.

4.2.2.1.2 Related Industry Experience

All operators had some prior knowledge about Avinode and their marketplace MSP for the private air charter industry. Some medevac flight operators had used it previously or used it for selling passenger flights. One operator that had both a passenger fleet that already used Avinode and a medical fleet expressed how the air charter system could be adapted for the medical system as well:

> *"There are several benefits that you could directly transfer from the current Avinode platform into an Avinode Aid platform. You just need to have some more add-ons in the process where clients request a flight"*

One dedicated medical operator had purchased a passenger configured aircraft which was planned to be refitted for medevac missions, but the operator got a request for a passenger mission before it was reconfigured. After receiving additional requests, they decided to register the aircraft on the Avinode marketplace MSP and advertise the empty legs. This led to a steady stream of requests and the aircraft became continuously busy with flights, which made the company postpone the refitting to a medical configuration. This experience made them interested in the Avinode Aid expansion as well.

> *"I have one plane that is for air charter, out of the fleet. That happened because when we went into COVID, we bought the plane and we were going to convert it into an air ambulance, but somebody called us to see if we could do a charter*

mission to Trinidad Tobago, and we did. And then we got some further passenger requests, and then we put that plane in Avinode and now that plane is flying 20 missions a month, as air charter all over the United States, and it comes thanks to empty leg reports in Avinode."

Several operators highlighted the experience Avinode brings from the passenger charter industry as a capability strengthening their credibility and value proposition. Furthermore, medevac operators noted the potential that customers on the current Avinode marketplace MSP might also encounter the need to find medevac flights occasionally, which can increase business opportunities for them.

"Firstly Avinode has the whole experience regarding the aviation side of booking a flight, and secondly they have contacts to brokers, which we do not have so for sure it would be interesting. If somebody hires a private jet on a regular basis, and one day has a medical problem. He will contact the same broker and ask for a medical plane, but the broker is not familiar with medical planes so they will also have to start shopping around. That's where it's interesting for us to get contacted by them."

In summary, the user group medevac flight operators see how both complementary assets and network effects of the existing Avinode Marketplace and Avinode Aid might be beneficial to their business through the experience and platform Avinode brings with them in conjunction to a large user group on the passenger air charter side which gives access to a combined larger network of users and subsequently potential customers.

4.2.2.2 Lack of Market Overview

The second organising theme Lack of *Market Overview* was generated from the fact that many operators currently experience problems concerning *Low Market Transparency* and *Lack of a Forum For Information Exchange* between buyers and operators. Elaborations and quotes of these first-order themes are provided in the sections below.

4.2.2.2.1 Low Market Transparency

Several operators stated that buyers would call and check availability and price for certain common routes, even when there was no patient in need of transport at that time. They described this was typical practise for them in order to estimate the price and availability of an air ambulance transport in advance if the need would arise. This was regarded as an indication of lacking pricing and availability transparency.

Furthermore, multiple operators expressed that there were not any good ways to advertise and sell empty legs in the industry:

"I mean it would be nice to advertise your airplane's position in some system, the fact that for example I have a vacant plane in Pittsburgh right now with a full medical load and physicians on, and I'm pretty much willing to give them away for very little money to move it to another point anywhere in Canada, United States or wherever these people roll. What we're lacking is that data tool."

Several operators highlighted that there were some inherent difficulties with empty legs for medevac flights, since most patients travel in the same northbound direction, for example from Africa to Europe or South America to the US.

> *"The issue with empty legs is that everybody wants to fly the same way, so I don't think we can do a lot to improve that (...) we fly a lot from Africa to Europe and we always fly empty from Europe to Africa, nobody wants to be in an African hospital."*

The operators believed the most feasible type of empty legs to fill with patients would be the return flight from a drop-off location back to home base. The outbound flight leg from home-base to pick up a patient is usually not feasible since the time to make additional stops is limited because medevac flights usually need to be executed quickly.

Another problem with empty legs is that there is limited time for coordination of routes as the flights are activated on short notice. The interviewees however believed there can still be instances when filling an empty leg could be possible, but they all felt they lacked a good tool to advertise such flights to buyers. Some operators emailed out opportunities to their usual clients, but they cited this practise to be ineffective - they seldom managed to fill empty legs this way.

On the subject of pooling, the American operators that were interviewed stated that the patient confidentiality laws in the US made it difficult, almost impossible to fly multiple patients in the same aircraft. The European operators on the other hand saw a big potential to increase pooling of multiple patients, if buyers would have a tool for coordination. However, they also stated that there were considerations that made pooling quite complicated in certain situations; in instances when patients with certain medical conditions are incompatible to be on the same flight, if a high degree of medical urgency restricts flexibility and how two different buyers pooling patients together would split costs.

