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**EXPLORING SUSTAINABLE BUSINESS MODEL  
INNOVATION AND DYNAMIC CAPABILITIES IN THE  
ELECTRIC YACHTING INDUSTRY: A COMPARATIVE  
STUDY OF TWO STARTUPS**

*AN EXAMINATION OF THE ROLE OF DYNAMIC CAPABILITIES IN BUSINESS MODEL  
INNOVATION PROCESSES*

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## ABSTRACT

Dynamic Capabilities (DC) have been the subject of numerous studies, but only a few authors have connected them to environmental sustainability, especially looking at their role in startups. This research aims to fill this gap by analysing the development of DC in the context of Sustainable Business Model Innovation (SBMI) processes in two young companies, Silent Yacht and Natural Yacht. Through a comparative case study, the research addresses how startups in the yachting industry develop and enhance dynamic capabilities to overcome barriers and achieve successful SBMI.

Data was collected through six semi-structured interviews with the management of the companies. Findings reveal how DC were constantly developed to support the scale-up of the businesses and to adapt to the market's developments while also helping overcome barriers towards SBMI and Business model innovation (BMI). Sensing activities were the most important in both case studies, and seizing and transforming were the subsequent steps to utilise the insights previously gathered.

The research generates awareness of the role of the underlying activities and skills included in the broad categories of sensing, seizing, and transforming during SBMI and BMI processes in startups, helping practitioners to understand what actions are necessary to handle SBMI and BMI and what barriers they will possibly face during the process.

Keywords: sustainable business model innovation, dynamic capabilities, startups, electric yachting industry, comparative study, industry dynamics.

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## INTRODUCTION

Fossil fuels are known to be a significant contributor to global warming. With 7.64 billion metric tons of CO<sub>2</sub> emissions just in 2021 (Statista, 2023), the transportation sector has been one of the primary causes of GHG emissions at the global level (Bleviss, 2021). Being reliant on fossil, the sector faces substantial challenges in reducing GHG emissions (Bleviss, 2021). Particularly in the maritime transportation sector, progress towards sustainability are just at the early stages. Despite the European Union's ambition to reach climate neutrality, there are hardly any adequate measures to achieve the necessary emission reduction in the maritime sector. While there are regulations concerning shipping (European Commission, NA), there are policy gaps present. Consequently, there are categories of high-pollution vessels, such as yachts and superyachts, which are not included in those regulations and, therefore, can keep polluting limitlessly. As concerns about climate change and environmental degradation have grown, many high-end consumers are looking for ways to reduce their impact on the planet. In response to this rising demand, over the last years a few yachting companies have begun to invest in research & development to create new types of electric vessels. Although this niche sector is still in the early stages, it is expected that the global electric boat market, and consequently the electric yachting market, will steadily increase from \$5.0 billion in 2021 to \$16.6 billion in 2031, due to more awareness of climate conservation and government regulation of air pollution (GlobeNewswire, 2022).

In this nascent niche of electric and sustainable yachting, which strongly relies on sustainable technologies, constant innovation in doing business to remain competitive and enhance sustainability is essential. This requires reconfiguring different aspects of a business, from stakeholder relationships and engagement to the firm's ordinary capabilities, which are the regular operation procedures that a company employs to make a living (Adams, Jeanrenaud, Bessant, Overy, & Denyer, 2012; Winter, 2003). Therefore, companies must aim for such

sustainability innovations, adopting changes in technologies, processes, operating procedures and practices, system thinking, and thus the overall business model (Szekely & Strebel, 2013). As also highlighted by (Bocken & Geradts, 2020), the innovation of a company's business model (BM) is essential to achieve competitive advantage while striving for sustainability. Therefore, companies can strategically choose to innovate their BM, building a Sustainable Business Model (SBM) based on the triple bottom line of people, planet, and profit. Considering a wide range of stakeholder interests (Bocken & Geradts, 2020), SBM can help to embed sustainability into business purpose and processes, embracing solutions that foster sustainability in the value proposition, creation and capture of a company (Geissdoerfer, Vladimirova, & Evans, 2018). While Business Model Innovation (BMI) is about innovating the value creation, delivery, and capture mechanism to convince customers to pay for such added value to increase profits (Baden-Fuller & Morgan, 2010), Sustainable Business Model Innovation (SBMI) can be defined as: *“innovation that creates significant positive impacts while reducing negative impacts for the environment and society through changes in the way the organisation create, deliver, and capture value or change their value propositions”* (Bocken, Short, Rana, & Evans, 2014: 44). SBMI is thus considered a vehicle to coordinate technological and social innovations with a system-level sustainability perspective (Bocken et al., 2014) while achieving competitive advantage.

However, even though Sustainable Business Model Innovation (SBMI) can lead to direct benefits, such as new revenue streams and cost savings (Bocken et al., 2014; Schaltegger, Freund, & Hansen, 2012), the process of developing and transforming business models is complex (Snihur & Wiklund, 2019). To achieve successful outcomes, dynamic capabilities are of relevance (Teece, Pisano, & Shuen, 1997), as they allow the firm to redesign the business model, leading to a coherent set of skills needed to properly address new opportunities (Teece, 2018). As Teece (2018) argued, management should focus specifically on the dynamic

capabilities of sensing, seizing, and transforming, since these are critical for the innovation of business models. Such capabilities have been the subject of numerous studies, and most academics concur that they strengthen a company's competitive advantage (Wu, 2007).

However, from the literature review, it emerged that only a small number of academics have so far connected the DC approach to environmental sustainability (Prieto-Sandoval, Jaca, Santos, Baumgartner, & Ormazabal, 2019) and even less focused on their role in sustainable startups. Moreover, literature highlighted the power of startups to introduce newness and force large actors in business fields to react and engage in sustainability-related opportunities to avoid losing market shares (Hockerts & Wüstenhagen, 2010). Indeed, market incumbents are challenged by the sustainability innovativeness of newcomers and startups, but given their stronger market power and financial resources, these companies quickly react and innovate their products and BM (Hockerts & Wüstenhagen, 2010).

In addressing these shortcomings, this paper will make use of data from two startups, since such an approach can provide more insight into the current industry's transformation. By analysing two young companies in the yachting industry, Silent Yacht and Natural Yacht, through a comparative lens, this paper aims to close the gap regarding the SBMI barriers and the key role of DC in overcoming them in startups by answering the following research question: *“How do startups in the yachting industry develop and enhance dynamic capabilities to overcome barriers and achieve successful sustainable business model innovation?”*

In the following sections, the concepts of BM, SBM, and SBMI are introduced, followed by an overview of the barriers towards SBMI and the role that dynamic capabilities play in the innovation process. Further, the methodological choices are explained in depth. The results and discussion section helps to clarify my findings and make them consistent with previous research while examining the theoretical and practical contribution of the research.

