

Don't Fall!

A Case Study on Market-scoping For Early-stage Technologies and
the Role of Sensemaking

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MSc Thesis in Business & Management

Stockholm School of Economics

Fall 2023

Abstract:

Effectively managing uncertainty requires flexibility and strategic trade-offs, even so for firms basing their product-offer on early-stage technologies. Managers' role in strategic decisions have previously been overlooked, focusing more on predetermined market spaces based on technology, firm, and industry characteristics. The meaning-based aspect of markets have also been neglected in prior research, which some authors have called for more integration of. To answer these calls, this study explores what potential enablers and barriers firms utilizing early-stage technologies face when conducting market-scoping activities, as well as how employees make sense of this. A qualitative, single case, ethnographic research method has been adopted to explore this. Data was collected through in-depth interviews as well as observations from an engagement workshop, a networking event and reviewing internal and external documents. Several enablers and barriers were identified in which market ambiguity mindset prevails as one large indicator. Further, enablers were defined as utilization of diverse backgrounds, acting and behaving with awareness and proactivity as well as leaning on an 'internal champion', where an individual person championed for the firm's product leading to a successful sale. As for barriers, falling for traps, such as favoring the familiar and mature was an evident theme. Moreover, having too rigid routines and relying on a perceived future state of the market may also lead the market-scoping in the wrong direction, leading to failure. The study provides important knowledge, both theoretical and practical implications, providing important aspects to consider when conducting market-scoping. At the same time as the natural state of sensemaking being highly subjective, which is important to consider. All together, this study contributes by building on the nascent research conversation of market-scoping for early-stage technologies and the importance of understanding and applying sensemaking to this process to ensure firms future success.

Key words: Market-scoping, early-stage technologies, dynamic capabilities, sensemaking, sensegiving, high-tech

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Acknowledgements

I would like to firstly express gratitude to my supervisor, Suvi Nenonen, who provided me with invaluable support and inspiration. Thank you for taking the time to engage in interesting discussions and for believing in me throughout the thesis!

Moreover, I would like to say thank you to the case company for giving me the opportunity to study your organization. Being able to gain multiple perspectives from the inside helped me to capture your company in a very interesting way. Your shared experiences and interest helped me enormously and I am extra grateful for your effort in making this study able to happen. Thanks a lot!

Julia

Definitions

Term	Definition used in this thesis
Market-scoping	Activities involving identifying and evaluating opportunities for technologies in the market by conducting various research of customers and the landscape of the market (Molner et al., 2019).
Early-stage technologies	Technologies that lack commercial validation (Molner et al., 2019).
Market ambiguity avoidance	A mindset in managers' minds that focus on the end-user of the product in the market (Molner et al., 2019).
Market ambiguity acceptance	A mindset in the managers' minds that focus away from the end-user of the product in the market (Molner et al., 2019).
Downstream	Another word for market ambiguity avoidance, i.e. focusing on the end-user (Molner et al., 2019).
Upstream	Another word for market ambiguity acceptance, i.e. focusing away from the end-user (Molner et al., 2019).
Market space	Something that is co-created by involved actors' input and subjective preferences of resources (Read et al. 2009; Sarasvathy 2001).
Technology to market linkages	Opportunities for new product development by applying a technology to a viable market space (Molner et al., 2019) and how to combine technological knowledge and demands in the market (Gruber et al., 2008).
Sensemaking	A process in an individual's mind during uncertain or unknown situations that rely on various attributes (Weick, 1995).
“Make sense”	To provide meaning to something unknown or uncertain, driven by the individual's subjective mind (Kleinaltenkamp et al., 2022).
Enabler	Something that drives the market-scoping process forward towards the end-goal (technology to market linkage) (Molner et al., 2019).
Barrier	Something that inhibits the market-scoping process towards the end-goal (technology to market linkage) (Molner et al., 2019).

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1. Introduction

In this section, a brief background to the topic is given (1.1), and afterwards, a discussion of problematization (1.2) which leads to the purpose and research question (1.3), and lastly the delimitation of this study (1.4).

1.1 Background

“A plan is worthless, planning is everything. And I think that's true. I will come up with a strategy, a plan for the next year, but almost as soon as I create it today, it has to change” - A

How do firms form a strategy, knowing it might be worthless in the near future? How does one navigate between and within a business environment that may either aid the firm towards growth or result in failure? Companies utilizing early-stage technologies face these challenges to a high degree due to inadequate knowledge of the business context (Molner et al., 2019). When markets are characterized as complex and ambiguous, firms must adopt effective commercialization procedures to ensure progress and financial growth (Danneels, 2007; Gruber et al., 2008). Understanding the dynamics of markets is crucial, considering that they can be seen as co-created entities shaped by the input resources of involved actors and their subjective preferences (Read et al., 2009; Sarsvathy, 2001).

The ambiguity associated with early-stage technologies and their application areas poses a significant challenge for business managers, requiring proactivity in managers' work to find viable market spaces (Read et al., 2009; Sarsvathy, 2001). Previous literature highlights the tendency of startups to only take action in uncertain times due to various factors such as regulations, socio-cultural aspects, or collective efforts with other actors (Baker & Nenonen, 2020; Maciel & Fischer, 2020; Humphreys, 2010; Rosa et al., 1999). However, smaller firms may face challenges in doing so due to a lack of both intangible and tangible resources despite a higher ability to seize market opportunities (Wymer & Regan, 2005).

Effectively dealing with these challenges requires an understanding of managing uncertainty, flexibility, and knowing when to make trade-offs (Teece et al., 2016). In practice, navigating this complex landscape demands a strategic approach that aligns with the collaborative and co-created nature of markets, ensuring that firms can capitalize on opportunities and ensure success.

1.2 Problematization

Inadequate research has been made about the evolution of early-stage technologies and how to identify end-users, despite the overall large interest in innovation management and technology (e.g., Capon & Glazer, 1987; Chandy et al., 2006; Yadav et al., 2007). It is important to understand that most marketing literature places a strong emphasis on the end-user when deciding which market space to be active in (Molner et al., 2019).

Furthermore, prior research often forsakes the managers' role and processes and rather emphasizes a market space as given based on technology, firm, and industry characteristics (Molner et al., 2019; Nerkar & Shane, 2007; Gambardella & Giarratana, 2013; Fosfuri, 2006). This leaves out a rather significant aspect of management, which is how involved actors make sense of the uncertain surroundings and gain competitive advantage. In addition, gaining these types of insights is quite tedious before commercialization efforts being launched, requiring rich data to reveal viable market spaces (Nerkar & Shane, 2007).

In essence, literature on market-scoping for early-stage technologies has only begun to be theorized (Molner et al., 2019). We do not yet know much about how market-scoping unfolds, which dynamic capabilities are being used, and the individual sensemaking of this. There is a lack of research that provides enough insight into the managerial agency, and further exploration of the corporate setting and various market-scoping preferences has been called for (Molner et al., 2019), which this study aims to contribute to.

1.3 Purpose and Research Questions

The purpose of this study is to understand potential enablers and barriers of market-scoping for early-stage technologies, building upon the nascent research conversation. Understanding how managers and employees make sense of their market space, this thesis aims to provide further insight into how enablers and barriers of the market-scoping process evolve. To explore this, one research question with a sub-question has been formulated:

1. *What are potential enablers and barriers of market-scoping for early-stage technologies?*
 - a. *How do employees make sense of the market-scoping process?*

To answer the question, primary data was collected from interviews with employees of a case study in combination with ethnographic observations from a client workshop, a networking event, and internal and external documents. The interviews aimed to understand the employee's perspective on the business environment and the rationale behind their thinking. Identified enablers and barriers and the individuals' sensemaking of this from different data points were then combined with prior research.

1.4 Delimitation

To fulfill the scope of the study and remain focused on the topic, clear boundaries were adopted. This study takes a single-case approach, investigating one organization in its corporate setting as a case-study. The call for more empirical, corporate contextual evidence within the selected field of market-scoping for early-stage technologies (Molner et al., 2019) makes this a suitable option. In addition, choosing to study one case-company allows a richer and deeper analysis of the activities and their potential effects on the chosen firm (Yin, 2015). The context for this thesis has been a small company with a Western cultural context adopting high-tech and early-stage technology within a small open economy. I therefore acknowledge that findings from other sources and contexts could differ. Acknowledgement also needs to be made towards other types of theories to explain the phenomena of market-scoping for early-stage technologies and their potential enablers and barriers.

2. Literature review and theoretical lens

Based on the inadequate research within market-scoping for early-stage technologies and what potential enablers or barriers exist to conduct these processes, knowledge from three different research streams have been drawn and synthesized as the theoretical lens to fully analyze and comprehend the findings in this study. The following section highlights these domains; market-scoping for early-stage technologies, dynamic capabilities and sensemaking.

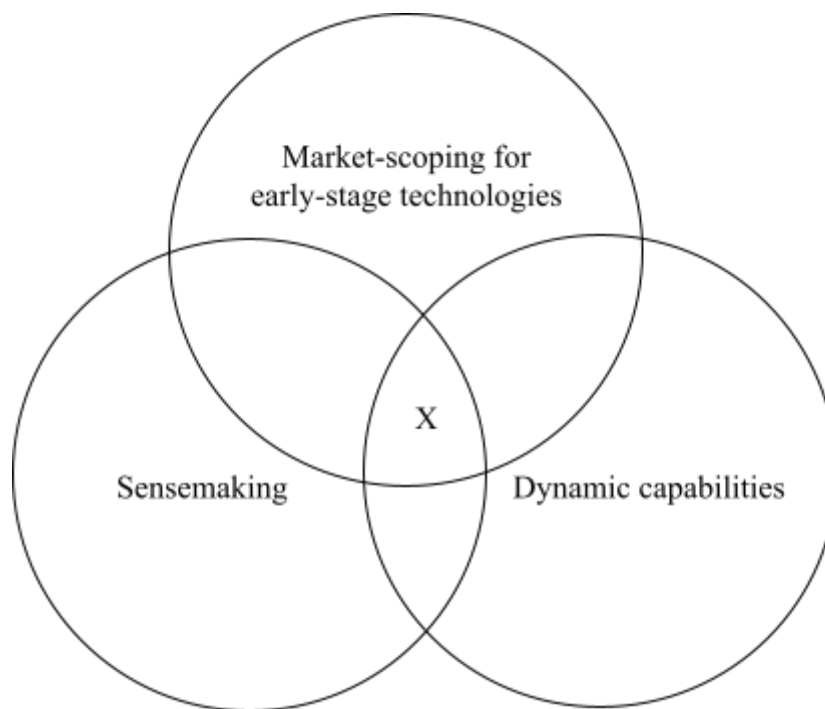


Figure 1. Synthesis of previous literature where X represents the intersection of which this study takes its standpoint.

2.1 Market-scoping

This section describes market-scoping as a concept (2.1.1) to later relate it to other, similar research streams (2.1.2) to provide more context to the nascency of the phenomena.

2.1.1 Market-scoping as a concept

Understanding the potential of your technology and utilizing it in a way that will extract the most amount of value is not an easy task (Danneels, 2007). What appears to be proven as managers' success in commercializing an early-stage technology depends largely on the

diversity and breadth of both market and technology knowledge (Gruber, MacMillan, & Thompson 2013; Shane 2000). As new technology rarely has clear comparisons, understanding the value it offers can sometimes only be done once competitors enter the market (Rindova & Petkova, 2007; Fuchs & Diamantopoulos, 2010).

Market-scoping refers to activities conducted by individuals within an organization that involve identifying and evaluating opportunities in the market (Molner et al., 2019). This involves research of initial preferences, assessment of the market landscape, understanding customer needs and demands and where early-stage technologies might fit in. It is an important aspect of marketing activities, yet still quite underexplored (Molner et al., 2019). Given the fungibility of early-stage technologies, managers are required to decide which market spaces are relevant for them to, in turn, create an appropriate marketing approach. Molner et al. (2019) define market spaces as linkages between technology and market that present opportunities for new product development, i.e. how technological knowledge can be combined with market demand (Gruber, MacMillan, & Thompson, 2008).

Related to the market-scoping process is market ambiguity, which means that there is a lack of clarity of potential technology-to-market linkages. Market uncertainty, on the other hand, talks about the prediction of particular outcomes that come with these linkages, and the difficulty attached to them (Santos & Eisenhardt, 2009). The distinction between market ambiguity and uncertainty emphasizes both the importance and difficulty of defining a relevant market space and formulating an attached strategy for early-stage technologies (Molner et al., 2019). Market ambiguity can be manifested as either an acceptance or avoidance mindset, which in turn shapes the mindset of managers' decision-making. Molner et al. (2019) defined market ambiguity avoidance mindset as managers focus on the end users (downstream) which may lead to failure of technology commercialization, although being well-intended. Under this mindset, there is a preference for a determined market space that can guide the managers' market-scoping activities, resulting in quicker market clarity. A mindset of market ambiguity acceptance, on the other hand, is directing attention away from end users (upstream), possibly uncovering new market spaces and may therefore be more successful, depending on the context. Underlying this mindset, there is a willingness to delay market clarity and avoid potential preconceptions. In essence, the market-scoping mindset reflects the priorities in the eyes of managers when engaging with the environment (Molner et al., 2019).