> *"Clients are looking more and more on how to save costs, and a good way to save costs is to share the plane with somebody else. So I think definitely that's the future that it will be happening more and more. It just has to be very well planned and very well coordinated beforehand, to avoid any kind of problems during the flight, or afterwards, during the invoicing."*

There is one already existing MSP company in the industry which has tried to address some of the availability issues regarding buyer and seller matching, empty leg filling and pooling. All operators interviewed stated that they either knew about it or used it to some degree. All interviewees also stated that there were big deficiencies with this system hampering its functionality, many refrained from using it as they saw little benefits, other than to receive requests from certain buyers.

In summary, all of the above-mentioned factors regarding limitations to fill empty legs and pool patients constitute precursors to why these operators might adopt Avinode's MSP which they anticipate can address some of these issues.

4.2.2.2.2 Lack of Forum for Information Exchange

The interviewees put a lot of emphasis and attention to information exchange processes and which challenges they had and which improvement potential they saw. This led to the generation of the first-order theme *Lack of Forum for Information Exchange*. In this section a number of key points on this topic are highlighted.

The request process was generally described by the operator-interviewees as very manual with much back and forth by email and phone to ascertain necessary information. Confidentiality regulations regarding how personal and medical information should be mediated in a secured fashion further complicated some of the communication between buyers and operators.

One operator expressed how he experienced problems with the follow-up process of quotes he submitted, in some cases he did not know the status of his quote as buyers sometimes did not communicate if they had chosen another operator already. He would then need to call and check and he preferred if he could have a better system to get an overview of his quotes.

Other issues operators identified stemmed from the excessive amount of work required to receive certain types of flight permits and landing certificates. Summarised, there seemed to be a lack of a forum for information exchange between medevac flight operators and buyers which act as a precursor to why these users might adopt a tool which solves this problem.

4.2.3 Buyers

The findings regarding the buyer side in the medical air transportation industry is based on four semi-structured interviews with in total five interviewees (see Table 1). The findings are structured in organising themes and subdivided in the first-order themes on the buyer side which can be viewed in Figure 3. The organising themes on the buyer side are shared with the organising themes on the operator side, reflecting how the two user sides identify similar precursors that might influence them to adopt an MSP which has expanded from a related segment.

4.2.3.1 Complementary Assets and Network Effects

This organising theme is shared with the organising theme generated from the operator interviews. Here, the theme is derived from the first-order themes *Cross-Industry Network Effects* and *Established Core Functionality*. These were generated since the buyers identified that the existing users on the Avinode platform could be useful to their business operations. Also, the fact that the Avinode Marketplace has existing functionality which can be utilized in the new segment was described as a precursor that might influence adoption of the MSP.

4.2.3.1.1 Cross-Industry Network Effects

In the interviews the buyers of medevac flights described how they believed there could be positive network effects across the passenger air charter market and the medevac segment if both were gathered on the same platform, composing this first-order theme.

For instance, the large international insurance company elaborated that they are interested in using Avinode for passenger charter as well, when it is difficult to arrange transports on commercial flights.

> *"The system could be useful in other cases, for example when people are not able to move by commercial flight, sometimes we use air ambulances to transport people when it's actually more of a taxi mission"*

They also expressed that these synergistic effects of having access to passenger air charter operators through Avinode can be utilized in situations when the insurance company have a large number of clients that need to be evacuated from a country because of a political crisis or similar:

> *If Avinode can offer quotes for larger charter aircraft, it could be useful in crisis management for us (...) for example you can have a coup or political crisis we can be requested to move like 100 pax out of the country"*

In essence, the buyers believe they can make use of Avinode's existing network of air charter flight operators in addition to being able to find medevac flights on the platform.

4.2.3.1.2 Established Core Functionalities

In addition to providing cross-industry network effect, buyers consistently expressed the advantage of Avinode having existing functionality for a related industry. One advantage all the buyers highlighted with Avinode's Aid initiative was Avinode's experience and the similarities with their system for the air charter market. The regular air charter broker stated he sees potential in a dedicated platform for medevac flights and thinks Avinode's existing marketplace MSP can mostly be used directly for ambulance aircraft as well:

> *It's not really much that needs to be different for the Aid platform. Because you know it's not a big secret how an ambulance aircraft looks inside. They have to have a stretcher, they have to have oxygen and then they have to have medication. (...) they [Avinode] just need to add descriptions on what the [ambulance aircraft] have on board, how the aircraft looks inside, technical description and so forth. But it's not a big thing in my opinion, because calculation is the same, it's about flying time.*

The buyers from the large international insurance company see value in potentially being able to jointly develop the Avinode Aid expansion for medevac missions together with Avinode, if they become early adopters, in order to cater to their specific needs. They also see value in Avinode successfully having delivered and introduced services in the passenger air charter industry before.