Finally, in the conclusion, shortcomings are noticed, and suggestions for further research are presented.

## **LITERATURE REVIEW**

### **The concept of business model**

Both academics and practitioners are increasingly relying on a management concept that proved useful in solving many of these challenges: the BM (Lüdeke-Freund, 2020). A BM is a conceptual tool that can be used for analysis, performance comparison, management, communication, and innovation to better understand how a company operates (Osterwalder & Pigneur, 2010). Nevertheless, the literature has different perspectives on BM: for example, Teece (2010) describes it as a tool to articulate how a company transforms resources and capabilities into economic value, whereas Beattie & Smith (2013) give a more concise and holistic description, simply framing a BM as how a firm does business. Others described it more in detail, providing a series of elements: the value proposition, resources, activities, partners, distributors channels and cost structure, and revenue model (Osterwalder & Pigneur, 2010). In Bocken et al. (2014), BM is defined by three elements: value proposition, value creation and delivery, and value capture. The first element looks at the product or service offered to generate economic revenue, even though in fields such as sustainability, it refers to the ecological or social value generated next to an economic value. Value creation describes the key activities, resources, technologies and partners involved, whereas value capture explains the business's cost structure and revenue streams.

### **The importance of business models for sustainability**

The new rising sustainability challenges, the pressure on businesses to adapt themselves, and the need to deliver long-term sustainability on a large scale require

fundamental shifts in the global industrial system (Bocken et al., 2014). A new holistic approach that goes beyond single eco-efficiency initiatives, generating deeper changes that tackle the root causes of problems, is needed. Innovative BM framed around sustainability can help determine what is needed for a business's success and what are the capabilities and resources to acquire, combine, and utilise. Lüdeke-Freund (2020) describes how sustainable innovations combined with BM designed on sustainability can create or extend business opportunities. Transferring the notion of BM as a mediating device, or conceptual tool, that allows the creation of new value with technologies and other innovations to the field of sustainable entrepreneurship, BM could also support the creation of ecological, social, and economic value (Lüdeke-Freund, 2020). The BM concept can be seen as a way to develop new opportunities for sustainable entrepreneurs (Charter, Gray, Clark, & Woolman, 2008) and as a tool to incentivise organisational development (Stubbs & Cocklin, 2008).

Combining literature, Schaltegger, Hansen, & Lüdeke-Freund (2016: 268) developed the following definition of SBM: “A *business model for sustainability helps describing, analyzing, managing, and communicating (i) a company's sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries*”. Bocken & Geradts (2020) describe this type of BM as built on the triple bottom line of people, planet, and profit, considering a wide range of stakeholder interests, including the environment and society. They can serve as a vehicle to coordinate technological and social innovations pursuing sustainability at a system level (Bocken et al., 2014), helping to embed sustainability into business purpose and processes. Moreover, as Lüdeke-Freund (2010) describes them, through superior customer value, they are a key driver to achieving competitive advantage while contributing to the sustainable development of the company.



Nevertheless, adopting such a model comes with difficulties, and one of the main challenges is to design the BM in a way that ensures a firm to be able to capture economic value through delivering social and environmental benefits (Schaltegger et al., 2012). Indeed, it is often not clear how generating social and environmental values is linked to profit and to the achievement of competitive advantage. However, the attention of the literature towards these topics suggests the importance of the BM framework for driving sustainability innovation forward (Boons & Lüdeke-Freund, 2013).

### **Sustainable Business Model Innovation**

Both the concepts of BM and BMI have received substantial attention in literature, and it is increasingly thought that BMI is fundamental to achieving business success (Chesbrough, 2010; Lüdeke-Freund, 2010). This is in line with Mitchell & Coles (2003), who explain that a company's capacity to innovate BM often and successfully can enhance its ability to adapt to environmental changes and provide a long-lasting competitive advantage. It is possible to describe BMI as a process of innovating the value creation, delivery, and capture mechanism to convince customers to pay for the added value created and increase the company's profits (Baden-Fuller & Morgan, 2010).

However, even though BMI is an effective process to achieve economic benefits, releasing, for example, the full potential value of technology (Zott, Amit, & Massa, 2011), it is not very effective in addressing environmental issues (Guo, Cao, Qu, & Tseng, 2022). In response, the concept of SBMI has become prominent in practice and literature (Ulvenblad, Ulvenblad, & Tell, 2019). Indeed, SBMI, which is about changing the way business is conducted by combining societal and environmental concerns into core business procedures (Massa, Tucci, & Afuah, 2017), increases not only revenue sources and competitive advantage but also advances social and environmental goals. SBMI can be defined as: "*Innovations that*

*create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organisation and its value-network create, deliver value and capture value (i.e. create economic value) or change their value propositions.”* (Bocken et al., 2014: 44). It is thus considered a vehicle to achieve competitive advantage while coordinating technological and social innovations with a system-level sustainability perspective (Bocken et al., 2014). As a matter of fact, to solve the complex challenges that separate our society from a sustainable future, innovation cannot just counteract the negative effects of a business but needs to tackle unsustainability systemically and at its source, changing the core of the BM (Bocken et al., 2014). As explained by Schaltegger et al. (2016), SBMI contributes to generating deep and long-lasting change in industries since it has the power to broadly shape markets and society, influencing other businesses, NGOs, and regulatory actors about how to tackle complex issues such as climate change and poverty.

### **Barriers towards Sustainable Business Model Innovation**

Sustainable entrepreneurs, described as individuals who align or create a business model with sustainable innovations to succeed and create value for stakeholders (Lüdeke-Freund, 2020), face many barriers along their way (Kiefer, Del Río González, & Carrillo-Hermosilla, 2019). Among those barriers, uncertainty about whether they can build successful businesses based on their innovations (Schaltegger & Wagner, 2011) is the most important. Literature has emphasised the necessity for firms to adapt BMs in response to market shifts and the emergence of new opportunities. However, organisations face multiple obstacles in their attempt to react to such external events (Cederholm Björklund, 2018). Specifically, given the broad notion of value of innovation towards sustainability, including environmental and social values and not only focusing on economic goals as standard BMI, SBMI is to be considered highly complex (Snihur & Wiklund, 2019). One of the main difficulties is designing or

innovating BMs in a way that enables the company to capture economic value while also providing social and environmental benefits (Schaltegger et al., 2012). Since sustainable innovation is not always economically profitable in the beginning stages, many businesses do not see the long-term opportunities and do not welcome it due to fear of failure, even though it may become profitable in the future due to societal or regulatory changes (Bocken et al., 2014). Although management meetings regarding SBMI are conducted, ideas are often not followed up, and even the most promising SBM concepts are usually not implemented or later fail the market (Geissdoerfer et al., 2018). Therefore, companies' leaderships face cognitive barriers towards SBMI, either not recognising new opportunities or being unwilling to make the necessary changes (Engelken, Römer, Drescher, Welp, & Picot, 2016). Geissdoerfer et al. (2018: 408) describe this implementation gap as: *“the set of challenges that prevent organisations from successfully innovating their business model, due to insufficient follow-up on ideas, lack of implementation of concepts, and failure of businesses in the market.”*. Therefore, even though SBMI can lead to possible different benefits, companies face different obstacles during the development of SBM.