During the market-scoping process, external partners, such as consultants, researchers and investors, play a large role in providing critical input on knowledge about end-users, benchmarking, funding and performance standards etc. Inherently, market-scoping is based on collaboration and co-creation (Molner et al., 2019; Alvarez, Barney, & Anderson 2013; Sarasvathy, 2001). It is also vital to have a clearly defined language, i.e. defined concepts and alignment of them, since it will be a trajectory of how others think of and act within and around that market (Molner et al., 2019).

Molner et al. (2019) found a correlation between managers rushing to gain market space clarity as early as possible with a market ambiguity avoidance mindset. They argue that when an organization partners up with entities to reach a specific end-user in mind, this guides decision-making downstream, possibly resulting in a sense of illusory direction and a false sense of progress. This may also lead to fewer opportunities for commercialization and market-resource linkages not being effective (Molner et al., 2019). On the other spectrum with a market ambiguity acceptance mindset, the partnerships encounters may not be seen as of high relevance, due to the early stage. At the same time, though, they can open up new trajectories and discover market spaces that were previously unknown leading to higher value of and more efficient market-resource linkages (Molner et al., 2019).

2.1.2 Market-scoping in relation to other research streams

Market-scoping for early-stage technologies is, as mentioned, a relatively nascent area within marketing research (Molner et al., 2019). Understanding how it relates to other, more well-known, fields of research can aid in understanding the importance of it and its relevance for this study.

Market-shaping is one stream of research that relates to market-scoping. Market-shaping refers to organizations attempting to take proactive actions to shape a market in a preferred way (e.g., Blocker et al., 2011; Humphreys & Carpenter, 2018; Narver et al., 2004). This process is made by one focal firm that finds potential value in new resource linkages which, in turn, set off changes in the market and its related characteristics to enable the emergence of the new resource linkages (Nenonen et al., 2019).

Nenonen et al. (2019) contribute to market-shaping literature by providing a comprehensive categorization of capabilities needed in this process. They identified two large categories; triggering and facilitating capabilities that empower the process of market-shaping. The former influences parts of the market to generate new resource linkages through different market-level characteristics (Nenonen et al., 2019). It involves re-designing exchange, re-configuring the network and re-forming institutions. Facilitating capabilities are part of the firm's creativity in discovering new resource linkages, their potential addition of value, and how the firm applies and elevates the triggering capabilities' impact by deploying relevant resources. Examples of specific capabilities Nenonen et al. (2019) identified are modifying customer-side features, modifying matching methods, and influencing norms and representations (triggering), as well as exploring, experimenting, expressing and engaging (facilitating). More specifically, facilitating capabilities are created by underlying activities such as prioritizing value creation over capture, deliberately using accessible language, collaborating with competitors to promote change and incentivizing the change for customers (Nenonen et al., 2019).

Suggestions have arisen to firms that they should start visioning their preferred market, adopting a proactive mindset to guide others in that direction (Flaig, Kindström & Ottosson, 2021; Nenonen & Storbacka, 2020). This refers to the concept of market vision, which is an organization's ability to foresee and comprehend the future state of the market in which it operates (Reid & Brentani, 2010). It involves having a clear, informed, and strategic perspective on the market dynamics, trends, and opportunities that will shape the industry over time. Market vision is an essential component of strategic planning and is seen as highly appreciated by managers in uncertain contexts (Gotteland et al., 2020) since it aids in effective positioning for future success (O'Connor & Veryzer, 2001). It is particularly important during the originating phase of market-shaping activities, where a firm should develop a value proposition and vision for the wanted direction and change in the market (Storbacka et al., 2022).

In sum, market-scoping, market-shaping and market vision all relate to each other. The uncertainty and ambiguity related to market-scoping for early-stage technologies require a comprehensive and collective understanding of these concepts together. Moreover, the application of sensemaking and dynamic capabilities framework has not been fully explored in this context. This will be explained in the following sections.

2.2 Dynamic capabilities

The basics of dynamic capabilities are first described (2.2.1) to later relate it to market-scoping (2.2.2) and explain the importance of viewing them collectively.

2.2.1 Dynamic Capabilities Framework

The dynamic capabilities framework, developed by Teece et al. (2016), brings together a perspective on how managers can adapt to uncertain situations. Dynamic capabilities are critical for a firm's long-term competitiveness, as they enable it to remain agile and resilient in the face of uncertainty. Dynamic capabilities involve a firm's ability to continuously learn, innovate, and adapt. Being agile or flexible has been highlighted in management literature and encourages managers to always keep options open and constantly change to relevant stimuli in the environment. The fundamental challenge for organizations is the requirement of continuous reinvention, not only in times of crisis (Hamel, 2002). The importance here is being able to capture moments with the right momentum of agility to be as cost-efficient and competitive as possible. Teece et al. (2016) define strong dynamic capabilities as management teams possessing entrepreneurial efficiency and vigorous organizational designs, and thus the ability to manage uncertainty successfully.

There are three clusters of dynamic capabilities according to Teece et al. (2016); sensing, seizing and transforming the market. Moreover, these capabilities need to be following the same strategic direction as the organization has implemented to make sure it is consistent and coherent (Teece et al., 2016). First, sensing requires dynamic capabilities in which an organization can confidently and proactively build hypotheses, test it and thereafter learn from it, i.e. looking past already known rules (Teece et al., 2016). During this process, managers might find new application areas for their available resources and thus spur innovation. Seizing, another important dynamic capability, is about carrying out actions and executing them. This can be done through multiple ways, e.g. avoiding fixed investments and outsourcing activities that do not necessarily need to be self-owned. The last aspect of dynamic capabilities which is transforming, or pivoting, was not deemed relevant for this study. This is due to the focus being on the initial process of assessing a market space, where sensing and seizing play the largest role, whereas transforming rather takes place after this process has been done.

Teece et al. (1997) address three categories of factors to distinguish an organization's dynamic capabilities which are processes, positions and paths. They define it as "*the competitive advantage of firms lies with its managerial and organizational processes, shaped by its (specific) asset position, and the paths available to it*" (Teece et al., 1997, p. 518). *Processes* refer to routines and current practices, *positions* refer to the establishment of technology and relationships with various stakeholders and *paths* refer to alternative strategic options available. Moreover, conducting an excessive amount of 'strategizing' activities may lead to an underestimation of investing in dynamic capabilities which can harm competitiveness in the long run (Teece et al., 1997). During entry strategies the organization is required to look around the market and assess the competition.

With the above methods and procedures, managers can magnify their entrepreneurial expertise and take action towards better navigating between agility and efficiency (Teece et al., 2016). The trade-off is both crucial and difficult.

2.2.2 Dynamic capabilities in relation to market-scoping

The relationship between market-scoping and dynamic capabilities is that they both pertain to a firm's ability to adapt and succeed in a competitive environment (Teece, 2016, Molner et al., 2019). Dynamic capabilities and market-scoping can be complementary in the sense that market-scoping provides a foundation for dynamic capabilities. It helps managers identify the opportunities in the market, based on their market ambiguity mindset, which can then guide the development of dynamic capabilities tailored to exploit those opportunities effectively (Teece et al., 2016). This means that they might require certain dynamic capabilities over others since they help firms to change their base of resources (Helfat & Peteraf, 2009) or create new resource assemblages to react to market changes (Eisenhardt & Martin, 2000). Teece (2007; 2016) also argues that dynamic capabilities not only help firms react to changing markets but also form changes in business environments, thus also being considered as market-shaping capabilities (Nenonen et al., 2019).

The process can be perceived from both an individual and an organizational level where the latter focuses on the general integration of dynamic capabilities and strategic direction of the market-scoping process. Thus, individuals within an organization may possess the necessary cognitive abilities to pursue the appropriate dynamic capabilities on an organizational level

(Teece, 2007). When defining dynamic competencies and linking resources to market, managers must try to abstract away from the current embeddedness of the competence, and be able to imagine how it can be applied and utilized in other, new areas (Prahalad & Hamel, 1994). It is important to note that merely responding to market opportunities and threats in an ‘ad hoc’ way is not sufficient (Teece, 2007). Neither is adopting ‘best’ practices since they are most likely known by the competitors as well. An encouraging culture where individuals take responsibility and learn is necessary to fulfill this. Seeing how specific elements of a technological competence can be applied in new areas might open up for successful market spaces (Gruber et al., 2008; Maritan, 2001; Noda & Bower, 1996). However, if only a minority of the individuals have these cognitive abilities, the organization may be in jeopardy. The cognitive abilities of individuals therefore need to be discussed, aligned and understood by the rest of the organization to ensure adequate dynamic capabilities are being deployed.

Christensen and Bower (1996) also identified that resources are usually allocated based on how immediate the returns are, which then affects which type of market space is exploited. This creates a Catch-22 situation where resources are not leveraged into potential new opportunities until it has proven to generate revenue, at the same time as it is unable to generate revenue due to insufficient resources being allocated (Danneels, 2007). Other authors have described this as a type of ‘competency trap’ (Levitt & March, 1988), where a self-reinforcing exploitation of a current competency is inhibiting the exploration of new competencies. By gaining more marketing competence and allowing the transformation and resource allocation to come from inside rather than being completely driven by current customers, an organization increases its chances of mitigating the ‘competency trap’ (Danneels, 2007).

In regards to market-scoping, this can be seen as relating to the market ambiguity avoidance mindset, and steering away from focus on the end-user (Molner et al., 2019). At the same time, failing to properly identify a major marketing opportunity prior to entering a market space can be detrimental for an early-stage technology firm (Gruber et al., 2008). In order to identify this, one must compile different types of insights of application areas and customer needs, and thus spend time on the search process (Dougherty, 1992), i.e. relating to Molner et al.’s (2019) definition of an upstream mindset.

Building on the Catch-22 situation that Danneels (2007) mentioned, Gruber et al. (2008) mean that there is an opportunity cost in *not* seeking additional markets and rather rushing a product to market, neglecting other alternatives. Similarly, in market-scoping literature, the focus on the end-user may therefore lead to an opportunity cost. Gruber et al. (2008, p.1663) argue that entrepreneurs need to “look before they leap”, because choosing a less favorable market can result in missed opportunities. Being able to see beyond potential biases and explore alternatives should therefore have a greater emphasis in the first stages of market-scoping. Molner et al. (2019) adds to this argument as well and means that the value of a technology can therefore not be manifested until it has been determined where it might be deployed. *“Often what looks like a great leap forward rapidly dwindles to incremental or worse upon little development”* (Molner et al., 2019 p. 45).

Molner et al. 's (2019) work about managers' mindsets has opened up a greater understanding of managers' and why they perform certain activities. Sometimes, unexpected events may prove to be more beneficial, which in prior research has mainly been described as something undesirable (e.g., Lynn et al.,1996; Sommer et al., 2009). However, as Molner et al. (2019) prove in their study, an acceptance mindset can be a part of determining success or failure. The mindset of focusing on the technology's immediate benefits can limit the technology's evolution and create an illusion of security (Molner et al., 2019).

2.3 Sensemaking

This section describes sensemaking as a concept (2.3.1) to later relate it to its importance in marketing and management literature (2.3.2) and, lastly, how it relates to market-scoping for early-stage technologies (2.3.3).

2.3.1 Sensemaking as a concept

Sensemaking is a process in the individual's perception where one creates an understanding of situations that are perceived as unpredictable or uncertain (Weick, 1995). The individual constantly shapes assumptions and expectations, both consciously and unconsciously, that work as future predictions (Louis, 1980; Weick, 1995). Furthermore, sensemaking also includes framing situations, constructing meaning and understanding unpredictable situations and interactions with others in order to achieve mutual understanding and patterns. According to Weick (1995, p.17), there are seven attributes to sensemaking; *“(1) grounded in identity*

construction; (2) retrospective; (3) enactive of sensible environments; (4) social; (5) ongoing; (6) focused on and by extracted cues; and (7) driven by plausibility rather than accuracy”.

The sensemaking process can thus be perceived as a loop of actions where actors make sense of their reality by committing to activities based on individual beliefs and in retrospect seeking an understanding for this reality (Sandberg & Tsoukas, 2015).