The insurance company also highlighted that they put a lot of effort on vetting operators and updating data about their credentials, they see a potential for a tool to gather, store and access this data in a better way. This kind of functionality in the original Avinode platform has been demonstrated for them which evoked interest of a potential solution for the medevac industry as well:

"We have a team working specifically on gathering credentials, making sure that they are all up to date, etc. (...) it will be a huge added value if they can have all these credentials at the same place on the platform or in some similar system"

4.2.3.2 Lack of Market Overview

On the buyer side, the *Lack of Market Overview* organising theme was generated through the first-order themes *Lack of Supply Overview* and *Information Flow Deficiencies*. How these were generated is explained in the sections below.

4.2.3.2.1 Lack of Supply Overview

The most crucial factor on which buyers decide which operator to use for a medevac flight is suitable availability. However, no buyer currently has a tool to give an overview of where any operators' aircraft are located nor if they are available. This extends to an inability to utilize empty legs and pooling opportunities. This creates several inefficiencies due to a *Lack of Supply Overview* for buyers, which was identified as a first-order theme and is elaborated below.

The large international insurance buyers that currently utilize an existing MSP for medevac flights state that whenever they have a medevac patient, they will send out requests to all providers in their network, regardless of where their base or aircraft are located, which causes low response rates, according to the two buyers.

"...we will send a request to all our providers, but of course they won't all answer, because some of them will be too far away from the patient. Some of them are completely out of geographical scope."

A consistent view among the buyers is that operators tend to overpromise on availability in order to receive missions. This sometimes leads to delays which is considered an issue by all interviewees.

All interviewed buyers have a consistent view that standard industry practices are that air ambulance operators market empty legs through emails sent out to their regular buyers, but it is seldom these opportunities are actually utilized, since those are sent out regardless of their current missions. The large international insurance buyers that use an existing MSP have a similar experience. The MSP they use promotes empty leg opportunities, but in practice the buyer has not been able to utilize any empty leg opportunities through the platform, instead the buyer has reverted back to email even though this is not particularly effective either.

"Operators are mostly advertising empty legs by mail, it's even working better than the system in [name of the existing MSP], that's the reason why."

Pooling several patients on the same flight is something buyers look to increase since it can potentially decrease costs. The large international insurance company stated they had mixed success so far with coordinating pooling of patients and saw a big improvement potential. A general problem appears to be internal communication, where different regional operations lack tools to coordinate missions.

"So we were seeing a huge opportunity in developing pooling just by a simple action of implementing an interactive map with all flights our different offices are conducting visualized on the same map."

These buyers have seen demos of Avinode Marketplace where they already identify several features that can be helpful for their operations, including the map referred to above which currently visualize empty legs, but which they view can be used to show internal pooling opportunities. Their offices in Paris, France, Chicago, USA and Kuala Lumpur, Malaysia currently have no good tool to coordinate their missions, but they see that Avinode's platform has a simple solution for this.

In terms of pricing, the buyers state they usually have somewhat of a picture of the market price for a given route. COVID-19 has been a disruptor though, causing larger price spreads where some operators quote double the price of others for the same mission.

"Can be big differences sometimes, especially during Covid, some quote prices that are unrealistic or unreliable (too low) because they are not really aware of the difficulties. But there is some kind of a market price and you roughly predict the average price from one city to another. "

In general, price is considered second to availability. Priority is always catering to the medical needs of the patient. One buyer acknowledges that sometimes, price is accounted for due to payout limitations in a patient's insurance, although this is a seldom occurrence.

"Generally, if it's something critical, the actual price is secondary, how quickly they can help the person and they can respond is priority. Unless it's a massive, massive amount. So yeah, I think if it is something critical then, yeah, we will generally go for the quickest option unless the alternative is going to be four hour later [response] but £50,000 GBP cheaper. If it's something like that, then there would be a discussion about where to go. It's a commercial option and if something can wait, we'll go for the cheaper option"

The regular air charter broker who is a current customer of Avinode elaborated on how he handles the occasional medical request he gets. He explained that he would search the route in the regular Avinode system to find an approximate cost for a passenger flight before contacting an air ambulance operator. After accounting for some extra added costs for the specialized medical equipment and crew this gives him an estimate he can present quickly for his client. This procedure implies that the pricing for medevac flights is less transparent as the broker chooses to benchmark with the Avinode platform and the regular air charter market to get a price indication.