Laukkanen & Patala (2014) highlighted several barriers, which can be grouped into three main categories: Firstly, regulatory barriers, emphasising the importance of regulatory bodies and the need for supportive economic incentives and increased legislative pressure; secondly, market and financial barriers, given the high uncertainty for long-term planning and the preference for short-term profit maximisation, which cause businesses to stick to their current form and BM, maintaining the status quo; finally, behavioural and social barriers, which focus on the organisational culture, the leadership and management of the company, and the overall lack of motivation in adopting a SBM caused by a lack of risk-taking and a lack of consumer/customer acceptance. These barriers are considered obstacles to pursuing

technologically-oriented, social-oriented, and organisational-oriented SBMI, referring to the archetypes proposed by Bocken et al. (2014).

Technologically oriented innovation refers to pollution control, maximisation of material and energy efficiency, creating value from waste, and substituting with renewables and natural processes (Bocken et al., 2014). The primary obstacles for technologically oriented SBMIs are perceived to be a lack of strict and clear legislative pressure to face resource scarcity, economic incentives to support clean production methods and technologies while sanctioning unsustainable ones, and a lack of awareness and understanding of the need for new partnerships across industries and new business models (Laukkanen & Patala, 2014). In the yachting industry, technological barriers are those businesses mainly face, as their BMs are primarily oriented on technical aspects, and their aim is to improve the available technologies constantly.

Regarding socially oriented SBMI, which refers to delivering functionality rather than ownership, adopting a stewardship role, and encouraging sufficiency, a lack of consumer acceptance, followed by a lack of economic incentives and short-term profit maximisation, are the main blockers (Laukkanen & Patala, 2014).

Furthermore, for organisational oriented SBMI, which aims to re-purpose the business following social or environmental targets and developing scale-up solutions (Bocken et al., 2014), the main hinderers are considered to be attitudes, values, and lack of awareness and understanding, which stop the business from focusing on long-term strategic planning (Laukkanen & Patala, 2014).

### **Dynamic capabilities**

The DC perspective, which focuses on how businesses may adapt to changing circumstances by rearranging their current resources and skills, has become essential to

strategic management over the past two decades (Eisenhardt & Martin, 2000; Teece et al., 1997). DC can be defined as: *“the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments”* (Teece et al., 1997: 516). Teece (2007) divided DC into three different groups: sensing, seizing, and transforming: for businesses to be able to proactively reposition themselves to confront newer threats and opportunities as they occur, businesses must be able to continuously sense and seize possibilities as well as proactively modify organisational and cultural characteristics (Teece, 2018). According to Jantunen, Ellonen, & Johansson (2012), sensing capabilities are related to scanning and exploration activities in the market to create knowledge and recognise emerging opportunities. Seizing capabilities are the procedures and processes that incorporate and assimilate the knowledge gained from new market possibilities, and transforming capabilities are processes and routines used by businesses to combine their resources and operational capabilities (Jantunen et al., 2012).

Developing DC is vital to leverage the value of a company’s stakeholders (Loi, 2016; Teece, 2007; Tseng, Tran, Ha, Bui, & Lim, 2021), building and renewing resources, assets, and general capabilities (Teece, 2018), and facilitating changes in the resource base (Schilke, 2014). Thus, DC are indispensable for innovating and responding to new developments in the market (Teece, 2018). Moreover, DC are also considered crucial for companies to pursue SBMI and achieve positive outcomes (Inigo, Albareda, & Ritala, 2017; Sommer, 2012). Nevertheless, the role of DC in overcoming SBMI barriers in startups has not been studied extensively, making it a nascent state of theory (Edmondson & Mcmanus, 2007).

In the context of SBMI, sensing entails businesses learning about and evaluating new environmental challenges as potential business opportunities (McWilliams & Siegel, 2011), exploring new technological opportunities, and examining potential applications of new technology through a "green lens" (Castiaux, 2012). In this way, sensing helps companies to

obtain information about environmental and social challenges and provides solutions for sustainable innovation (Mousavi, Bossink, & Van Vliet, 2018). By converting such possibilities into SBMI opportunities, seizing entails mobilising resources to address emergent (sustainability) opportunities and capture the related benefits (Teece, 2018). Many factors can influence this process, such as upper management's commitment, presence or creation of a collaborative network, and appropriate knowledge flow inside and outside the organisation (Dangelico, 2016). In fact, to take advantage of opportunities for sustainability, businesses must collaborate with multiple external partners to a greater extent than they would with conventional innovation (De Marchi, 2012; Marzucchi & Montresor, 2017). Finally, to face new dangers and possibilities, the ability to transform is essential, allowing a company to be flexible and ready to adapt business models, methods and organisational culture (Leih, Linden, & Teece, 2015). This ability indicates the company's effectiveness to adjust in rapidly changing environments, achieving competitive advantage (Teece, 2007). Regarding SBMI, transformation entails putting new sustainable business model concepts into practice as well as the deliberate, continual renewal of an organisation's capabilities (Teece, 2018). Therefore, DC are not to be considered necessary for BMI but also equally vital for SBMI, given the complexity and the obstacles of the process (Pieroni, McAloone, & Pigosso, 2019).

## **METHODOLOGY**

### **Comparative case study approach**

This study employs a qualitative research approach, entailing a comparative case study. The role of DC in overcoming SBMI barriers in startups has not been studied extensively. Hence, given the study's exploratory nature and the aim to acquire a profound understanding of the phenomena, a qualitative research approach is the most suitable (Edmondson & Mcmanus, 2007). Particularly, case studies are an appropriate tool to examine and yield in-

depth insights into complicated phenomena (Lapan, Quartaroli, & Riemer, 2012). Comparative studies' main objective is to identify points of differentiation and similarity by examining how phenomena present themselves in various contexts, such as systems, cultures, and markets (Esser & Vliegenthart, 2017; Hantrais, 1996; Miri & Dehdashti Shahrokh, 2019). This allows the researcher to compare and contrast the findings derived from each of the cases (Bryman, Bell, & Harley, 2019).