2.3.2. Sensemaking in marketing and management literature

In the context of management and marketing literature, sensemaking is often used to understand customer behavior, market trends, and competitive dynamics (e.g: Kleinaltenkamp et al., 2022). It can also be applied to internal organizational processes to make sense of changes, disruptions, and emerging opportunities (Kleinaltenkamp et al., 2022). Sensemaking helps individuals within an organization to identify and understand resources and what meaning to provide to them, which in turn creates opportunities for resource linkages and avenues for strategic direction (Möller, 2010). Sensemaking therefore opens up for interpretation, creation, and validation of the linkages (Sandberg & Tsoukas, 2015; Weick, 1995).

The cognitive abilities that managers possess are what essentially transfer dynamic capabilities into actions through managers realizing and influencing decision-making processes (Helfat & Peteraf, 2015). Depending on the perception of the market and its development, managers will be able to sense new opportunities (Helfat & Peteraf, 2015). Whether this will become an investment or not depends on managers' way of rationalizing and reasoning, i.e. seizing the market.

Sensing, as an aspect of dynamic capabilities, and sensemaking works in unison (Helfat & Peteraf, 2009). Dong et al. (2016) describe the challenges of sensing as something that lies on the individual mental perspective to observe and comprehend one's surroundings. The central trade-off exists between the quest for minimizing uncertainty through deductive and inductive reasoning (Sandberg & Tsoukas, 2015). This can provide clear answers about potential opportunities but might, at the same time, overlook those opportunities that are exceptionally unusual or uncertain. When individuals within an organization make sense of external and internal information, the organization can better align its strategies with emerging opportunities and threats and develop relevant dynamic capabilities (Kleinaltenkamp et al., 2022). Sensemaking helps organizations learn from their experiences,

assess the impact of their actions, and adjust their strategies and operations accordingly (Sandberg & Tsoukas; Weick 1995). Without sensemaking, firms may struggle to recognize and understand the need for change.

Another aspect to consider, which is that attention, memory and concepts or any type of knowledge is selective (Shah et al., 2002). This highlights the fact that individuals have different interpretations, and organizations must therefore form their strategic goal in a way that can empower each member for value creation. The organization must, in other words, be aligned regarding environmental stimulus being seen as something to avoid or grab as an opportunity (Shah et al., 2002).

2.3.3 Sensemaking in relation to market-scoping

Market-scoping processes are done on an individual level, but counts for the organization in its whole (Molner et al., 2019). Sensemaking processes enhance the quality and depth of market-scoping efforts, ensuring that organizations have a thorough and well-informed understanding of the market opportunities they are pursuing (Kleinaltenkamp et al., 2022). This, in turn, helps organizations make more effective strategic decisions and adapt to changing market conditions. Furthermore, sensemaking is important for market-scoping as it highlights that market spaces are often characterized by ambiguity, uncertainty, and complexity (Cattani et al., 2018). When conducting market-scoping, organizations must acknowledge that the information they gather may be incomplete or unclear. Understanding the principles of sensemaking can help organizations process this ambiguous information effectively.

Sensemaking literature also explores cognitive frames that can influence how individuals and organizations interpret information (Kleinaltenkamp et al., 2022). During market-scoping, it is important to be aware of these cognitive frames that might affect decision-making. Moreover, sensemaking literature recognizes that individuals within an organization have different perspectives and experiences that shape how they interpret information (Weick, 1995). In the context of market-scoping, this means that diverse perspectives and inputs from various stakeholders can be invaluable for constructing a comprehensive understanding of the market, in line with Molner et al. (2019). Encouraging collaboration and dialogue among team members can lead to richer insights and more effective market-scoping. This can be done through, for example, scenario planning (Teece, 2016) or storytelling (Weick, 1995).

For innovation breakthroughs, closely related to market-scoping for early-stage technologies, there are certain traps to avoid. Ahuja and Lampert (2001) conducted a study in which they identified three inhibitors of innovation breakthroughs which (1) favor the familiar, (2) the search for solutions near to existing solutions and (3) favor the mature. Familiarity, described as an expanded learning and problem-solving set for technology, can lead organizations in specific directions, limiting exploration of alternatives and increasing cognitive map rigidity (Leonard-Barton, 1992). To avoid familiarity traps and enhance problem-solving diversity, organizations should explore unfamiliar technologies (Ahuja & Lampert, 2001). Favoring maturity involves relying on well-known technologies with established reliability, crucial for competitive advantage and network effects (Ahuja & Lampert, 2001; Freeman and Hannan, 1989). While mature technologies offer legitimacy, exposure to and exploration of emerging technologies helps avoid maturity traps. Searching for solutions near existing ones, akin to familiarity and maturity, provides historical proof of success, particularly crucial for incumbents bound by organizational norms and procedures (Hitt et al., 1996). Actors from unrelated contexts can guide organizations into specific trajectories, posing risks but avoiding a predetermined outcome (Molner et al., 2019).

Kleinaltenkamp et al. (2022) highlights the importance of the meaning-based aspect of new resource linkages, and that it essentially lets market-shaping organizations and its individuals initiate the necessary capabilities to the origination and propagation direction of the market-shaping process. In detail, the authors suggest that decision-makers may utilize different approaches to *'express their capabilities in an attempt to originate and propagate new resource linkages, and thereby shape markets'* (Kleinaltenkamp et al. (2022, p. 152). These are described as sensegiving/sensebreaking activities, which are sub-parts of sensemaking, that provide different meanings to what the actors aim to influence. The distinction between sensemaking and sensegiving, as highlighted by Thomas et al. (1993) and Gioia & Thomas (1996), underscores the reciprocal nature of these processes, with sensegiving involving managers' efforts to influence their employees' sensemaking toward a favorable view of the organizational environment. Kleinaltenkamp et al. (2022) explain that sensegiving may help individuals understand linkages between resources and market spaces during the originating process of market-shaping. As market-scoping for early-stage technologies also relates to finding viable market spaces and linking resources to them, this is of similar relevance. In sum, this brings an interesting aspect to market-scoping for

early-stage technologies where applying further detail into the meaning-based process of managers' market ambiguity mindset.

Sensemaking may help broaden the perspective of individuals, and not fall for certain traps (Ahuja & Lampert, 2001; Danneels, 2007; Levitt & March, 1988). By being aware of the context and environment, individuals within an organization can more easily weigh the advantages and disadvantages of a market space and see the bigger picture, based on their interpretation of their reality. This means that sensemaking may aid in minimizing the effects of the Catch-22 situation (Danneels, 2007) where resources are not leveraged into opportunities until proven to be successful.

2.4 Theoretical framework and research gap

After having conducted a literature review of relevant and existing academic conversations, this study aims to answer the identified research question as a synthesis of the three research areas as portrayed in *Table 1*.

Theoretical lens	(Non-exhaustive) List of scholars	Research gap
Market-scoping for early-stage technologies	Molner et al., 2019; Gruber et al., 2013; Danneels, 2007	Lack of conceptual clarity of market-scoping activities, and possible explanations behind them.
Dynamic capabilities	Teece et al., 2016; Hamel, 2002; Schweitzer et al., 2023; Anderson, 2014	Lack of perspective for early-stage technologies and importance of sensemaking in the process of developing dynamic capabilities.
Sensemaking	Weick, 1995; Helfat & Peteraf, 2009; Dong et al., 2016	Lacks individual explanations of causal linkages within an organization.

Table 1. Identified research gaps

Figure 2 provides an image of the conceptual framework applied in this thesis. To provide a comprehensive description of the framework, sensemaking is constantly engaged in any organizational setting, especially those under uncertainty (Weick, 1995). Under the uncertainties of market-scoping, the individuals of a firm have different cognitive framing of situations, i.e. sensemaking, thus ruling their effect on market-scoping and dynamic capabilities. Moreover, these two phenomena work in unison, informing and impacting each other, dependent on individual mindset and the firm's ability to sense, seize, and be flexible. As a result of these three continuously interacting, both consciously and subconsciously, they impact the market-scoping process in conjunction with the firm's dynamic capabilities, resulting in being either an enabler or barrier to the process. Again, surrounded by sensemaking, informing that individual perceptions will determine the value it is given. This is especially true for start-up companies, who have yet to realize their technology-to-market strategy.

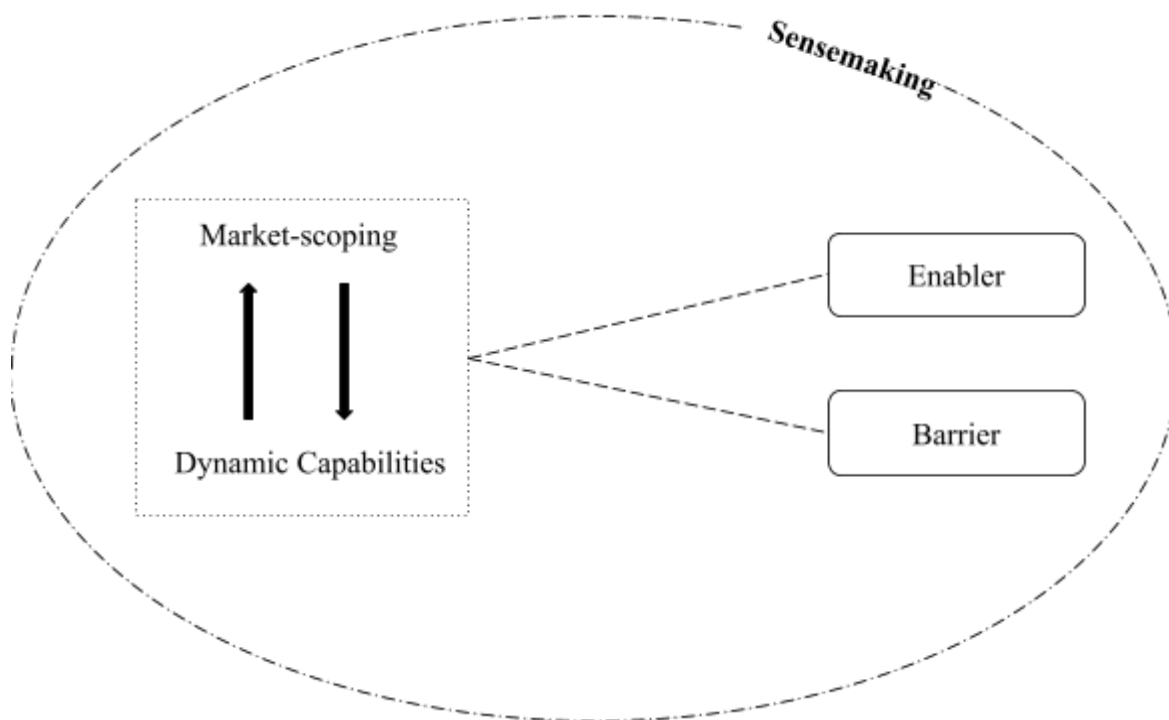


Figure 2. Conceptual framework for this study

3. Methodology

This section outlines the studies' methodological choices, strategy and overall fit to answering the research question. The order is as follows; philosophical positioning (3.1), research design (3.2), data collection (3.3), data analysis (3.4), and finally quality consideration and ethics are discussed (3.5).

3.1 Philosophical Positioning

As the aim of this study is to identify and understand potential barriers and enablers for market-scoping for early-stage technologies and employees' sensemaking of this, the socially constructed ontological position was taken. The ontological assumption refers to reality being “*socially constructed and subjective*” (Saunders et al., 2012, p.140). This means that the assumption of the reality of market-scoping for early-stage technologies is created through the experience and perception of the individuals within the case company. This was deemed the most suitable to reflect my research question and the attached philosophical views.

This thesis philosophical assumption lies in an interpretivist perspective, where social reality is subjective and construed through actions and interactions (Orlikowski & Baroudi, 1991). The focus is thus on the social actors, and in order to conceptualize and understand them, we must base it on their expressed experiences (Bell, Bryman & Harley, 2022). In order to understand and identify potential enablers and drivers of market-scoping for early-stage technologies, it is required to recognize how practices and meanings are formed by the language and actions shared by employees (Orlikowski & Baroudi, 1991).

3.2 Research design

The research design is described by first explaining the qualitative nature of the study (3.2.1) to further explain ethnography as a method (3.2.2), single case (3.2.3), and lastly case selection (3.2.4).

3.2.1 Qualitative

The synthesis of existing literature reveals several theoretical gaps that conclude in my research question. Considering the subject's early-stage development, a method that could provide versatility and flexibility throughout the study was deemed necessary. To respond to the research question, a qualitative research method was required because it allows a deeper

and more complex understanding of the topic at hand (Cresswell, 2007). Furthermore, it allows continuous adaptation in the progress of emerging insights (Saunders et al., 2012). A qualitative method also goes in line with the interpretive positioning (Bryman, Bell & Harley, 2022).