Submitting and communicating accurate medical information is crucial for operators in later steps of the request process. Both buyers and operators claim that early in the request process, minimal patient information is required such as height, weight, and nature of medical condition, since this enables operators to send accurate quotes.

"Minimal medical information is required, most important is route - A to B in order to account for fuel [costs]"

The air charter broker has a similar view, where he handles very little medical information, and rather lets doctors at the patient's hospital have that contact with the air ambulance operator directly.

To summarize, all of the above mentioned factors regarding limitations to get an overview of suitable availability, utilize empty legs or pool patients and finding appropriate market prices can be considered precursors of why these buyers might adopt an MSP which can address these issues.

4.2.3.2.2 Information Flow Deficiencies

The first order theme *Information Flow Deficiencies* was generated from the fact that buyers express there being several instances where information exchange with operators is inadequate. This is elaborated below.

The standard procedure when requesting quotes to fly patients is that a buyer sends an email or makes a phone call to a medevac operator with basic patient diagnosis, route and other conditions (accompanying passengers). Typically they take in 3-5 quotes, and once an operator is selected, more information is communicated, such as a full medical report.
The large insurance company describes how they have previously been using mailing lists to contact operators:

"Historically we were working with mailing lists. So, it was just all our providers in a mailing list and we were sending the request to all these guys by email."

They describe this as one of the reasons they adopted the existing MSP, to decrease the amount of manual communication processes. However, this existing MSP has not been very effective in delivering on this issue, according to the interviewees.

On the other hand, the global assistance company buyer sees a marketplace MSP such as Avinode for medevac flight mainly being useful for regular brokers with less knowledge of the medical air transportation industry, if they want to book ambulance aircraft at some occasion. The buyer believes that he has a comprehensive market overview, something regular air charter brokers lack when it comes to air ambulances.

"Most of us [assistance companies] have aviation directories, I would suggest I have about 98% of the world's air ambulances on my books"

This buyer has a list of operators he can contact and uses his directories to know what provider to contact for different types of missions. But he admits that a system where you could have real time updated locations could be beneficial also for him.

The regular air charter broker had contact information to a couple of dedicated air ambulance operators. For his regular charter requests he would use the Avinode system to request quotes, for medically related requests he would contact a dedicated ambulance operator by phone or email directly.

The interviewed buyers working for the large international insurance company are currently using the existing MSP for medevac flights to access most of their operators when they have a mission. Some of their providers are, however, not on the platform, resulting in the need to also use email and phone to contact those.

The buyers can generally find operators that can fulfill their mission through their current communication tools. But they believe there is a potential to improve how information is mediated between them and their suppliers. At the moment this process is a bit cumbersome and the current tools are experienced as blunt.

5 Discussion

This chapter presents a discussion and analysis of the two research questions and elaborates on how the findings from the interviews can address these.

5.1 What Influences an MSP's Decision to Expand Horizontally?

The data collected from the company internal interviews with stakeholders at Avinode provided insights concerning the decision-making process underpinning the company's expansion initiatives. A number of themes were generated through the processing of the interview data. This chapter elaborates and analyses how these themes relate to the first research question and the theoretical framework.

RQ1:

- *What influences an MSP's decision to expand its platform horizontally into a new but related market segment?*

5.1.1 Firm-Specific Resource Constraints Steers Expansion Initiatives

Different expressions for resource scarcity and constraints was a frequently recurring theme among the internal Avinode interviewees when discussing expansion initiatives. The constraints were related to several different types of resources and not only financial.

From the interviews it was understood that Avinode historically have bootstrapped all their initiatives and this tradition seems to influence their mentality regarding business development. It should be said that this has been possible due to Avinode being profitable almost since the foundation and they have subsequently chosen to not raise any outside capital to finance investments as they have been able to organically develop by their own means. A consistent view from internal stakeholders is that it is easy to come up with interesting ideas, but which to actually execute upon is much more difficult and requires careful consideration and prioritization.

Except for financial frames several other aspects were highlighted as limiting which, and how many, new initiatives that Avinode can undertake. Software development capacity was often considered a bottleneck. Human capital limitations also manifested themselves on several different levels; one stakeholder expressed it as the company had a limit on its organisational learning capacity or limited ability to internalise new initiatives. Just hiring new people to assign to a project would sometimes not be an effective strategy as the new hires need to be trained and cultivated into the company culture and sometimes this process would consume more resources than the contribution of the new hires for an extended time period.