### **Case selection and description**

The two selected cases are exemplary as they are successful forerunners in the yachting industry and given the strong innovation that has driven the companies since their nascent stage. The first company analysed in this thesis is Silent Yacht, a yacht manufacturing company located in Austria, founded in 2009 by Heike and Michael Köhler. With sustainability at the core of the business model, the company is specialised in the production of solar-powered, emission-free luxury catamarans. The second company is Natural Yacht, a smaller business located in the north of the Netherlands, founded in 2010. The company offers, which offers a complete line of luxurious 100% electric sailing and motor vessels equipped with the latest technologies. The company is committed to accelerating the transition towards zero-emission in the yachting industry, making green boating comfortable and accessible. Given the different sizes, different clientele, and different locations of the two businesses, it was possible to identify differences and similarities across the two different contexts, enhancing the analytical generalizability of the research.

### **Data collection**

Semi-structured interviews were conducted as it is a data collection method that helps gather insight into novel phenomena (Dane, 2011) and understand them in-depth (Harrell & Bradley, 2009). To facilitate the comparison between the selected cases (Patton, M. Q., 1990)

a purposeful sampling method was chosen, ensuring that each case adhered to specific criteria. Therefore, only management and C-level people were chosen as they are involved in strategic and transformational processes. Additionally, a cross-departmental perspective was taken to gain a holistic view of the process, ensuring that the interviews were conducted with members of different departments. Regarding Silent Yacht, members of the technical, commercial, and innovation departments were selected, whereas for Natural Yacht, given the company's small size, multiple interviews were conducted with a single management team member who covers multiple positions in different departments. The participants of Silent Yacht were contacted through the help of the company's Head of Engineering, the researcher's contact person within the company. In contrast, the interviewee of Natural Yacht was contacted by the researcher via LinkedIn.

The interviews were conducted in April using Google Meet and lasted, on average, 40 minutes. Previous studies have highlighted no repercussions on the quality of online interviews compared to face-to-face interviews (Salmons, 2014). Based on the literature about SBMI barriers and DC the researcher developed a semi-structured interview guide, open enough for serendipitous findings. The questions were adapted to the different roles that the interviewee covered in the companies. The questionnaire followed a funnel technique, asking broad open-end questions before introducing narrowly scoped questions about the SBMI process and DC.

To ensure the interviewees' consent, a consent form to be signed to express agreement was sent to each participant before the interviews (Lune & Berg, 2017). The consent form and the interview transcripts are available in an [online folder](#) shared only with the interviewee and the supervisor. Moreover, after conducting the interviews, the transcription was shared with the participants for approval.



## **Data analysis**

The interviews were transcribed with Otter.ai, and the data was coded using ATLAS.ti, a qualitative data analysis software that will enhance the efficiency and transparency of the procedure. Through an iterative process and a grounded fashion approach, 1<sup>st</sup> order, 2<sup>nd</sup> order, and 3<sup>rd</sup> order themes were developed (Bryman & Bell, 2007), following an elaborative coding scheme, considering sensing, seizing, transforming, and SBMI barriers identified in literature as sensitising concepts to guide the analysis of the interviews (Auerbach & Silverstein, 2003). To analyse the collected data, the researcher started by coding the interview considered as the most illustrative regarding barriers and the use of DC. Using the first interview as a guideline, the other interviews were coded. Multiple rounds of coding were developed, and the codes have been refined and adjusted, identifying finally 40 1<sup>st</sup> order codes. Those 1<sup>st</sup> order codes were later summarised in 12 second-order themes. Afterwards, the 2<sup>nd</sup> order codes were further grouped into 5 aggregated dimensions. These procedures led to the development of a coding tree, which can be found in the appendix (appendix C), together with an overview of all the quotes used during the coding process.

To ensure the quality of research, literature on the topic has been carefully researched and collected to ensure credibility; a comprehensive method section and rich descriptions have been provided to ensure replicability and transparency; and the researcher has been aware of any possible bias to ensure validity (Bryman & Bell, 2007). To prevent any ethical issues, the study adheres to the code of conduct of the University of Groningen.

## **RESULTS**

This section presents the findings of the study. The data suggested the presence of different barriers towards the innovation of the BM, which can be found both at the internal and external levels in each one of the two companies analysed. Moreover, the data suggest a

wide range of activities undertaken by both companies during innovation processes, which have been grouped into sensing, seizing, and transforming activities, following the literature on dynamic capabilities. The findings will be discussed per company, among the five categories of internal barriers, external barriers, sensing, seizing, and transforming.

## **Silent Yacht**

### *Internal barriers.*

The company faces important resource-related barriers while implementing technical innovations in its products. The interviewees stressed the complex requirements of the production process of the boats, which make the development of the end-product difficult. For these reasons, the company uses external collaborations to have more resources available. Constraints are also related to materials and the hull's structure. Indeed, some materials are not yet sustainable, and experts are still working on improving the deficiencies. Moreover, the boats present rigid parameters, and any innovation must fit into such rules of the structural configuration. Thus, implementing radical changes is almost impossible. Such problems are also increased by two factors: financial and time constraints. One interviewee pointed out how they cannot develop any prototype to test the innovations, since each would cost millions of euros. Finally, time constraint is perceived as the most important hindrance to the development and implementation of innovations.

*"it is just a question of finding the time introducing, or either introducing a new model, which will expand on our sustainability model, or finding the time in our production line to re-develop a redesign of the boat that needs to be completely re-engineered, obviously, the materials are different.."*

As other interviewees mentioned, long-term changes have to be calibrated with the short-term production line. In this situation, the company struggles to integrate innovations in the production line, especially without disrupting existing systems, and to keep up with the rising market's demand. At the organisational level, the company faces mainly internal disagreements on technical developments.

*“we are trying to implement some changes as well is finding a better solution for the gearbox... the CEO doesn't like gearboxes, for example. So we usually fitted very big engines without the gearbox. But if you fit a gearbox, you can actually have much smaller engines.”*

Furthermore, the feeling is that governments are not aware of their products and that the company is still too small to be taken into consideration and have the power to enter into a dialogue.