Moreover, this study takes an abductive standpoint, which is deemed to go in line with the study's purpose as it enables synthesization of theory whilst engaging with insights derived from the data points (Charmaz, 2009). First, previous research within market-shaping was explored to gain an initial understanding of the subject simultaneously as ethnographic observations and conversations with the employees of Organization X were conducted. During these activities, an increasing understanding of the subject led to the adaptation of the literature, where market-scoping for early-stage technologies was seen as most suitable. With this, the focus of the study shifted, which resulted in a revision of the theoretical frameworks. Market-scoping for early-stage technologies was seen as both an interesting and suitable phenomena to explore. The abductive approach is explained as cycling back and forth between collected data, processing it, and reviewing relevant literature to conclude with a focus that is interesting for both scholars and practitioners (Charmaz, 2009).

3.2.2 Ethnography

Ethnography is considered a method by itself, while overlapping with, for example, case study methods (Cresswell, 2007; Hammersley & Atkinson, 2019). Revealing organizational processes and uncovering underlying expectations and norms makes ethnographic research a well fitted method because one can observe behaviors and language related to these activities (Cresswell, 2007). In addition, ethnography as an approach is aligned with interpretivism. Both interpretive and ethnographic research is based on studying people as active social beings in their natural habitat and environment (Moisander et al., 2020). An emphasis is put on the fact that people belong to organizations and groups, and define their identities accordingly with their different cultural communities. Some authors have argued that ethnography is a necessary method to identify and understand behaviors of actors within complex institutional logics (Ramus et al., 2017). It is important in both interpretivism and ethnography to ask questions of 'how' and 'why' and investigate the deeper meaning of these (Van Maanen, 2011).

Ethnography is described by Watson (2011), as “*draw[ing] upon the close observation of and involvement with people in a particular social setting and relat[ing] the words spoken and the practices observed or experienced to the overall cultural framework within which they occurred*” (p. 205-206). Furthermore, ethnography involves the researcher taking part in multiple activities with the studies’ object, participating in activities, asking questions and reading relevant documents (Maanen, 1979; Watson, 2011).

There are benefits of drawing on the researcher’s skills and experiences not related to the research. Reimer (1977) explains that an already established relationship with the subject of the study creates a more comfortable setting, and a higher willingness to collaborate and share thoughts and ideas. I had an already established relationship with two of the six employees from previous case collaboration, which meant that the understanding of each other’s situation was already rather high. As a result of this, I did not need time to try and understand their organization or different relationships with stakeholders very much, and could identify useful questions to pose. However, the integration of myself within the organization also provides a potential disadvantage for the study, for example confirmation bias and other assumptions of the organization. To mitigate these effects, an evaluation of Cresswell’s (2007) criteria for ‘good’ ethnographic research has been done (*Table 2, section 3.5*).

3.2.3 Single case

As the chosen topic for this study is rather complex and in its nascent development within research, a single-case study was chosen. This is seen as a necessary factor to gain an in-depth analysis (Darke, Shanks & Broadbent, 1998). The chosen case company was, at the time this study was being conducted, in its initial phases of development and utilizing an early-stage technology, which suits the chosen topic. Yin (2015) describes the working definition of a case study as ‘*An empirical inquiry that closely examines a contemporary phenomenon (the case) within its real-world context*’ (p. 194). According to Flyvbjerg (2006), a single case study is preferable when conducting an in-depth study and trying to uncover the perceptions and experiences of employees, thus relating to the chosen topic of this study. From an interpretivist perspective, which this study takes its standpoint, it is important to consider that there may be multiple realities and attached meanings with the observer's findings dependency (Yin, 2015). This can be achieved by attending to various

sources of documentation, which partly explains the ethnographic research choice for this study.

3.2.4 Case selection

To answer the research question, the Swedish start-up, Organization X, was chosen. Organization X can be seen as a unique case, not only due to the innovative market they are operating in, but also because they use complex technology in which the employees need to successfully make sense of to conduct appropriate market-scoping activities. The complex technology Organization X utilizes is satellites, which also entail additional technological aspects in the context of sustainability. The application areas for Organization X service include ESG reporting, supply chain monitoring and monitoring of investments. Moreover, the case company is in its initial stages of operations, and has not yet fully manifested its resources to a specific market space. It therefore makes it a suitable selection of case for this study's purpose.

Worth noting is that no compensation was offered from Organization X to be part of this case study, which Daft (1983) argues is important for novel insights uncoverage. However, through prior collaboration and study of the organization, trust had already been built with some of the employees, and thus mutual understanding of the research was established.

3.3 Data collection

This section describes the collected data sources (3.3.1), interviews and interviewees (3.3.2), and lastly the interview process (3.3.3).

3.3.1 Data sources

When following ethnographic research, many data sources are used (Maanen 1979; Watson 2011). This research included data sources of different types of documentation, formal interviews and other interactions with team members, which are all further explained in this section and summarized in *Table 2*.

The ethnographic research started with preparatory work, where I reviewed documents such as internal communication presentations. After this, I observed a client engagement workshop with two potential clients, conducted 12 semi-structured in-depth interviews and observed the

case company during a networking event where they were a participating actor. This was then followed by data analysis and structure of a data model (*Figure 3, 3.4*)

Documentation included internal text and video documents, already existing prior to the study. This included external PowerPoint presentations with application areas, explanation of the technology, case examples and was used to build understanding of the overall context for the organization. Different types of interactions with team members of Organization X included both formal and informal conversations, in person, online and via email. Data sources from these interactions include detailed notes from meetings, a workshop and an event. In addition, I also documented my personal reflections as soon as possible after each interaction had occurred.

Formal interviews made up the most richness of my data collection which opened up an opportunity to gain greater understanding of the employees' thoughts and feelings. I undertook 12 semi-structured formal interviews that ranged from 30 minutes to 70 minutes. (*See Appendix 1 and 2 for interview questions*). The interviewees were chosen based on having some kind of contact with customers. Some of the respondents were more involved and engaged than others, mainly due to their geographic location and ability to participate physically and also because of some lack of connectivity for certain questions or types of work.

The collected data resulted in 3.795 MB total size of documents which were manually coded and filtered. This was processed in multiple stages, leading to a second round of interviews with all employees. Table 2 provides an overview of this.

Data source	Example of source type	Number of files
Internal documents (existing prior to the study)	Project presentations with previous clients, internal customer profile documents etc.	12 A4 pages (slide decks), 1.9 MB
Researcher's personal	Notes and reflections written in Google Drive, based on	14 A4 pages, 1.708 MB

notes and reflections	interactions and activities with the team members of Organization X	
Field notes from workshop and networking event	Handwritten notes from my personal reflections and observations from a workshop and a networking event. Observations include both visual and audible.	8 A4 pages of hand-written notes, 8 KB
Formal research interviews	Documentation from 12 interviews of approximately 30 minutes to 1 hour, video recorded and transcribed with MS Teams.	12 interviews, 135 A4 pages, 179 KB
Total		169 A4 pages, 3.795 MB

Table 2. Summary of data sources and its indicative sizes

3.3.2 Interviews and Interviewees

The respondents for this thesis were chosen simply for being employed by the case study company as well as having direct contact with customers in some way. Due to the company being of technical orientation, some of the employees were naturally ruled out due to them not being involved with customers. The case company was chosen through previous contact via a project done a few months earlier prior to the study. The contact facilitated easy access to relevant employees, enabling me to take active participation in their activities to observe their market-scoping initiatives, making the thesis possible.

The study resulted in a total of 12 interviews, 2 interviews per (chosen) employee in the company. All involved participants were guaranteed full anonymity and they have thus received an alternative letter instead of their real names to provide context.

The number of interviews was decided by, what Saunders et al. (2012) explains as, theoretical saturation. This means that I continued my round of interviews until no new insights emerged

from the data collected, both via the observations, documents and interviews (Strauss & Corbin, 1998). Already after one round of interviews, interesting patterns had emerged. However, it was not until after the second interview with each and one of them that a saturation of the data was achieved.

Respondent	Role	Interview length #1	Date	Interview length #2	Date
A	CEO/Co-founder	58 minutes	13/09-2023	40 minutes	30/10-2023
B	CTO/Co-founder	56 minutes	05/10/-2023	27 minutes	30/10-2023
C	Senior Business Developer	42 minutes	20/09-2023	23 minutes	23/10-2023
D	Business Developer	48 minutes	21/09-2023	29 minutes	25/10-2023
E	Business Developer	58 minutes	25/09-2023	30 minutes	25/10-2023
F	Marketing Coordinator	47 minutes	25/09-2023	27 minutes	30/10-2023

Table 3. Compilation of respondents

3.3.3 Interview Process

After the client engagement workshop, I reflected over my perceived experience from it and drafted interview questions based off of it, in combination with some of the literature. Three of the employees were involved in the workshop and I aimed to interview those three as soon as possible after the workshop had taken place to grasp their ‘true’ experience. The interviews took place in September and October and consisted of approximately 30-60 minutes discussion. All of the interviews were recorded and transcribed with the help of MS Teams. Follow-up questions were asked continuously, facilitating an engaged conversation.

The structure of all interviews was similar, although the interview questions were tailored to the relevance to each participant. Due to an already established relationship with the company, I did not need to spend too much time introducing myself nor the purpose of the

study. However, the interviews usually started off with a brief casual conversation to build further trust. Afterwards, permission to record the interview was asked and also ensured full anonymity for the respondents. During the interview, follow-up questions were a natural part of the conversation and often led to reveal interesting aspects of the respondents' minds.

Due to the participant's geographical spread, all interviews were conducted as video interviews. Although, thanks to my ethnographic method, I was also able to observe and ask questions in person with some of the participants as well. What was important for my research topic was to understand the *why* and *how* behind their behavior and language. Due to the lack of time and budget, traveling to different places to meet with the participants was not feasible. Irani (2019) argues that online meetings are a good option for studies that are bound to certain constraints, such as mine.

3.4 Data analysis

Notes were taken after each interview, to try and capture the emotion of the respondent as well as finding what was left unsaid. To assess the main emerging insights gained from each interview, the transcription was done as soon as possible.

My framework is largely based on Molner et al.'s (2019) article, since they have initiated to theorize market-scoping for early-stage technologies. When conducting the analysis, I highlighted instances where market-scoping was seen prevalent. For example, expressions regarding customers, market vision and strategy activities. A similar process was done of the observations of the workshop and networking event, also highlighting the behavior of the respondents. Consequently, after the most interesting findings had been highlighted they went through a second round in a similar manner, slimming down to the strongest accounts.

Subsequently, the practice of '*thinking with theory*' was applied (Jackson & Mazzeri, 2013) where data and theory are used collectively and iteratively to think and read the collected data. This method is often used to find distinguishing perspectives within the broader category of the chosen topic, being both aligned and withstanding interpretivism (Jackson & Mazzeri, 2013). After findings related to market-scoping and market ambiguity mindset had been highlighted and chosen, two larger categories were decided; market space complexities and upstream versus downstream. These categories were used as codes to later re-read the

findings searching for characteristics distinguishing them further. Figure 3 exemplifies this process.

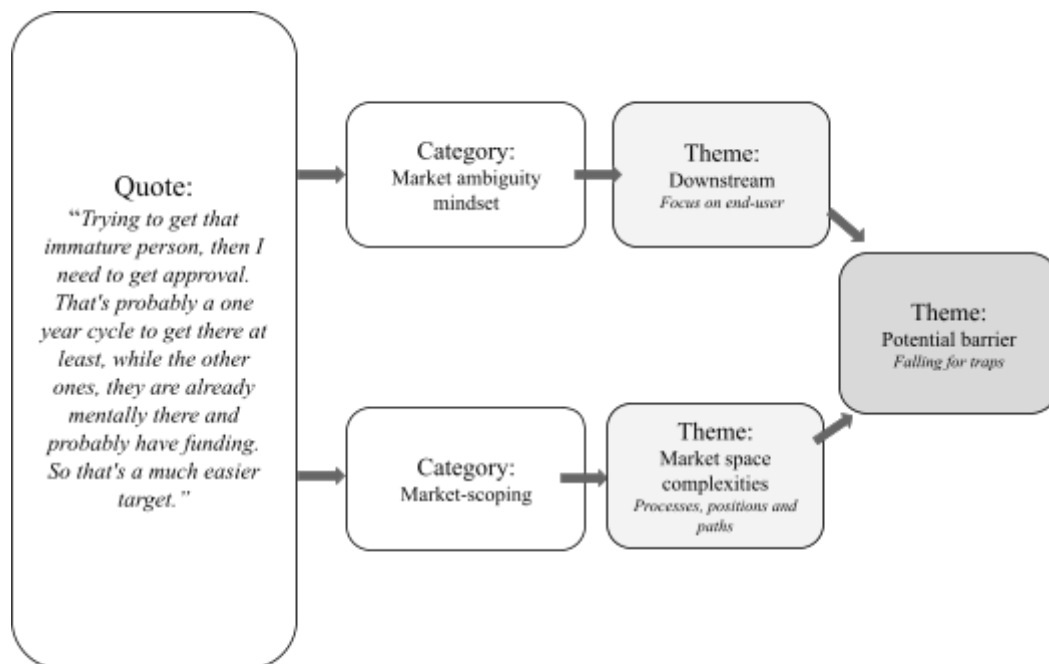


Figure 3. Example of data processing

3.5 Quality and ethical considerations

Validity and reliability are important criterias to consider when assessing a study’s reliability and quality for qualitative research (Bryman, Bell & Harley, 2022). LeCompte & Goetz (1982) describe internal validity, as part of the reliability criteria, as whether there is a relevant connection between theory and observations in the study. The abductive approach enables a constant shift of focus between the empirical material and theory which means that the theoretical perspectives have largely been based on the words of respondents and observations.