Given that Avinode is preoccupied with two larger vertical initiatives which consume large resources, the room for a new expansion initiative is quite limited. Therefore the circumstances favoured a smaller initiative that could leverage already existing solutions. The situation with the Covid-19 pandemic in 2020 also increased the awareness at Avinode about the medevac segment and the company saw the Aid initiative as a way to contribute during the pandemic.

This firm-specific resource context steered Avinode in the direction of a horizontal expansion initiative. The consideration of available resources that the Avinode interviewees described can be seen from an RBV perspective as Avinode ascertained the limitations given their resources to understand the possible scope for an expansion effort. Financial and human resources were stretched because of the already ongoing vertical initiatives. To circumvent these restrictions Avinode looked to exploit existing product infrastructure with as small tweaks as possible. These factors made a horizontal move into a smaller adjacent market feasible.

5.1.2 Realizing Synergies and Leveraging Complementary Assets

An important step in the process of exploring new initiatives at Avinode was to evaluate synergistic potential or identify complementary assets that could be leveraged. The Co-founder and CRO exemplified this by elaborating how they always strive for that the value of their combined product offering should be greater than the sum of its individual parts.

A key motivation for initiating the Avinode Aid expansion was the potential to apply the existing marketplace system with minimum tweaks and get a minimum viable product for the medevac segment with very small investments. This could then work as a proof of concept to stimulate further development. The actors in the medevac industry were mostly delimited from Avinode's current user base, but there was still some overlap. As an example, operators with convertible jets or operators which had two separate branches in their company; one for passenger missions which already used Avinode and one for medevac missions. This made it easy for Avinode to start researching the industry through contacts in their existing network. These operators also saw the potential benefits for their own businesses as they could draw upon the experiences they already had with Avinode, which motivated them to contribute with insights and knowledge to the Aid initiative. Avinode saw that the market structure in the medevac industry was similar to the air charter market 20 years ago. They anticipated that their platform offering had the potential to have a similar impact and transform the medevac industry in a similar way as had already happened in the air charter industry.

This implies that the initiative of the Avinode Aid expansion was guided by synergistic potential and by the potential to utilize complementary assets both internally and in their network.

The interviews suggest the Avinode stakeholders grounded their search for expansion opportunities on a resource-based foundation. Given the resource bounds discussed in 5.1.1 Avinode identified a market opportunity where their current software capabilities and surrounding infrastructure could easily be adapted to. Several Avinode stakeholders express how the search and routing capability is a core competency of the Avinode marketplace and this is an example of a capability fundamental also for the medevac segment. Furthermore, there are network effects that span across Avinode's current and new market segment which improve the competitive advantage of the Aid expansion.

To understand the added value that network assets contribute to the Aid offering the concept of CNA is useful. When introducing the Aid initiative with the core functionality being marketplace matching Avinode can in addition utilize several complementary assets in conjunction that complements the offering. These include for example established marketing channels, quoting overview, scheduling and payment systems for which all are also applicable in the medevac segment. On top of these, the platform also harbours a large network of buyers and suppliers in its current market (passenger air charter) which can generate synergies with the actors in the medevac industry. If considering the user network as an elemental part of the Avinode ecosystem the synergetic resources stemming from the network can be regarded as CNAs. From the interviews, it is clear that the potential to leverage CNAs was a motivation for Avinode to expand into the medevac segment.

We believe that the CNA lens can be applied to understand expansions that other MSPs have undertaken. An example of another horizontal expansion is how Uber entered the food delivery business. Their food delivery service saw an extraordinary growth in 2020 and even surpassed Uber's ride hailing service in terms of revenue (Cheng, 2020). The success of Uber Eats can be attributed to many factors, but CNA can help understand how synergies in user groups can benefit and contribute to the success of expansions significantly. Many of the drivers on Uber's ride hailing platform can likely easily switch to undertake food delivery services as well, and Uber ride customers can probably consider ordering food for delivery through a company they are already a customer to. In this respect, both the drivers and riders on Uber's ride hailing platform can compose strong CNAs for the food delivery service, partly explaining the success of the service.

5.1.3 Strategic and Value Assessment

All the internal stakeholders expressed in different ways that a value/effort evaluation always underpinned the decision to start new initiatives or expansions. There was always a large backlog of new ideas to pick from and this was never a limiting factor. Resource constraints would limit how large undertakings could be performed at any given time, this restricted the effort part of the ratio. Though the effort factor could naturally be stretched if very attractive opportunities appeared.