#### *External barriers.*

Regarding external barriers, industry experts are still sceptical, and a lack of awareness among them was mentioned. Nevertheless, the interviewees feel that they have generated a change in the industry and that now the competition is rising. The risk is a spillover effect of knowledge and techniques and the availability of experts, which must be retained in the company. Moreover, regulations are still in the early stages or non-existing, and their development could benefit the company and its market. From the customer side, client demands are seen with a negative eye from a technical perspective since they have bad effects on the engineering of the boats.

*“in the last few years, it (the change) has maybe not been driven by engineering, but it was more like by customer demand, which also had bad effects for the engineering*

*side because in the in the beginning it was mostly about developing the technically best solar electric yacht.”*

Moreover, the interviewees reported how there are a lot of customers who do not believe in the concept of electric boats and how it is thus necessary to better educate them, clearing doubts.

### *Sensing.*

Sensing activities are extensive and mainly aimed at supporting constant research of innovations to ensure the availability of the best technologies, improving techniques and material efficiency. Gathering accurate technical knowledge is vital, and the company uses different sources considered reliable. Data suggested the importance of looking outside the standard yachting market for new opportunities and gathering insight and collaborators from other industries.

*“To be able to drive the change, therefore, you rely on other markets, which is, in this case, the car industry, to be able to use that technology and bring it into the nautical world.”*

Whereas the interviewees have different methods to gather personal knowledge, such as academic publications and industry fairs, client feedback was mentioned by all the interviewees, considering it vital for integrating innovations and improving the product. Moreover, regulations are constantly monitored to better understand the current situation and possible future changes, as well as the current market trends and any change in the yachting industry, both in technology and mentality. Sensing activities also help to find and evaluate possible collaboration to establish, both with suppliers and other yacht builders.

### *Seizing.*

Seizing activities are also widely undertaken and range from the development of new resources, such as solar panels on production facilities and a new electric fleet of cars, to the mobilisation of financial resources for future projects. At the same time, the interviewees stressed the importance of acquiring new skilled workers with industry experience, both in production and research and development, and the use of external collaboration as important resources to improve the efficiency and the sustainability of the products. Internally, clear and horizontal decision-making processes have been established to improve the development of the company, and interdepartmental collaboration and knowledge sharing are now considered important resources.

*“We started working as a group, and we started to receiving requests from the people actually working in our organization for setting up processes and procedures for having a better involvement throughout the lifespan of the product.”*

Moreover, resources are constantly mobilised for the evaluation of new opportunities previously sensed and to understand if they are truly something positive for the company and the product itself. New technical tools, such as 3d modelling and data accumulated in different tests, are now used. Finally, integrating insights from both customers and the yachting industry is seen as an important tool and as a resource that is helpful for the learning process.

### *Transforming.*

Transforming activities follow the company's scale-up, which expanded through different channels to grow faster and attract more customers. The interviewees mentioned how the company keeps transforming, always following the market and client requests based on the trend of the industry. Nevertheless, the interviewees mentioned how the company's goal and vision remained unchanged. The adaptations and transformations are always according to the

initial vision of creating the first truly sustainable yacht. While growing, the company had to reconfigure itself internally, develop new departments and change the company's structure, and develop better processes and communication between departments.

*"We started working as a group, and we started to receive requests from the people actually working in our organisation for setting up processes and procedures for having a better involvement throughout the lifespan of the product."*

Regarding the production process, the procedures are now more standardised than before, cutting down time and costs and transforming it into a lean production line. Furthermore, the interviewee of the sales department mentioned how the marketing strategy keeps changing and adapting, always following the market requests and adopting new solutions to clear doubts and convince more potential customers. Finally, the company always tracks the impact of the innovations with technical lenses, measuring the saving in materials, time and improvements in the auto sufficiency of the boat.

## **Natural Yacht**

### ***Internal barriers.***

The company faces fewer internal barriers compared to Silent Yacht, and the hurdles are only resource-related. As in the other case study, the company experiences strong time constraints, both in the production process and marketing activities, and difficulties in integrating innovations in production.

*"The approach of integrating knowledge really takes a long time. It's not from today to tomorrow. So sometimes new projects takes times in a period of two or three years. Regarding fuel cell technology, that's something we started, I think, three or four years*

*ago, we really did working together with the universities, and now we are in the implementation phase. So it's, it's hard and really takes long time periods."*

To deal with such constraints, as in Silent Yacht, the company began to rethink and standardise procedures to save costs and time while also attending fewer fairs and events, focusing on a different marketing strategy. The interviewee also mentioned how the company has a relatively small budget, and thus the testing and implementation focus only on smaller vessels to save money.

#### *External barriers.*

Regarding external barriers, the company is mainly limited by regulations that are not yet updated or supportive. Furthermore, the interviewee felt it would still take a long time for them to improve and change. Difficulties also emerged from a lack of client awareness regarding the dangers of a diesel engine, the positive impact generated by an electric vessel, and a lack of industry partners' awareness, which are still to convince together with the end consumer.

*"It's not something we have to convince ourselves... but we still have to convince partners and the end consumer."*

Moreover, the company faced problems in marketing its products online since many websites could not advertise them properly. The company had to start working with online platforms to implement better solutions. Finally, another obstacle is the electricity price and the lack of charging stations in the North Sea, which made the company adopt fuel cell technology on the boat to make them more self-sufficient.

### *Sensing.*

Sensing activities are similar and equally extensive to the ones undertaken by Silent Yacht. The company is well aware of the industry's changes and constantly monitors regulations and market trends.

*"We see that is a better investment to invest now in new boats with electric drive trains, compared to those with diesel drive trains."*

The company is constantly working to develop new techniques, and research and development are a non-stop practice to increase efficiency and sustainability. Technical knowledge is gathered in different ways, although data from the systems on the boats and client feedback are considered the most important source by the interviewee. Moreover, insights are gathered from collaboration with Dutch technical universities and other businesses and by looking at different industries, such as the automotive industry.

### *Seizing.*

Seizing activities are mainly focused on mobilising and acquiring new resources. The interviewee reported that they now possess more in-house skills, being less dependent on external people. Nevertheless, the company also heavily relies on external partners, both businesses and universities, to integrate new technologies and improve existing ones. The interviewee reported that they also joined an advisory board at the European level to better influence new regulations.

*"So it's also helping each other, and we learn from them, they learn from us how to build boats, how to maintain boats, and how to improve and integrate new concepts."*

Thanks to these collaborations, the company developed a most valuable resource: a new fuel cell system to produce electricity onboard, creating a self-sustained boat while solving the



barrier of the electricity price and the lack of charging stations. Moreover, together with internal resources such as the charter fleet, collaborations are also useful to evaluate innovation opportunities to implement. Internally, as Silent Yacht, the company decided to be a flat organisation, collecting useful ideas from the employees and being more flexible in the production process. Finally, the interviewee highlighted how important resources for integrating changes in the boats come from other partners and clients, providing insights to improve the products.