When it comes to case study research, there are often two common challenges attached; credibility and generalizability (Yin, 2015). Yin (2015) suggests that in order to strengthen credibility, one should devote attention to, in combination or isolation, trustworthiness, validity and reliability. Particularly for a study with an interpretivist standpoint, trustworthiness may be the most important aspect for credibility. This can be done by assuring the readers that fieldwork was fully conducted, which is explained by Eisenhart (2006) as being “*really and fully present - physically, cognitively, and emotionally – in the*

scenes of action under study” (p. 574). This means that the interactions between the researcher and the participants in certain events need to be highlighted, which can be done with the help of organized fieldnotes (Eisenhart, 2006). As this study is an ethnographic research, this was naturally done in all events with the case company, where my own reflections and the participants' interpretations have been made as clear as possible during data presentation. An ethical challenge with this is to assure the reader of appropriate inclusion and exclusion of the data and observations. In chapter 3.4, Figure 3 illustrates my data coding framework, which explicitly delineates the rules guiding the selection of data, enhancing its clarity and effectiveness (Newman & Brown, 1996). This aims to aid the reader in understanding when exceptions of data inclusion were made. Moreover, the engagement of thick description in ethnography aims to adequately describe and portray the respondents in their respective contexts with the attached awareness of my own potential predetermined categories and selectivity patterns (Yin, 2015; Becker, 1998). Therefore, it aims to reveal implicit aspects of my own perspective, and thus increase transparency.

Validity, the second challenge to building credibility, largely relies on a realist ontological standpoint and is not as relevant for interpretivist case studies (Yin, 2015). Since this study is not an explanatory study and does not aim to uncover *causes and consequences* of a well-known phenomena, but rather takes an interest in exploring *aspects* of problems that are under-researched (Yin, 2015), validity in terms of credibility is not as big a concern and interest.

The third, and last challenge of credibility for case studies, is strengthening reliability (Yin, 2015). This entails convincing the readers that data collection and analysis have been made in an honest and consistent manner with the respondents attested reality. Avoiding taking a storytelling perspective to not provide an unfair image of the respondents reality is important, even for an interpretivist perspective. By acknowledging multiple perspectives of realities and accurately showcase them to provide as high transparency as possible is therefore required. The data coding framework (*Figure 2, section 3.4*) aims to promote this transparency.

It is also important to acknowledge the quality considerations of ethnographic research. The integration of my role as the researcher presents a potential drawback for the study. More precisely, there is an increased risk that my pre-existing knowledge and assumptions

regarding the organization may impede the accurate identification of activities and meanings. To address this potential decline in objectivity, I employed reflexivity and respondent validation. The details of how the research aligns with Cresswell's (2007) criteria for 'good' ethnographic research are elucidated in Table 4.

Criteria	Research design response
Clear identification of a culture-sharing group	Organization X and its employees is the culture-sharing group in this study. Being a start-up within a nascent area, they have been working tightly together for 2 years, having created a shared language and behavioral patterns, indicated by Cresswell (2007) as vital.
Issues to be studied about the group	The issues in this study are those related to the market-scoping process, outlined in section 1.2 and 1.3 as well as section 4.
Description of the culture-sharing group and themes derive from an understanding of them	The culture-sharing group Organization X and its employees is described in section 4.1 with an overall description of the firm. Moreover, section 4.2 and 4.3 describe the individual and organizational perceptions of their market, business context and customers, all relating to market-scoping for early-stage technologies. Observing the organization through fieldwork of engaging in a workshop and networking event, signifying how the culture-sharing group works and behaves.
Self-disclosure and reflexivity by the researcher about their position in the research	In this part of the thesis (3.5), I describe my involvement in the project as the researcher. To deal with the limitations of ethnographic research, where the researcher's role might make it harder to be reflective, measures have been implemented. The previous involvement with Organization X made my understanding of their complex business environment more comprehensive, contributing me to being able to position myself in the employees position. My research supervisor has also been helpful by questioning what I think and find during the study. This has made it easier for me to reflect and take a step back from the everyday project work.

Table 4. Evaluation of Cresswell's (2007) 'good' ethnographic research criteria

To conduct the study in an ethical manner and protect the integrity of involved participants, ethical considerations were fused into the study. Consent of recording and participation was also explicitly requested prior to each interaction. Full anonymity and confidentiality were affirmed and guaranteed to ensure high truthfulness and authenticity in the responses

(Bryman, Bell & Harley, 2022). All sensitive information has been left out, and the participants as well as the case company have been pseudonymized, named Organization X and Person A, B, C and so on. Finally, I signed an NDA with Organization X that covered all essential aspects to protect the company and mitigate the risks of potential damage involving customers, strategy, partnerships or other sensitive knowledge.

4. Empirical Findings

The following chapter presents the empirical findings of the study. Firstly, an introduction of the case company is introduced (4.1). Following, evaluation of the findings from the interviews conducted and observations from the two events are presented (4.2, 4.3). Lastly, a summary of empirics is provided (4.4).

4.1 The case company: Organization X

Organization X is a B2B start-up that conducts challenge-focused consultancy related to sustainability reporting and operational matters. They use satellites as their main source of technology to this nascent application area. Organization X is therefore operating in an uncertain environment and they aim to be an adaptive and proactive company to respond to upcoming and increasing demands in the market. Current activities consist of attending various networking events, conducting engagement workshops with potential clients although main focus currently being involvement in a collaborative project with multiple stakeholders as well as utilizing their personal networks.

At the time of this study, the team consists of 11 employees, where 6 of those are in some type of contact with (potential) customers, whilst the remaining are technically oriented. The organization is a subsidiary of a Swedish government-owned organization, although the employees are located in Sweden, the UK and Spain. The company has only been active for 2 years, and their business environment is characterized by fast changes and continuous evolvement of requirements, which is a consistent and highly complex process.

4.2 Market space complexities

This section highlights individual and organizational perceptions of the market space. Quotes and observations are used to substantiate the findings.

4.2.1 Individual perceptions

Starting at the individual perception, there were both similarities and discrepancies in the employees' expressions. Specifically for technical resources, the respondents demonstrated an overall comprehensive understanding of the satellite technology's complexity for its application area. Multiple times, they often compared it to other, more conventional products, such as toothbrushes or washing-machines, highlighting the challenges of selling a

technology perceived as intricate. Respondents expressed that satellites are often known from most of the population, however often perceived as an irrelevant and elitist technology. Another respondent expressed the difficulty of navigating such complexity and staying relevant, reflecting that the assessment of developing certain resources has large limitations:

“How do I tell them (the CTO) to go and build a thing, which in six months I might have to say, no one wants anymore. It costs a lot of money, so we have to be quite flexible. The way we tackle that typically is we will be looking to use technology which is not just a specific thing for one purpose. If it doesn't work out in this way, we can reuse it in a slightly different way later.” - A

Additionally, one employee mentioned that their current strategy was decided two years ago by the whole team. This process was done by conducting research, comparing and ranking them, resulting in a focus of three segments. Respondents also recognized the challenge of avoiding overcommitment and ‘spreading themselves too thin’. The tension between staying focused and being open to various market routes was evident:

“I think we need to be clear about who the users and clients are for what we are creating. We went into this being very broad and saying this could address everyone.” - B

There were indications from the respondents' answers that they might need to look at the market in a different light. One respondent suggested to focus on simpler tasks initially and later scaling up to complexity:

“Maybe sell to the low hanging fruits [...] maybe you just need to do the simple stuff first to get people using it and then scale to complexity. [...] I think that's where we need to find the balance that we might go too complex, too fast.” - C

This quote was stated in a way that seemed to be a spontaneous thought, as if it had not crossed their mind before. From observing the same respondent during the networking event, there were hints of reluctance to engage in a discussion with one of the attendants. This reluctance was explained as them being ‘too far behind’ in regards to their sustainability work, further indicating that the above quote was not prioritized.

Moreover, in assessing customer needs and integrating technology into relevant contexts, respondents expressed advantages of selling to technically oriented individuals over others. There seemed to be acknowledgment of challenges in evaluating potential clients, discerning genuine interest from mere curiosity. Respondent B pointed out:

“To be honest with you, they're always interested. The key point here is how interested they are and are they willing to put money behind that idea?” - B

The co-founders highlighted that their team should start looking for signs that distinguishes this curiosity from genuine interest, although the task is difficult:

“You will see that they are very motivated to try and close every single deal. So I need to get the team to recognize earlier that this is not a client that's going to buy anything from us and they should stop wasting their time. It's not easy, though, and looking for those little signs is really hard.” - A

When discussing successful outcomes of an engagement workshop, they recognized the need to sometimes adapt their approach during the meeting based on participants' interests. However, the challenge of ensuring the right people were present was acknowledged, which was expressed as something they could not control:

“I can have a fantastic set of slides, but if they are not interested in that, I should be knowledgeable enough to be able to tweak the conversation without the slides, and be able to talk about the topic. So go with an open mind to these workshops or these events and be able to listen to what they say and transition to a completely different meeting than what you had in mind.” - D

Simultaneously, language emerged as a significant factor, with respondents stressing the importance of speaking in a way so the client understands and is received as credible.

“I think language is a really important part of this and it is mostly what drives our thinking. You know, where are we going to be credible? I mean, you're only credible if you can talk the language of the client” - A

However, the marketing coordinator, less involved in technical aspects, expressed challenges in comprehending the required language after being with the company for over a year.

Moreover, Organization X recently enrolled in a collaborative project with multiple stakeholders to target a specific market with their joint expertise. This was explained as a way for them to naturally lead them towards a certain direction, being perceived as something positive by all respondents. The engagement workshop I was able to observe was an initial part of this collaborative project. Observations revealed a discrepancy between the emphasis on language during interviews and the execution of the workshop. Despite stressing the need to meet the client on their level, effective communication was lacking where they often spoke for long periods of time, leaving little room for the companies involved to ask questions or assure them of understanding the topics discussed. Usually, Organization X has been provided with subjects of interest from the client's side prior to a workshop to conduct a meaningful session for both parties. Despite this request, it was not received this time. This left them with little room to prepare which resulted in an improvised presentation.

When asked about the outcome of the workshop afterwards, two of them were positively surprised, where one of them expressed:

"I was actually really impressed with them. [...] We were pitching it at a level which was really responding to the way they were absorbing what we were saying. If they're showing enthusiasm and they continue to ask questions, we will happily continue to give them information." - A

The third person involved, however, expressed disappointment with the outcome:

"What I wanted to see with that workshop was some clear, tangible takeaways and some routes forward. The applicability of what we were saying to them wasn't high enough or not close enough. And that was really sad, after four hours of my time. All of our times. That's a large investment for a small company." - B

However, this person also mentioned that it is important to not go into a meeting with a client seeing it as a one way channel of communication thinking you know all the answers since it

will lower the credibility and point of the meeting. Moreover, their expressions in regards to how they perceived themselves revealed mismatches:

“We are quite good at trying to read the audience and describing it in a certain way.” - A

“I’m very aware I spoke for a long period of time. I think if I was to change my approach, I would have spoken for a lot less and hopefully given them the floor a lot more. But it wasn’t clear at what point we gave him the floor on how engaged they were.” - B

In observing the workshop, there was little to no time spent on expressing intentions and expectations on each other before presenting, resulting in improvisation and encouraging the customer to be an active participant during rather than before. Thus, it was observed as leaving little room for the participants to ask questions or assure them that the content being presented was understood. Organization X’s representatives were observed rushing through their presentation, wanting to cover as many application areas as possible.

From the interviews, the respondents often highlighted the limitation of time from clients, and that it should be highly valued. Based on the outcome of the workshop, this was perceived as the employees wanting to close a deal once they get to that meeting room, whilst not fully making sure the alignment is there. Only 3 out of 12 participants were engaged in the workshop, being interpreted as the clients not quite grasping the topics discussed.