The expected value creation of an expansion initiative could refer to different kinds of value for Avinode. It could be to simply find new revenue streams by either a horizontal or vertical expansion, it could also be a strategic move to create "protective barriers", create lock-in effects or increase switching costs in order to protect the current business. In practice most initiatives would be a combination of finding revenue and of creating strategic value, as increased customer stickiness.

The value/effort evaluation is a natural step for all MSPs considering an expansion but the preconditions and circumstances underpinning the evaluation are strongly context-dependent. All companies will have resource constraints to some degree and will try to use complementary assets and realize synergies to some degree, but there is a difference in how much weight companies put on each aspect depending on their circumstances. For example, it will depend on how they are owned and financed, how strong the network effects are in their ecosystem, how mature the platform is and their organisational ambition. For Avinode the medevac market constituted an attractive

value creation opportunity for a limited effort given the CNAs that Avinode could exploit.

5.2 What Precursors Might Influence the Users in the New Market Segment to Adopt the Horizontally Expanding MSP?

The data collected from the company external interviews with stakeholders within the medical air transportation industry provided insights concerning how buyers and operators interact with one another, how they fulfil missions, how their businesses operate, which challenges they experience and what improvement potential they see in their business and how/if an air charter MSP might provide value for them. A number of themes were generated through processing of the interview data. This chapter elaborates and analyses how these themes relate to the theory on value proposition of MSPs and RQ2.

RQ2:

- *What precursors might influence the users in the new market segment to adopt the horizontally expanding MSP?*

5.2.1 Benefitting From Complementary Assets and Network Effects

All the external stakeholders expressed how Avinode's experience from the passenger air charter industry and Avinode's existing networks were important factors for evoking interest in the Avinode Aid expansion, on top of the established core functionalities as supply/demand matching and routing. They identified potential in Avinode's capabilities and surrounding network, for example access to overlapping user bases and Avinode's marketing capabilities. These are examples of CNAs that according to the interviewees enhanced the value proposition of the Aid initiative and works as precursors that might lead to adoption.

Indirect cross-industry network effects were particularly interesting in this context, given that actors in the medevac industry identified the existing user base of Avinode Marketplace to compose of potential clients and suppliers. Having access to more clients and suppliers could therefore be regarded as a clear precursor for medevac flight operators and buyers to adopt an MSP that encompass this larger network.

In this sense, the Avinode Aid expansion offered potential value beyond the industry-specific problems the platform aimed to solve. Another example of this is the well-developed capability of the original Avinode system to interact with different aviation scheduling systems through APIs. This is another example of how an MSP can work as an enabler to improve its own value proposition by facilitating interactions in the ecosystem.

5.2.2 Access to Unparallelled Market Overview

It is clear from the interviews that buyers have a limited overview of the medevac operator market. While some buyers may know that certain providers can cover certain geographical regions, the ability to exercise certain types of care and an idea of their

ability to fulfil requests, there is very little they actually know beforehand of day-to-day availability, pricing and response time.

The fact that the market is very fragmented with different operators dispersed throughout the globe contributes to making it difficult for both operators and buyers to get a comprehensive market overview. Furthermore, the service of providing medevac flights relies on aircraft that constantly move around the globe on either missions or repositioning flights, meaning that it is very difficult for other than the operators themselves to predict accurate availability.

This inefficiency leads to irrelevant requests to operators from buyers when aircraft are either unavailable, on missions or unsuitable repositioning flights. This leads to unnecessary work for both buyers and operators.

A simplified parallel of the excess work medevac operators and buyers undertake is if private individuals, when wanting to get a taxi ride, would have to find a suitable taxi by themselves, without calling a centralized dispatch office or using an MSP such as Uber. The problem and amount of work is extensive; how do you find and contact drivers? How do you know which driver is closest or most timely available? How much will it cost? Fortunately, the taxi industry solved this problem long ago by organising drivers through centralized dispatch offices that could distribute drivers to customers who requested rides. This system was not perfect, and Uber disrupted this business when they launched their MSP connecting drivers directly with riders. Cramer & Krueger (2016) found in a research case study that Uber was 50% more efficient than regular dispatch services by increasing capacity utilization, in effect due to their driver-rider matching technology and larger scale. A good example of how an MSP provides value by reducing search costs before a transaction, while at the same time increasing capacity utilization.