### *Transforming.*

Transforming activities, as in Silent Yacht, are not extensive and clearly defined. However, the data suggests they follow market trends previously identified to get more awareness and attention, aiming at a scale-up of the business and becoming more independent from outside stakeholders.

*“The focus at the beginning was on the bigger vessels that are sailing from Rotterdam up north, and back and forth. And later on, the focus was more on the recreational branch because of the larger investments and attention.”*

While doing so, the company changed its structure and developed new departments following the scale-up. The company also changed its strategy in the market after the level of exposure on the market has risen, focusing now on smaller events and personal time with clients. It also uses the charter fleet for marketing its products while gathering technical insights. Moreover, as Silent Yacht, the interviewee mentioned how the procedures had been standardised, saving time and costs.

*“Now we know exactly what people want, they can just yeah, they can just click on all the options they want. It is more standardised now.”*

Finally, to track the impact of the technical transformations, the company measures how much Co2 has been saved thanks to their products, using this information also to receive more market awareness.

## **DISCUSSION**

This section will integrate the findings with the academic literature previously described, analysing the ongoing processes related to DC activities and linking it with the barriers faced by the case companies during the innovation of their BM.

Firstly, the study contributes to DC literature by generating awareness of the role and importance of the underlying processes, skills and organisational activities included in the sensing, seizing, and transforming categories, making a clear connection between these vague concepts and their concrete application in BMI and SBMI processes in two startups in the yachting industry. Secondly, the study helps practitioners in the industry to understand better what actions have to be taken to successfully handle SBMI and BMI processes to achieve competitive advantages, clarifying what barriers are possibly to be faced.

### **Innovation processes**

Regarding innovation processes, the data shows how both companies have been developing innovative sustainable products for the market since their beginning and did not transform their products later. The (sustainable) value proposition remained the same, and none of the two companies experienced radical transformations of the business model towards sustainability. Nevertheless, from the interviews, it emerged that both businesses, even though they are producing sustainable vessels and aiming to reduce environmental pollution, are extremely market-oriented, aiming at satisfying market demands, constant growth and financial benefits. Thus, the companies did not experience profound SBMI but aimed mainly at

increasing the sustainability performance of the boats and their production processes regarding material and energy efficiency to improve their position in the market, achieving competitive advantage. Competitive advantage involves a company's ability to constantly adapt and innovate internal resources and capabilities to face external changes in the market, sensing and seizing new opportunities (Teece et al., 1997).

Taking as a guideline the archetypes of Bocken et al. (2014) to clarify the innovation activities of Silent Yacht and Natural Yacht, the focus of the SBMI was on what the author describes as technological archetypes, whereas adopting solutions categorised in the social or organisational archetypes were not a goal to achieve by the companies. However, given the dimension of the niche electric luxury yachting market and its wealthy clientele, it is difficult to envision that any transformation will occur regarding the inclusion of social or organisational archetypes, such as encouraging sufficiency or repurposing the business for the society. Overall, the outcomes of these technical innovation processes were only incremental innovations (Johannessen, Olsen, & Lumpkin, 2001), whereas radical transformations towards sustainability were not observed. At the same time, driven by market demands, the companies also engaged in BMI, which is known as a fundamental activity to achieving business success (Lüdeke-Freund, 2010) and increasing the company's profit (Baden-Fuller & Morgan, 2010). These activities aimed at gathering knowledge and resources to support the scale-up of the businesses, expanding the operations while improving cost and time management.

### **The role of dynamic capabilities**

As highlighted by literature, DC are vital both for BMI and SBMI (Pieroni et al., 2019), and in the two case studies, such activities were extensively used to achieve successful outcomes. Even though it is thought that deploying DC is helpful to generate breakthrough innovations (Lavie & Rosenkopf, 2006), in the two case studies, sensing, seizing, and

transforming activities were not used to support radical reconfigurations of the business model, but to adapt it to new opportunities on the market, improving the end products, the sales and the production processes, and consequently the market position of the companies. The companies constantly engaged and balanced a process of exploration and exploitation of new opportunities (March, 1991), and DC were used to continuously look for such improvements, also linked to gathering and implementing sustainability related changes. Indeed, regarding SBMI, DC helped gather information and adapt processes, especially concerning efficiency improvements and new technical solutions on the boats and in their production processes. Thanks to DC, the companies engaged in extensive research through different channels, such as customers, industry experts, universities, suppliers and other businesses, collaborating with them for resources or for gathering insights to be in a winning position on the market. Moreover, thanks to external collaborations, even if the companies were unfamiliar with new technologies, the limited experience did not cause any problem in exploiting the newly discovered opportunities (March, 1991) due to the expertise of the collaborators. Furthermore, internal knowledge was already extensive, and the companies' skills helped in the learning process and in integrating insights.

Nevertheless, the transformations, especially toward sustainability, were moderate and incremental, always linked to improving products and operations to enhance financial profit and sales. This can be explained because the most radical step was already taken by both companies in their nascent stage, when they decided to diverge from the traditional market by presenting a unique and different product. Therefore, both companies developed a SBM and a strong sustainable value proposition, which is the core of any SBM (Laukkanen & Tura, 2022) since their beginning, and nowadays, only minor improvements can be implemented in the BM.

However, DC were not only used to explore new opportunities, whether or not related to sustainability, but were also vital to identify and overcome different barriers that the

companies have found themselves facing in production processes, sales and customer relations. The two companies faced both internal and external barriers, even though with some dissimilarities, due to the differences in the context, size of the company and customer base. Indeed, Silent Yacht is a well-developed business that, in the last years, scaled up quickly and adapted internally to overcome the difficulties of such a process. In contrast, Natural Yacht is still run as a family business and, therefore, did not face the same constraints. Moreover, Silent Yacht products are more expensive and aimed at a more exclusive market. These characteristics resulted in a constraint that Natural Yacht did not face, given the more substantial power of clients' requests and their destructive effects on the product's engineering. Looking at the barriers that Laukkanen & Patala (2014) highlighted regarding technologically oriented SBMI, none of the two businesses faced the constraints mentioned by the authors: even though the regulatory change highlighted by the authors is recognised as necessary, it is not perceived as a barrier concerning resource scarcity. The main issue is an external lack of support from governments and their lack of awareness about the new technological developments, which are always regulated with delay. One of the two companies engaged in lobbying efforts at the European level in response to this situation, trying to speed up the regulation change. None of the interviewees mentioned the need to receive economic incentives from governments, as highlighted by Laukkanen & Patala (2014), and both were also already perfectly aware of the need for new partnerships across industries. Indeed, the barriers were mainly related to the difficulties and complexities in the production process, faced via internal reconfigurations and the development of new resources, and a lack of awareness in the industry, which the company are addressing by constantly trying to convince experts and customers. It is only thanks to the constant processes of sensing opportunities and gathering new information, acquiring and mobilising resources, and transforming the business operations that the companies were aware

of the wide range of internal and external barriers faced in the process and could implement new solutions accordingly.