In regards to future endeavors, varied expressions were spotted from the respondents. Respondent C expressed the following after one of the interviews:

“It is not a question if satellite data will be relevant but how and when” - C

Some saw a clear path forward, others expressed frustration with the lack of focus and uncertainty. The emphasis on adaptability to market progressions was highlighted, with the recognition that a standardized process might evolve thanks to legislation.

The CEO mentioned that the co-founders spent eight years, before Organization X, to refine their client approach and stated:

“We spent a lot of time getting things wrong and learning from it and then improving and now we feel that we've got a method that maximizes our chance of success. It's never 100%, of course, but we think it kind of works” - A

The marketing coordinator, who had previous experience with more tangible products such as art, brought light to the aspect of brand consistency to build trust, which was not mentioned by the other respondents. When observing one respondent in the networking event where physical marketing flyers were handed out, this respondent acknowledged not knowing the content of it. The alignment of activities and mindsets of the individuals within the organization was therefore perceived as something not fully established.

The respondents expressed a shortage of resources, leaving them with few options for trade-offs. Applying for funding projects was expressed as something natural for them to be involved in. In combination with this, there were expressions of avoiding the risk it bears of ‘going down the wrong path’ as a startup.

“There's quite a few funding applications that we are involved in and often that does take us down a certain path. You know if we get funding for something, we work with organizations. Then that's something that we're gonna put our effort and resources into and if we see it being successful, we've already got a routine that is fairly low risk.” - F

Despite shared ambitions for growth, visions of the development of the market were different. Some of the respondents saw a clear future for the organization and that they wished to grow their customer base, having one big ‘case’ to build trust and acknowledgement. Relying on future progressions of the market where legislation will create a more standardized process was expressed as something that can aid the organization in gaining a clear market space. Organization X expressed a recent development of a technological tool to assist with their process of accelerating quicker.

Due to the company being spread out over three countries and working with clients from different nationalities, the sales process was expressed as something needed to be tailored to the recipient. However, there were only two respondents who brought up the potential effects of cultural aspects into the equation:

“There are cultural issues that I tried to bring up and I don't know if the others (other employees) find me annoying but for example, in Sweden you can't do the American sales, that will backfire. [...] People find you annoying” - C

Therefore, while the respondents shared a collective vision for Organization X, divergent perspectives and challenges in focus, communication, and strategy alignment underscored the complexity of their journey.

4.2.2 Organizational perceptions

From an organizational level, several similar themes can be derived from the data. There is recognition of the need to bridge the gap between the advanced technology they offer and the market's understanding, particularly emphasizing the importance of speaking the client's language for credibility. When observing the organization in different settings, this was an apparent struggle since they seemingly were not acting accordingly in neither the workshop nor networking event. The employees seemed to rely on their past knowledge and use words that were approved by previous customers.

In regards to their strategy and business approach, the indication of relying on past knowledge and methods that have proven effective was prominent. Although they expressed themselves to be a first-mover in the sustainability reporting area, when asked about the future for the Organization and the future for sustainability reporting, there seemed to be discrepancies. In essence, this was described as different things. They collectively expressed legislation being an aid in helping them scope the market effectively, specifically targeting customers to help them with upcoming requirements for sustainability reporting.

Organization X saw their technology being superior from competitors and expressed their product being an obvious and natural part of that market in the future.

Currently focusing on specific sectors, Organization X expressed wanting to avoid overcommitment and spreading resources too thin. With the commitment of the collaborative project with multiple stakeholders, they are narrowing down their scope, having it as their current main focus. It is aimed to guarantee the feasibility of market space options where the pain-point of the customers is already defined by the involved stakeholders. At the same time, one of the stakeholders is providing valuable technical expertise needed for the proposed end-users which is seen as an enhancement of value.

Similarly, being a subsidiary of a Swedish state-owned corporation that possesses large knowledge about satellites, access to important expertise is present there, too. Although less on the commercialization of this nascent application area, but rather about the technology itself. In terms of the recent development of a technical visualization tool, this was initiated solely by themselves, without input from any of their stakeholders.

Organization X thus has different routines and practices in place, such as the funded collaborative project and attending various events, being well read prior to participating. From internal documents, their way of engaging new clients is done through existing networks, opportunistic demonstration or direct sales. After this step has been done, they have 10 additional steps outlined. From the networking event and expressions during the interviews the ‘opportunistic demonstration’ seemed to be highly valued. In detail, when a client lacked curiosity, they would dismiss this person and move on to another one.

4.3 Upstream versus downstream

This section describes the individual's perception of how they view their end-users as well as the organization's current activities with stakeholders. Quotes from the collected data in combination with my observations are used to substantiate the findings.

4.3.1 Individual perceptions

Due to the uncertainty of their market-resource linkages, the respondents expressed a nuanced view of competitors, leaning towards collaboration rather than direct competition. The complexity of their technology making it challenging to identify explicit competitors, prompting a more cooperative approach where direct competitors did not seem as a large threat:

"I think it's not threatening. I think we can collaborate together. I think the thing is to work together." - F

Respondent C and F both expressed interest in collaborating with organizations that can complement their product, emphasizing the importance of working together:

“[...] That was not sales. That was more an organization that I'm impressed of and reached out to and said can we do something together because you have the expertise in this, we have this new tech.” - C

“I think when you've got a project where you're working with both organizations, you can enhance your capabilities and your development. And if you potentially got an end user at the end of it then that's really valuable.” - F

Hence, the perception was that collaborating with other organizations is the preferred course of action. The participants discussed various types of collaborators, including general consultancy firms and specialists. A preference for the latter was expressed. The belief is that these organizations, with specialized focus, were seen as more attractive and easier to work with, due to more tangible benefits:

“The incentive for them (niche consultancies) to work with us is that satellite technology gives them that scalability. Whereas they've got the expertise that we don't have, so it's a really nice partnership” - A

The respondents perceived potential engagement with larger consultancies more reluctantly due to the slower pace, risk aversion and fear of idea appropriation:

“There is an opportunity to sell and partner with the big consultancies, (and smaller). And actually I would argue in the short term that it's the latter, which are probably going to be quicker and easier to engage with. But, they work at a different speed. And they are also kind of risk averse. So it's a slower, longer burn.” - B

Despite remaining open to the prospect, there was a hesitancy observed. The reservation appeared more pronounced due to the smaller size of Organization X and a perceived power imbalance. Additionally, constrained resources lead employees to initially leverage their existing networks for strategic planning. Balancing efficient engagement with larger consultancies without undervaluing themselves was seen as a non-priority, with time identified as the primary constraint:

“We also don't want to be disposable. We don't want to give them the insights of a given value-added product and then they cut us out immediately and either go with a competitor or

build their own capability. [...] So it's very difficult to know if the person I'm talking to is actually the right person, or are they just another part of this chaos and I'm going to have blockers coming all over the place.” - A

The co-founders, who possess the most extensive knowledge of satellites and the business environment, expressed confidence in their approach whilst acknowledging occasional doubts. They pointed towards sometimes not enough questioning of potential clients wanting to drop out when having shown initial interest. At the same time they highlighted becoming better at reading signals from genuine interest versus mere curiosity.

The way their workshops with potential clients are currently conducted has been proven both successful and less so in some ways. The respondents mentioned that the people in the room affect the outcome of the workshop in many ways. If they are technically oriented or not, the outcome of it will be vastly different. The way they attempt to mitigate this is to try understanding their customers and their challenges as much as possible beforehand, to meet them halfway in the discussion. At the same time, though, they highlighted that they still want to stay true to their original strategy and go through their already known networks and the sectors they have decided to focus on:

“You would respond positively to any potential customer that shows an interest, right? So. We're certainly responsive to clients coming to us in that way, but if we're trying to take a step back and think more strategically. We try to look around or when we started it was very much what were the sectors that we had originally got networks in already” - A

Another noteworthy point highlighted by three respondents was the importance of clients maturity in terms of sustainability. A shared sentiment among them suggested a need for a shift in the market's mindset, transitioning from a perception of risk to viewing it as an investment. These individuals stated that organizations lacking this 'maturity' could make the application of Organization X's technology in that segment financially burdensome:

“Trying to get that immature person, then I need to get approval. That's probably a one year cycle to get there at least, while the other ones, they are already mentally there and probably have funding. So that's a much easier target.” - C

Moreover, many of the employees referred to one specific case that went successfully, mentioning an ‘internal champion’, individuals who champion their cause internally, fast-tracking the decision-making process. Their way of expressing themselves revealed that this was used as an internal benchmark for future client engagement, aiming to reach a similar process:

“So I think it's both waiting for the maturity of other companies, but also making sure that you find the right champions internally to these companies and making sure that you're hitting the right offering at the right time that meets their needs.” - B

A refinement of this approach was recently initiated by Organization X where they have developed four personas representing different types of potential clients. This initiative came forth with the intention to more easily understand their types of potential customers, and approach them accordingly:

“I am trying to understand the specific needs of each of the sub-groups of people inside the sector and approach them with a slightly different strategy or a slightly different speech.” - D

The development of these was based on an internal workshop, where each employee gave their input on the different people they were looking for, in order to understand how to approach them in a better way. The incorporation of this in the employees daily work seemed to have little to no impact on how they work independently. When observing the respondents in various settings, they seemed to continue a conversation based on their own interest in the other person. In combination with how they expressed themselves during the interviews, they all mentioned having different focus-areas and strategies on how to approach clients, where they mainly went through their already established network, thus being aligned with their internal client engagement strategy.

4.3.2 Organizational perceptions

An important component of the collaborative project Organization X is involved in was the engagement workshop, which aimed to solidify connections with the stakeholders. From internal documents, they have, in collaboration with the other parties, conducted a feasibility study to make sure the right activities are being deployed. This project is perceived as the

optimal move for the organization, aligning them with clients who comprehend their product. They therefore see it as holding substantial potential for organizational growth and success.

In discussions about consultancy firms, a notable difference in language arises when comparing general consultancies to niche ones. The former is discussed with a more reserved tone, while the latter receives more positive expressions. Words such as 'risk' and 'fear' were used when discussing general consultancy whilst words such as 'enhance' and 'impressed' were used when discussing more niche consultancies.

Although individual freedom is highly valued, weekly meetings are utilized to share insights and align activities. Individual team members participate in various events and networking opportunities to connect with potential collaborators and clients within their geographical area. Conversations with external individuals are perceived as riskier compared to the well-established collaborative project, where outcomes are more predictable. Due to it being a well-known project that has been running for multiple years, this was expressed as a safe way of ensuring end-users.

However, self-reflection within the organization is limited. Observations reveal a reliance on existing knowledge, with minimal acknowledgment of alternative approaches. Their reasoning appears to serve as a form of justification for their actions, reflecting a perceived alignment with the 'right way' of conducting business. During the interviews, they expressed situations where they could have acted differently as well as where they believed they were acting accordingly to the situation they were in.

4.4 Summary of empirics

To summarize the empirical findings it became evident that there are differences in how the employees of Organization X perceive their environment and how their understanding from previous experiences may be a basis for this. Subsequently, this also affects their way of working and tendencies to be attracted towards the 'more known' scenarios were apparent. Simultaneously, there were also a lot of similarities, where they all expressed a preference for narrowing down their scope, resulting in faster results.

The organization is committed to learning from experiences, seeking clarity in strategy, and adapting to market dynamics. Organization X places an emphasis on the potential benefits of combining resources with external partners, having a collaborative mindset where other stakeholders can complement their product. The preference for niche consultancies is evident, seen as more attractive and easier to work with, thanks to their specialized focus. Despite potential opportunities for engagement with larger consultancies, respondents express reluctance due to slower pace, risk aversion, and fear of idea appropriation. Workshops with potential clients prove both successful and challenging, influenced by the participants' understanding and technical orientation. The organization aims to stay true to its original strategy, leveraging known networks and sectors while adapting to client needs. The importance of client maturity and finding internal champions within organizations is emphasized, although still focusing on their established networks and individual strategies in client interactions.

5. Analysis

In this section, the findings presented in the previous chapter are discussed in relation to prior research. Enablers and barriers of market-scoping, are presented (5.1, 5.2) with sub-heading defining different aspects to them. Lastly, individual and organizational perceptions (5.3) are described.

5.1 Enablers of market-scoping

The following section highlights findings related to enablers of market-scoping in relation to prior literature.

5.1.1 Market ambiguity acceptance mindset

The collaborative project currently undertaken by Organization X is viewed positively as it provides valuable insights and funding that would be challenging to achieve independently. Respondents emphasized the importance of narrowing their market vision and focusing on specific areas, aligning with recommendations from Flaig et al. (2021) and Nenonen and Storbacka (2020). Co-founders acknowledged the significance of employee contributions in maintaining a focused approach. This aligns with Molner et al.'s (2019) concept of a market ambiguity acceptance mindset, where attention shifts away from the end-user. The project's main focus on a specific area within sustainability reporting, in combination with the high bargaining power of funding partners, exemplifies this mindset. The project, despite its primary focus, may present opportunities for new trajectories and reaching previously unconsidered clients thanks to multiple stakeholders involved. This aligns with the idea that incorporating diverse perspectives can shed new light on the product and its potential applications (Molner et al., 2019).