The Avinode Aid product expansion, which builds on the Avinode Marketplace, could therefore provide a similar type of value as the Uber MSP does. Consequently, an MSPs ability to lower search costs is therefore a major precursor for the new medevac segment to adopt the horizontally expanded MSP. Adopting the Avinode Aid MSP would enable medevac operators and buyers to get access to an unparalleled market overview by being able to visualize all current availability and get access to all available operators on the market. On the theme of receiving a better market overview, adopters of the Avinode Aid MSP will likely take advantage of increased price transparency. While there appears to be consensus about some sort of market price, buyers tend to only receive 3-5 quotes whenever they send requests, hardly adequate to reach a comprehensible overview of all the best options available on the market. The private air charter broker who currently uses Avinode Marketplace for passenger flights to find price estimates for medevac flights is probably more likely than dedicated buyers of medevac flights to possess knowledge of actual market prices considering the broker utilizes a marketplace with many operators to base his estimates on. Although not dedicated air ambulances.

An industry-specific issue regarding availability of medevac flights is that opportunities, where empty legs could be utilized to save costs for buyers and increase utilization and revenue for operators, are often overlooked due to the unstructured mediation of empty legs. Operators even explicitly mentioned the lack of a tool to

market their available empty legs effectively. Avinode's marketplace MSP has a tool that has enabled passenger air charter operators to effectively display empty legs for buyers, implying that the horizontally expanding passenger air charter marketplace probably will also be able to provide value for the medical air transportation industry by solving this problem through decreased search costs. This implies another precursor why the medevac users might adopt Avinode Aid, since Avinode can leverage its existing assets and in turn provide an attractive value proposition for the new market.

6 Conclusion

This study has investigated MSP expansion from two angles: The platform company's internal perspective and from the perspective of the stakeholders in the industry that the MSP is expanding into. The data is based on a case study of an MSP providing a marketplace for the air charter industry that expands its platform into a new market segment horizontally adjacent to its current market.

The internal interviews have provided a basis to understand the factors influencing an MSP's decision to expand its platform horizontally into a new but related market segment. Based on the case study several factors were identified: (I) Resource constraints frame the context in which the MSP must choose and evaluate which expansion option is possible and feasible. (II) The potential to realize synergies and leverage complementary assets between the MSP's current and new market guides expansion efforts. Related to this is the importance and existence of complementarities and synergies between the network of users in the current and the new industry, referred to as complementary network assets. The potential to achieve these beneficial effects are high if the MSP finds a horizontally adjacent segment where existing resources can be used, market structures are similar and there exist network effects across industry borders. (III) The decision to expand will rely on a strategic and value evaluation. This evaluation will lead to different outcomes depending on the environment the MSP is in currently. Sometimes strategic considerations might favour a different way of expansion, or entrenchment. Sometimes potential to create value in another market outweighs and the evaluation will favour a horizontal move.

The external interviews, with stakeholders in the industry the MSP is expanding into, has provided a foundation to understand the precursors that might influence the users in the new market segment to adopt the MSP: (I) Given that the MSPs is originating from a related industry where it has an established position the users anticipate benefits from complementary assets and sees the potential to achieve network effects within its own industry and with the MSP's existing users. (II) A lack of market overview in the industry instigates the users to look for solutions, an MSP's inherent ability to lower search and transaction costs can therefore provide an attractive value proposition for industry stakeholders.

This study set out to explore MSP expansion which through a case study resulted in the above described factors. The authors believe the most important contribution of this study is the identification and definition of the MSP specific concept dubbed complementary network assets (CNA). In the context of MSPs the borders between internal and external resources of the firm are somewhat blurred. Consequently, this concept highlights how assets within the MSP ecosystem, that are not directly owned by the platform company, can provide positive synergistic and complementary effects when coupled with a platform innovation or new technical solution. The CNA concept encapsulates several of the factors that were highlighted as reasons for the case company's horizontal MSP expansion and also precursors for user adoption in the new segment. We believe CNA is a useful concept to better frame horizontal MSP expansion as it synthesizes several different relevant concepts such as network effects, MSP ecosystems and complementary assets. It can also help MSP companies to make more informed business decisions by improving their understanding of how to leverage all the assets in their ecosystem for an expansion initiative.

6.1 Limitations

The authors acknowledge that the number of interviews is a limitation for the generalizability of our findings concerning, both the company internal, and company external data set. The company internal interviews consisted of five interviewees, which is a small sample. However, four of these interviewees were (or have previously been) part of the executive management team, with roles centred around thinking about how to develop Avinode Group, both in terms of commercial and product expansions. The sampling of these interviews was made at the discretion of the authors' judgement of who would be relevant to interview and does not represent the aggregate view of how the employees think about horizontal expansion at Avinode. It does however include the executive decision-makers, whose' views arguably are most important when it comes to decision making regarding expansions in this company. Also given that Avinode is a small company consisting of roughly 100 employees, we believe the sample provides a good basis to address RQ1.