Nevertheless, DC were not only related to the presence of barriers but were constantly developed also to support the scale-up of the business and to adapt to new development in the market (Teece, 2018). The companies did not engage in DC activities only because they were facing barriers but because the management sensed opportunities and mobilised resources for rapid changes. Therefore, DC activities were also necessary for the development of both companies, especially for gathering useful knowledge to improve business operations. Sensing activities related to scanning and exploring the market (Jantunen et al., 2012) were the most useful in preventing possible barriers by monitoring market trends and regulations and looking for partnerships inside and outside the yachting industry. Thus, sensing was valuable for gathering new insight and being in the industry's loop, providing solutions for sustainable innovations (Mousavi et al., 2018), and avoiding barriers related to a lack of information about technologies, competition, and regulations while finding new resources in external partners. As mentioned in literature, to take advantage of sustainable opportunities, companies need to collaborate with numerous external partners (De Marchi, 2012), and external collaborations were, in fact, the most crucial resource for the two companies to face the complexities of the production process better, while also gaining the best technologies available on the market. Seizing activities, aimed at assimilating the knowledge previously gathered (Jantunen et al., 2012), were strictly connected to sensing both new opportunities and barriers and were the necessary step to make use of what was learned in the first place to improve the procedures and scale up the business. Transforming activities, as previously mentioned, were not radical or extensive but more focused on taking the necessary measures to adapt the operations to the scale-up in the market and overcome the technical barrier both companies faced in production.

Therefore, DC have to be considered as constant activities that were always undertaken in the companies, necessary both for overcoming barriers towards SBMI and BMI and to align the company with market needs (Drnevich & Kriauciunas, 2011), contributing to its survival in uncertain and rapidly changing environment (Teece, 2014).

## CONCLUSION

The overall goal of the study was to generate a better understanding of the relationship between DC and the achievement of successful outcomes of SBMI processes in startups, answering the following research question: *“How do startups in the yachting industry develop and enhance dynamic capabilities to overcome barriers and achieve successful sustainable business model innovation?”*

By developing a comparative case study and collecting six interviews with two companies in the yachting industry, the research question has been answered. A transdisciplinary approach was developed in order to work together with the two organisations and gain a comprehensive understanding of the internal processes of both companies, collecting data cohesively and logically. The data indicated how, in conclusion, sensing activities were the most important DC in both case studies, and seizing and transforming were the consequent actions to be taken to make use of the various insights gathered, allowing the companies to adjust to the rapidly changing market by building and renewing resources while overcoming barriers towards SBMI and BMI. Therefore, DC were not only beneficial in overcoming barriers towards the technologically oriented SBMI and BMI pursued by the companies but also in exploring and exploiting new opportunities, supporting the reconfiguration of existing resources for the scale-up of the businesses and adapting to market requests.

Concerning the limitations, the study is not generalisable because of its qualitative nature and the selection of only two companies in the yachting industry, even though the key

insights regarding the role of DC may have relevance for other actors in the yachting industry. Additionally, due to the interpretive nature of qualitative research, subjective components cannot be entirely excluded. Regarding the interviewing process, data collection was complicated by the gatekeepers' lack of commitment throughout the months of the research. Even though this did not result in a limitation with the company Silent Yacht, it was only possible to interview only one member of the board of Natural Yacht, whereas the other possible participants refused to be involved in the project. Moreover, the interviews were conducted in English, although none of the interviewees held it as their mother tongue. Finally, both the selected companies were already sustainable-oriented from their nascent stage, and the SBMI processes were aimed just at minor improvements and not at radical reconfigurations of the BM. Nevertheless, this could also be due to the limited amount of time available for the collection of data.

Considering this study as a starting point, future research on the topic could be developed by conducting a longitudinal study focusing on the long-term dynamics between SBMI and BMI processes and the role played by DC. Another suggestion would be to include a larger number of actors, considering not just sustainable companies but also those actively working towards sustainability as well as those who are not sustainable, to have a clear picture of their business ecosystem. It may be beneficial also to include established actors in the industry to see if newcomers such as Natural Yacht and Silent Yacht actually have the power to change the industry's standards. Other stakeholders, such as suppliers and governmental entities, could be included to get a more holistic understanding of the relations between companies and external actors. This would allow the collection of a significant amount of data and the development of a more robust analysis of the industry dynamics, generating a better understanding of the role played by DC in innovation processes.



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## APPENDIX

### A) Consent form and Information sheet



#### INFORMATION SHEET

“HOW DO STARTUPS IN THE YACHTING INDUSTRY DEVELOP AND ENHANCE DYNAMIC CAPABILITIES TO OVERCOME BARRIERS AND ACHIEVE SUCCESSFUL SUSTAINABLE BUSINESS MODEL INNOVATION?”

Thank you for your interest in participating in this research. This letter explains what the research entails and how the research will be conducted. Please take time to read the following information carefully. If any information is not clear, kindly ask questions using the contact details of the researchers provided at the end of this letter.

#### What This Study Is About?

- The purpose of this research study is to identify the most prominent barriers towards SBMI faced by startups in the yachting industry, focusing on the dynamic capabilities' positive influence on the process.

#### What Does Participation Involve?

- The interview will be conducted online with the researcher.
- The interview will take between 30-60 minutes to complete.

#### Do You Have to Participate?

- Your participation in this study is entirely voluntary.
- You can choose to withdraw from the study at any moment.

#### How Will Information You Provide Be Recorded, Stored And Protected?

- The interviews will be recorded and later transcribed.
- If needed, the transcription can be sent to you for review, and you have the right to edit, correct and approve the transcription.
- Only the researcher of the study and the research assessor will have access to the transcript and report.

#### What Will Happen to The Results Of The Study?

- The result of the study will be kept internally by the University of Groningen for internal review and grading. The content of the study will be used for educational purposes exclusively.