Teece's (1997) concept of dynamic capabilities, emphasizing the importance of established technology and strategic relationships, aligns with Organization X's approach in this aspect. The organization benefits from its connection with a knowledgeable mother organization, providing valuable input and relationships with stakeholders, as seen in the collaborative project. The project's non-threatening nature, especially regarding concerns of idea appropriation from larger consultancies, enhances its appeal to Organization X.

Molner et al. (2019) especially highlight technological external input, which is a natural part of Organization X thanks to being a subsidiary of the state-owned organization.

Indications from respondents suggest a need to reconsider their market approach. The discrepancies in addressing everyone and the desire to narrow down before scaling up reflect the complexities of their market strategy. The suggestion to focus on simple tasks and later scale up may indicate a potential upstream mindset. Moreover, language clarity, as recognized by Molner et al. (2019), is acknowledged by Organization X as crucial in client communication. They prioritize understanding the client's language and avoiding preconceived expectations in meetings, aligning with the idea that markets emerge from how involved actors represent them (Molner et al. 2019).

5.1.2 Utilizing diverse backgrounds

Organization X has demonstrated a dynamic approach by formulating hypotheses, testing them through engagement with various industries, and learning from their past experiences (Weick, 1995; Teece et al., 2016). Their flexibility is evident in their previous ability to adapt when faced with political challenges during attempts to engage with certain industries, prompting them to shift focus to more viable options. This can be explained as the social aspect of sensemaking within the organization, where they aim to be aligned and work as a collective (Weick, 1995).

The co-founders of Organization X, recognized for their extensive knowledge of technology and the market, actively lead their employees by integrating their expertise into daily operations, engaging in sensegiving activities (Kleinaltenkamp et al., 2022). Initially pursuing a broad market approach, they have shifted focus in the last two years to a more specific scope, aligning their language with Kleinaltenkamp et al.'s (2022) recommendation of refining communication to effectively link technological resources with market needs. Moreover, employees may have preconceptions due to their diverse backgrounds that influence their desire for market clarity. On the other hand, having different experiences from more tangible products may also provide insights into how different types of clients think and where the technology can be deployed. For instance, the newly developed personas as to how to ensure proper client approach. This also indicates elements of storytelling, from Weick (1995), recognizing the importance of language and adapting to different people and situations. Despite not explicitly stating storytelling practices, the organization expresses a

willingness to learn from each interaction, indicating an ongoing commitment to improvement.

Consistent with Teece's (1997) recommendation to avoid fixed investments and outsource activities that do not require ownership, Organization X prioritizes flexibility. With limited start-up resources, they maintain flexibility by not being bound to specific activities, allowing exploration of diverse options and keeping various routes-to-markets open. For example, prioritizing and encouraging individual tasks, attending various events to find viable markets in different market spaces. Thus, Organization X actively engages with various stakeholders, drawing on their extensive network connections for valuable insights, in line with Kleinaltemkamp et al.'s (2022) argument for effective market-scoping. Though not explicitly mentioned, their approach to foreseeing the future, especially regarding legislation, can be perceived as aligning with scenario-planning as suggested by Teece (2016).

5.1.3 Awareness and proactivity

Organization X's current market focus is determined by thorough research, identifying a potential legislative gap in the future where they can position themselves as first-movers. This strategy reflects an understanding of emerging trends in legislation and an intent to adapt proactively. While they acknowledge the need for customer awareness and adaptation, their approach is strategic, anticipating the implementation of various legislations to position themselves as a preferred choice for customers. This forward-thinking aligns with the evolving importance of sustainability in organizations, thus, once again, can be perceived as scenario-planning (Teece, 2016).

Their mother organization contributes significantly to technological expertise. Despite having a clear market vision, they acknowledge the dynamic nature of the market, recognizing that changes may occur beyond their control until implemented. This acknowledgment limits their engagement in market-scoping activities until there is more certainty. However, the awareness and proactive stance, although limiting immediate control, positions them effectively for future market dynamics. Subsequently, Organization X appears to be unconsciously working to avoid the catch-22 situation and enhance their marketing competence through the collaborative project with various stakeholders and thus market knowledge, addressing the competence trap (Danneels, 2007). Continuously collecting

valuable knowledge from their network, they show signs of being able to flexibly adapt to changes in the market.

5.1.4 Internal champions

The respondents from Organization X highlighted the importance of reaching a specific person, an 'internal champion,' within potential customer companies to advocate for their product and secure deals. This approach, rooted in past success, reflects a tendency to constantly refer back to past experiences and attribute their achievements to a specific formula (Weick, 1995).

Personality traits, while not fully explored in existing literature, were emphasized by Organization X, highlighting the human aspect of sales and the significance of personal connections. The networking event revealed an inclination towards body language reading, suggesting a preference for certain conversations over others, leading to observable reluctance in engaging with specific individuals. Reacting to the 'little signs', as proposed by the employees from the interviews, were therefore observed as something they were conscious of, limiting unnecessary effort put on clients not suitable.

5.2 Barriers of market-scoping

The following section highlights the findings related to barriers of market-scoping in relation to prior literature.

5.2.1 Market ambiguity avoidance

Despite satellites being recognized by the general population, there's a prevailing perception of them as exclusive to billionaires, emphasizing a lack of contextual understanding (Gruber, MacMillan, & Thompson, 2013; Shane, 2000). The challenge lies in aligning technology with customer needs, necessitating a dynamic market approach (Molner et al., 2019). Despite not knowing exactly when satellite technology will become relevant, Organization X is confident that it will happen, just a matter of time (Gruber, MacMillan, & Thompson, 2008). This expression also relates to Rindova and Petkova's (2007; Fuchs & Diamantopoulos, 2010) argument that the value of a product can sometimes only be determined once competitors enter the market. Due to lack of defined competitors for Organization X, addressing the value of their product is therefore difficult.

Organization X strategically targets three customer segments, a decision made collaboratively two years ago. Their emphasis on market complexity, with its uncertainties, aligns more with market uncertainty than ambiguity with the unpredictable nature of linking their technology to a determined market (Santos & Eisenhardt, 2009). The team's determination of satellite technology's future relevance implies a perceived future state and end-user (Molner et al., 2019), potentially limiting them from exploring alternative routes based on their cognitive framing.

Despite challenges, the team's specific focus on applying their technology to these segments underscores their pursuit of market clarity (Santos & Eisenhardt, 2009). Being initially broad in scope, Organization X's current strategy signals a shift toward focus for enhanced market clarity. This transition, indicated by empirical findings, signifies a mindset geared towards avoiding market ambiguity. Their expressed preferences and actions indicate a deliberate commitment to a defined market space for accelerated clarity (Molner et al., 2019). Moreover, explicit sayings from the interviews where words such as 'quicker' and 'easier' were used also hints towards the market ambiguity avoidance mindset.

Language usage plays a crucial role in market-scoping, with Organization X emphasizing its importance while paradoxically limiting client engagement (Molner et al., 2019). This contradiction is seen as a potential hindrance to successful market-scoping. A reason for this may be that their sensemaking process from previous engagements have gone two ways, being successful or not, therefore deriving it from these cues (Weick, 1995). The engagement workshop, initiated 1.5 years before its occurrence, was therefore observed positioned at a level deemed most sensible for the individuals involved, although the outcome hinted differently with little engagement from the customers.

Organization X's preference for niche consultancies aligns with the collaborative nature of market-scoping, acknowledging the value of external input (Molner et al., 2019; Sarasvathy, 2001). However, caution is advised in over-reliance on collaborative projects, as they may lead to illusory direction and hinder effective market-resource linkages (Molner et al., 2019). This underscores the importance of balancing collaboration with strategic decision-making to avoid pitfalls in commercialization and market success.

5.2.2 Falling for traps

While Organization X conducts thorough research and relies on co-founders' expertise, there's a tendency to overly depend on past knowledge, potentially hindering progress (Dogherty, 1992; Molner et al., 2019). The organization's focus on sustainability reporting, although perceived as a valuable market gap, may risk becoming an unconscious constraint due to overreliance on past successes. Gruber et al.'s (2008) recommendation to 'look before you leap' in technology-to-market decisions seems limited. The expression from the respondents of potentially seeking lower-hanging fruit was spontaneous, further signaling a favor for immediate returns and rushing to gain market clarity.

Individuals within Organization X exhibit a collective inclination towards familiarity, both in technology and individual interactions (Ahuja & Lampert, 2001). The preference for specific individuals within client organizations, considered 'internal champions,' reflects a reliance on past successful strategies, potentially limiting openness to diverse perspectives (Ahuja & Lampert, 2001). The networking event revealed a clear preference for 'mature' companies, reflecting a bias towards familiarity (Ahuja & Lampert, 2001).

Moreover, the tendency towards familiar approaches was evident in Organization X's hesitation to leverage new opportunities until proven successful. This may result in potentially hindering resource allocation and revenue generation leading them into a Catch-22 situation (Christensen & Bower, 1996; Danneels, 2007). The individuals expressed a favor towards leveraging their existing networks, indicating leaning towards exploitation rather than exploration which may, in line with Levitt and March (1988), result in a 'competency trap'. This routine, seemingly thoroughly established in the organization, may limit exploring alternative customers and thus paths.

Ahuja and Lampert (2001) caution against falling into the trap of searching for solutions too close to existing ones. Organization X's focus on a specific sustainability reporting concern in a collaborative project is partly done with a niche consultancy. This may risk being too narrowly tailored, potentially limiting the exploration of innovative solutions beyond established processes with insufficient input of broader knowledge, explained as vital by Teece et al. (1997) .

Additionally, alignment of attention, memory, and concepts, as emphasized by Shah et al. (2002), is maintained through weekly internal meetings at Organization X. However, the high level of individualism, while encouraging efficiency, may unintentionally restrict the organization's ability to collectively address broader problem areas.

5.2.3 Rigid routines

Due to numerous application areas available, Organization X faces challenges in market clarity. To mitigate these, they have narrowed down their scope to three segments, indicating trade-offs have been made for their paths as suggested by Teece et al. (1997). One of the respondents acknowledging a need for strategic adjustments, possibly scaling down before scaling up, suggests a realization of potential elitism in their technology, as occasionally expressed by their clients, further hindering the organization's evolution of processes, positions and paths (Teece et al., 1997). Moreover, the organization's 'ad hoc' approach to client presentations and reliance on retrospective mindset may stem from a mismatch between their market vision and the actual market response, as suggested by Prahalad and Hamel (1994).

Despite having narrowed down their scope and leaving the idea of addressing 'everyone', the expressions of the respondents revealed a frustration of needing to have an even narrower focus. This may indicate an excessive amount of 'strategizing', potentially harming them long-term (Teece et al., 1997). Moreover, Organization X reliance on past experiences, as evident in their reference to a customer engagement method created years ago and the development of personas, may possibly hinder continuous learning and adaptation from interactions (Teece et al., 2016; Weick, 1995). Additionally, responses and behavior during the workshop and event indicate a reliance on gut feelings. While reflecting on their cognitive framing positively, Organization X may need to gain further awareness of potential biases, as emphasized by Kleinaltenkamp et al. (2022).

Internal discrepancies within Organization X emerge in terms of the importance placed on aspects like culture. The struggle to align cognitive abilities, particularly regarding the significance of culture, may limit effective sensemaking and interactions (Gruber et al., 2008; Maritan, 2001; Noda & Bower, 1996). While managers at Organization X emphasize individual freedom and encourage autonomy among employees, there are indications that sensegiving activities may be insufficient. Expressions like "not trying to close every single

deal" suggest a potential gap in aligning employees with the organizational vision, despite weekly meetings designed to address discrepancies.

5.2.4 Reliance on the future state of the market

Organization X is actively deploying existing networks while striving to reshape the market in their favor, aligning with the concept of market-shaping described by Nenonen et al. (2019). They express themselves being a first-mover in this domain, emphasizing the uniqueness of their technology and viewing potential competitors more as collaborators to collectively influence the market (Nenonen et al., 2019).

The strong emphasis from respondents' expressions about future legislation being in their favor and perceiving the future market demand as an inevitable occurrence reflects the strong reliance on it. This reliance may indicate their options of favoring 'mature' customers and not wanting to collaborate with larger consultancies in fear of idea appropriation due to a perceived future market state adapting to their product.