On the company's external side, a total of eight interviews were conducted with nine interviewees. Five interviews were conducted regarding the operator side, which was deemed sufficient since data saturation was achieved. According to Saunders et.al. (2018), data saturation is the point at which the researcher no longer identifies any new information in interviews, and thus should discontinue data collection. This ensures that qualitative rigour is achieved. Similarly, data saturation was achieved after four interviews on the medevac buyer side.

The generalizable managerial impact of this thesis has several limitations. As the results are based on a single case study, this does not necessarily make the implications relevant for other industries. With the same argument as for delimiting the study to include one case, outlined in section 1.4 Delimitation, the authors argue that the nature of this thesis' research questions in conjunction with the implications are generalizable for similar contexts; i.e. companies that undertake similar horizontal expansion of their MSP due to resource constraints in bandwidth with regards to software development capabilities and who recognizes synergistic characteristics between their existing users and the user base to which they expand into. The authors do however not claim that the implications of this study are generalizable for contexts outside of this scope.

6.2 Suggestion for Further Research

We suggest that researchers conduct further case studies in similar contexts using deductive methods to validate and compare with findings in this thesis, related to the existence of CNA when decision-makers consider expansions. We also encourage researchers to look into the dynamics of other horizontal MSP expansions, such as in contexts where companies receive extensive venture capital funding to analyse if and how the motives behind such expansions contrast from the findings of this case study of Avinode. This can help validate the importance of the CNA concept regarding MSP expansion in cases where the prerequisites or circumstances concerning for example resource constraints are different.

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Appendix

A.1 Interview Guide - Company Internal

Time: approximately 1 hour
Introduction of the researchers followed by a presentation of the background of the thesis. Definition of horizontal and vertical expansion. Ask permission to record and transcribe the interview session.

Interviewees role and background (10 min)

- What's your role and employment history at Avinode?
- What's your role in regards to identifying and acting on expansion opportunities (in terms of revenue or product)?

General questions (50 min)

- With regards to your current role and previous roles, how do you identify expansion opportunities?
- How does Avinode weigh the option between expanding the business vertically or expanding horizontally?
- How does Avinode's parent company influence decision-making, and how does it compare to when Avinode was owner led?
- What factors are important for choosing a segment that you target for entering/expanding into?
    - Do you estimate market size and potential revenue opportunity for Avinode, or is it more exploratory?
- How much would you attribute the decision to explore a new segment to input from customers versus identifying yourself that you can create value in that segment (pull or push)?
- What strengths and capabilities do you identify in your existing platform and business?

- Have Avinode explored any segments outside the private air charter business previously, and if you have, which and why?
    - (if applicable) What was the outcome of these initiatives?
- Any further thoughts or topics you would like to address?

A.2 Interview Guide - Company External

Time: approximately 1 hour
Introduction of the researchers followed by a presentation of the background of the thesis. Definition of MSP. Ask permission to record and transcribe the interview session.

Interviewee's role and background

- What's your current role and history within the medical air transportation industry?

Current industry practices (buyers and operators)

- Explain what your company does and what kind of missions you undertake?
- How does the buy/sell process look like for medevac flights, step by step (describe a typical example of a mission)?
- Through what channels do you find operators/buyers?
- What are critical data points to be able to undertake missions?
- Do you use any software tools or MSPs to aid in the buy/sell process or other parts of your business?

General questions (buyers)

- What is your overview of the market of medevac flight operators?
- What do you consider when selecting which operators to contact for specific missions?
- How do you currently find available options of medevac flights when you have a mission?
- The passenger air charter industry has long been working to improve marketing of empty legs to increase efficiency and utilization. Is this something your company works with, and if so, how?
    - In your experience, how does the medevac sector work with this?

General questions (operators)

- Do you use any software platforms to sell and market your capacity/availability?
- How do customers find you and make contact?
- Do you have any problems with capacity utilization or filling empty legs?
    - (If applicable) How could you improve this?
- Do you currently have the ability to coordinate and pool requests on the same flight?
- What do you believe is most feasible/interesting, filling empty legs or increasing pooling?

General questions (buyers and operators)

- Do you experience any challenges with regards to buying/selling medevac flights?
    - (If applicable) What can be improved?

- Do you see any problems with how information is communicated between buyers and operators regarding patient info, flight plans etc?
- Do you see any potential benefits with a marketplace platform for medevac flights?
- What is your view and knowledge about Avinode's air charter sourcing platform?
    - Do you see any potential synergies with Avinode's network and their experience from business aviation that can benefit the process of buying and selling medevac flights?
- What would make you interested in adopting a medevac marketplace platform like the one Avinode is trying to create?
- Any further thoughts or topics you would like to address?

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