Dynamic capabilities are crucial for firms wanting to be a first-mover, in line with Nenonen et al.'s triggering and facilitating capabilities framework (2019). Organization X's current activities, such as participating in events and associating with sustainability reporting, reflect an attempt to influence norms and representations which is a key aspect of triggering capabilities (Nenonen et al., 2019). However, in the process of bringing about these capabilities, certain elements appear to be lacking. For instance, a focus on market capture rather than value seems evident in the organization's market-scoping efforts (Nenonen et al., 2019). The expression and engagement with customers, particularly in terms of maturity and understanding, seem to be areas where Organization X may need enhancement.

The consideration of modifying their approach, starting with simpler tasks before scaling to complexity, suggests a recognition of alternative paths and opportunities. Yet, there remains an expectation that potential customers must have a certain level of understanding before fully engaging, indicating a potential gap in their approach to customer interactions and market positioning.

5.3 Individual and organizational perceptions

To help not fall for certain traps (Ahuja & Lampert, 2001; Danneels, 2007; Levitt & March, 1988), sensemaking is a vital aspect. However, signs of different priorities for the individuals within the organization, with, for example, only some highlighting the cultural issues, indicates the collective cognitive image has not been fully established. Sensemaking being rooted in identity construction (Weick, 1995) may help explain this, especially since the employees of Organization X are placed in different countries with different backgrounds. Thus, the social aspect of sensemaking may need to be further enhanced, to help the employees view their business environment in a more similar way.

Similarly, sensemaking and sensegiving being highly reciprocal (Kleinaltenkamp et al., 2022), the aspect of culture being of importance for some and others not so much indicates that the perception of the environment is individually favorable, lacking a comprehensive image. The selective nature of sensemaking (Shah et al., 2002) may help explain their different interpretations of the engagement workshop outcome, where attention and memory relates to what the individuals find most important.

Some individuals reflected on alternative strategic options although their current focus and priorities suggests a rigid focus on safer options based on thorough research and experience. Individualistic work is encouraged in the organization, however, the empowerment of each individual to impact the organization in its whole may be limited. This reveals a potential need for further cognitive alignment, bringing more empowerment to the individuals on impacting the organization's strategic goal, in line with Shah et al. (2002).

Moreover, the expressed reliance on past knowledge and methods that have proven effective showcased being highly rooted in the retrospective aspect of sensemaking (Weick, 1995). Both individuals and the organization underscore the importance of the collaborative project in which they are involved, recognizing it as holding substantial potential for growth. This also suggests a reliance on past successful approaches in their strategic considerations, limiting them to look for alternative options based on their cognitive framing (Kleinaltenkamp et al., 2022). Their way of resonating suggests they are conducting inductive and deductive reasoning to minimize uncertainty (Dong et al., 2016) leaning towards clear

answers in their environment. At the same time, though, this may result in overlooking opportunities that may be fruitful, due to their higher level of uncertainty.

Lastly, depending on different parameters and due to market-scoping not yet being proven successful or not, the sensemaking perspective works in both favors where the same quote or behavior of the organization can be perceived as both an enabler and barrier. The organization stresses the significance of client maturity in terms of sustainability, urging for a mindset shift. Thus, being able to successfully ‘give sense’ to other types of clients was not a priority due to the employees’ way of rationalizing from past experience and, perhaps, not the adequate dynamic capabilities to seize those opportunities (Teece et al., 1997). On the other hand, the same behavior can be perceived as being an intricate personal factor, where ‘internal champions’, who possess this maturity, may aid the organization’s market-scoping process.

6. Conclusion

The following section presents the study's conclusions and summarizes key findings derived from the analysis by relating to the purpose and research question of this thesis.

Subsequently, practical and theoretical implications from this are discussed (6.1 and 6.2) ending with limitations and prospects for future research (6.3).

The aim of this study was to understand and identify potential enablers and barriers for firms conducting market-scoping with early-stage technologies and how the employees make sense of this, aiming to close the defined research gaps. Drawing upon Organization X, several different enablers and barriers of market-scoping for firms utilizing early-stage technologies can be identified. Thus broadening the nascent theory development of market-scoping for early-stage technologies.

First off, the results were proven to be perceived relating to both being an enabler and a barrier of market-scoping, depending on which stance from sensemaking was adopted. Moreover, in regards to barriers of market-scoping, the results indicated that market ambiguity mindset has a large impact on market-scoping attempts, as suggested by Molner et al. (2019). Additional barriers identified were the possibility to fall for certain traps, leaning into either the familiar, mature or search for solutions near existing ones. Applying a dynamic capabilities perspective, findings suggest depending too much on the firm's processes, positions and paths may also pose a threat for the market-scoping activity. Depending on the employees ability to make sense of this and how cognitively aligned they are as an organization, this may either mitigate or enhance the chance of falling for traps identified in prior literature (Ahuja & Lampert, 2001; Danneels, 2007). Moreover, reliance on the future state of the market being perceived as something in the firm's favor may also limit exploring alternative routes, depending too much on not an *if* but rather *when* their technology will be commercialized. This indicates a 'leaning-back' approach, and not driving the market forward in their favor.

On the other hand, results found that market-scoping and the individual sensemaking of firms may benefit from drawing upon various backgrounds from the employees, deploying experiences and skills to aid exploration activities. Personal aspects, such as certain personality traits also signaled being important and may work as an enabler of

market-scoping. The expression of ‘internal champions’ indicates the rather personal aspect of market-scoping activities, emphasizing the social and ongoing aspects of sensemaking from Weick’s (1995) theory.

The key findings in this study mostly correlate with Molner et al.’s (2019) work about market-scoping for early-stage technologies, whilst the applied sensemaking perspective provides an additional image of how a firm may conduct their market-scoping activities in a beneficial manner. The link between sensemaking and market-scoping for early-stage technologies is therefore prevalent, implying that a further emphasis on this process for the organization in its whole may be beneficial. However, it is important to acknowledge the natural high subjectivity of mindset and sensemaking. Simultaneously, that is also the beauty of it, enabling a multifaceted perspective to the uncertainties with market-scoping.

6.2 Practical implications

While previous literature suggests that successful market-scoping for early-stage technologies is done with a market ambiguity acceptance mindset, I, in line with (Kleinaltenkamp et al. 2022) agree that lacking effective cognitive alignment despite managers’ efforts on sensegiving, may inhibit success. The subjectivity of interpretations from this study are highlighted when respondents showcased different views of what may be required from them to adapt to their ambiguous market and effectively scope the market. Managers' market ambiguity mindset is therefore of high relevance, although a more collective cognitive framing of a firm’s business context may need to be enhanced and explored. As the case company for this study is rather small, the effect of sensegiving is therefore a highly relevant and crucial activity, possibly having larger impact and difficulties attached in bigger organizations.

The results from this study also highlights that cognitive discrepancy within a firm may not always be limiting, as described in prior literature (Kleinaltenkamp et al., 2022). The personal connection between humans seemed to have a large impact on the case company’s previous success. As continuous learning is also an important aspect of sensemaking, this hints at firms having particular techniques to do so, and that a clear focus does not have to result in something negative.

Due to the case company of this study operating in a unique context, firms utilizing early-stage technologies might benefit from some of the identified enablers in this study whilst others not. Nevertheless, the interesting aspect of sensegiving and sensemaking being reciprocal is suggested by all organizations, especially those operating in uncertain contexts, to adopt in their daily work, fostering a culture of collective understanding. This study thus yields important managerial implications, showing the magnitude of sensemaking and what to avoid during the market-scoping process.

6.2 Theoretical Implications

Theoretical contributions of this study are based on the identified research gap and conducted literature review. Thus, as market-scoping for early-stage technologies only has begun to be theorized within marketing and management research and the effect of individuals' sensemaking in this process have been neglected. The study's main theoretical contribution therefore comes from finding additional enablers and barriers to market-scoping for early-stage technologies and analyzing them in the corporate setting of a B2B startup. Moreover, in applying the sensemaking and dynamic capabilities perspectives, this thesis was able to illuminate further aspects potentially contributing to successful market-scoping for early-stage technologies. Through this, I was able to tap into an under-researched phenomena and extend the theorization of market-scoping for early-stage technologies. The ethnographic methodology choice allowed me to dig deeper and capture things beyond what was being said in the interviews, further grasping the individual's sensemaking. Thus, my study contributes to the important yet underrepresented aspect of identifying end-users for early-stage technologies by providing aspects to *look for* and *look out for* when conducting market-scoping activities.

6.3 Limitations and prospects for further research

Aligned with my methodology, which focused on selecting interview subjects directly associated with potential customers at Organization X, my final sample is relatively limited. This approach may have resulted in the exclusion of potentially valuable perspectives from the technically-oriented employees at Organization X. Moreover, market-scoping for early-stage technologies lies in managers' mindset which is largely subjective and therefore has limitations to be observed from the outside. Although the intention to remain committed to the respondents' expressions and meanings with the chosen methodological design to limit

interviewer bias, it is important to acknowledge that subjectivity is inevitable when interpreting the findings. Thus, a possibility of highlighting certain aspects over others in the market-scoping process is acknowledged. Even so due to largely basing the findings on the sensemaking framework, being naturally subjective and individual.

Being a nascent field of research, I hope that this study will facilitate more research on adopting the sensemaking and dynamic capabilities framework in studying market-scoping for early-stage technologies. Firstly, to cover the limitations attached to this study, a relevant future research study would be a multi-case study, preferably longitudinal, uncovering more barriers and enablers to market-scoping related to various contexts. Secondly, in line with Kleinaltenkamp et al.s (2022) call for a need for more holistic perspectives of the sensemaking framework for market-shaping research, a similar research would be of interest for the novel ground of market-scoping for early-stage technologies, diving deeper into the holistic aspect of sense (sensegiving/sensebreaking). Preferably not being constrained by time limits, as with this study, being able to conduct an even more thorough ethnographic research would be interesting to reveal these aspects. Third, the linkages between market-scoping performance outcomes and eventual commercialization success were beyond the scope of this study. Future research should therefore examine the market-scoping mindset's ultimate impact on firms utilizing early-stage technologies. Such research efforts will require access to longitudinal data that provides details regarding market-scoping activities and market-level performance related to those activities.

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Appendices

Appendix A: Interview guide #1

1. Can you begin by explaining your role in Organization X?
2. What kind of things do you do to reach out to clients?
3. How do you try to engage them in different ways? Both initial encounters and throughout the contact.
4. Can you maybe give an example of encounters with clients that you think went really good and not so good, and what you think the reason was for that outcome?
5. What role do you think sustainability regulation has as a role for Organization X? Would you say it is a driver in helping the business and for you to be a first mover in various areas?
6. Can you tell me what the timeline from initial contact with a potential client to them becoming more engaged usually looks like?
7. After you've had a sales meeting or workshop with a potential client, when do they usually get back to you afterwards and what does that conversation sound like?
8. What type of clients have you met, and how have they differed in terms of understanding your product?
9. And how have they differed in terms of showing interest and engagement?
10. Now I'd like you to describe the aim of Organization X business.
11. And do you feel as though these clients that you're meeting are helping you more in your progress of what your aim is as a business?
12. And how do you feel about other clients that you have worked with? Have they also helped you towards this goal? And if so, in what way and if not, in what way?
13. Do you think the incentive is there for all types of business to engage with you? Or what do you believe is in the way, if so?
14. Do you think the selling point of satellites could have some downsides to it?
15. You've recently developed this technological tool, how have clients reacted to this? Have you gotten any particular feedback from it?
16. Do you think the tool is helping your clients understand your service better?
17. Can you tell me approximately how many workshops you've had?
18. And if you would compare these different kinds of workshops, would you say the engagements have been as high and all of them or like how have they played out differently?

19. Have you experienced that, depending on what types of people were in the room during a workshop affected the dynamic and outcome of them?
 - a. Do you believe that you could have done anything differently prior or afterwards to make the situation better?
20. Do you think that there are other things for you to engage your clients in your service other than having these types of workshops?
21. How do you see the next upcoming 5 or 10 years to look like for Organization X?
22. Where do you see the market of ESG/sustainability reporting?

Appendix 2: Interview guide #2

1. Can you tell me how many times your strategy has changed since the beginning of joining Organization X? Would you say it's still something that's in progress?
2. How do you go about deciding the target customers of your product and service?
2. How have you as a team decided which type of customers to focus on?
3. When you meet a potential customer and they don't seem to be interested, how do you decide on this? What makes you see that they are not a potential end-customer compared to others?
4. Could you explain a bit more on what you see as Organization X's business potential or potential role for this nascent market?
5. When defining a market space that you want to be present in, what are your thoughts on this? How do you go about deciding it?
6. You've mentioned potentially partnering up with consultancy firms in the future, could you elaborate this thought process a bit more?
7. Do you have a strategy for engaging your customers throughout the stages? Or is it mostly A/B testing in trying to figure out what works and what doesn't?
8. Other than giving your brand more credibility and visibility, what does a customer gain from being associated with you?
9. Can you identify specific benefits for your customers in terms of psychological and behavioral?