#### Ethical Approval

- This study has obtained ethical approval from the Campus Friesland Ethics Committee.
- The researcher will uphold himself to relevant ethical standards.

#### Informed Consent Form

- You will be provided with a consent form to agree to participate in the study.

#### In Case of Further Information

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## INFORMED CONSENT FORM

“HOW DO STARTUPS IN THE YACHTING INDUSTRY DEVELOP AND ENHANCE DYNAMIC CAPABILITIES TO OVERCOME BARRIERS AND ACHIEVE SUCCESSFUL SUSTAINABLE BUSINESS MODEL INNOVATION?”

**Name participant:**

### Assessment

- I have read the information sheet and was able to ask any additional question to the researcher.
- I understand I may ask questions about the study at any time.
- I understand I have the right to withdraw from the study at any time without giving a reason.
- I understand that at any time, I can refuse to answer any question without any consequences.

### Confidentiality and Data Use

- I understand that none of my individual information will be disclosed to anyone outside the study team and my name will not be published.
- I understand that the information provided will be used only for this research and publications directly related to this research project.
- I understand that data (consent forms, recordings, interview transcripts) will be retained on the drive of the University of Groningen server for 5 years, in correspondence with the university GDPR legislation.

### Future involvement

- I wish to receive a copy of the scientific output of the project.
- I consent to be re-contacted for participating in future studies.

**Having read and understood all the above, I agree to participate in the research study:**  
yes / no

**Date**

**Signature**

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To be filled in by the researcher

- I declare that I have thoroughly informed the research participant about the research study and answered any remaining questions to the best of my knowledge.
- I agree that this person participates in the research study.

**Date**

**Signature**

## **B) Interview guideline**

### **Introduction**

Hello and thank you for agreeing to participate in this interview.

My name is [Jacopo], and I will be conducting this interview with the sole purpose of collecting data for my final project of the master Sustainable Entrepreneurship.

The purpose of this interview is to gain a better understanding of the SBMI processes that the company experienced and may experience in the future, focusing on the role that certain types of capabilities, called in literature “dynamic capabilities”, may play in achieving positive outcomes.

The interview will take approximately [40] minutes, and it will be recorded for accuracy purposes.

Please be assured that any information you provide will be kept confidential and used only for research purposes.

#### **1 \*General aspects\***

- Can you describe the company’s history (when was the company founded, main events to date, etc.)
- Can you tell me about the vision of the company and its activities, and introduce your current business models (products, service, distribution channels, stakeholders...)?

#### **\*Respondent profile\***

- What is your role in the company?
- How many years of experience do you have in the company/ field? (or similar)

#### **2 •BM changes, drivers and barriers**

- Did the company experience any incremental or radical change of the business model from the foundation?

.Which were (or do you think will be), the main internal and external drivers encouraging your organization to undertake these changes? (regulations, values, financial benefits...)

.Can you guide me through this change process? What happened exactly, and what were the outcomes (or what do you think will happen, and what will be the outcome)?

.Were the changes to the BM targeting sustainability concerns?

.If so, how did the outcomes have a positive impact on the environment or society? How? (or will have)

.What role has technology played in the process of innovation towards sustainability?

.How were these changes perceived by other stakeholders, for example, your competition? (or do you think it will be perceived)

.Did you encounter any barriers during the process? (or do you expect to encounter) Focus on the role covered in the company by the interviewee

.How did you sense and become aware of these barriers?

.How did you overcome these barriers?

.Did you engage in any collaboration/partnership to overcome the barriers?

### **3 •Dynamic Capabilities**

#### **Sensing**

- How does the company gather information about emerging trends, customer needs, and new technologies in the sustainable yachting space to identify new opportunities?  
 .if needed, go into details: monitoring market trends/customer requests; legislative trends; economic trends; social trends

- What are the processes for how you, in your position, discover new insight and new knowledge in the sustainable yachting industry (partnerships with universities, research centres, laboratories, other brands, suppliers, and customers)?
- Do you specifically try to identify trends/knowledge/new opportunities that address sustainability issues? How?

### **Seizing**

- Can you describe the processes for integrating new knowledge about sustainability-related issues and new sustainable technologies into the company (in products and processes)?
- Can you describe the decision-making processes for allocating investment in sustainable actions/technologies/new processes?
- How does your organisation evaluate the feasibility and potential of a new sustainable opportunity and the related business model innovation?

### **Transforming**

- Can you describe the processes for reconfiguring internal company processes based on the new sustainability-related innovation to be introduced (i.e., cross functional teams, shared meetings, internal newsletters, new organisation charts, management involvement, use of consultants and external resources, etc.)?
- Can you describe a time when your organisation had to pivot its sustainable business model innovation in response to changing market conditions or customer needs?
- Can you describe the processes for promoting the internal commitment of the organisation to the newly introduced innovations? (incentive schemes, etc.)?
- How does your organisation measure and track the impact of its sustainable business models?

### **Conclusion**

- Would you like to add anything else you believe relevant and was not included in the questions?

Thank you for participating in my Master's thesis research. Your insights and experiences were incredibly valuable, and I appreciate the time you took to share them with me.

Again, thank you for your time and willingness to contribute to my project. I wish you all the best and hope that we may cross our paths again in the future.

### C) Coding tree

First-order	Second-order	Third-order
<ul style="list-style-type: none"> <li>- Financial constraints</li> <li>- Materials and structure constraints</li> <li>- Time constraint</li> <li>- Complex requirements of the production process</li> <li>- Difficulties in the integration of innovations in the production line</li> <li>- Difficulties in remaining competitive on the market and keep up with the sales</li> </ul>	Resource-related barriers	INTERNAL BARRIERS
<ul style="list-style-type: none"> <li>- Internal disagreements</li> <li>- Lack of influence on regulatory change</li> </ul>	Organisational barriers	
<ul style="list-style-type: none"> <li>- Problematic in online marketing</li> <li>- Competitors</li> <li>- High electricity price and lack of charging stations</li> <li>- Lack of industry expert awareness</li> <li>- Regulations</li> </ul>	Industry-related barriers	EXTERNAL BARRIERS
<ul style="list-style-type: none"> <li>- Client awareness</li> <li>- Bad effect of customer demands</li> </ul>	Customer barriers	
<ul style="list-style-type: none"> <li>- Acquisition of technical knowledge (from different sources)</li> <li>- Gathering insights from different industries</li> <li>- Constant researching of innovations in the market</li> <li>- Looking outside the standard market</li> <li>- Gathering client feedback</li> </ul>	Knowledge acquisition	SENSING
<ul style="list-style-type: none"> <li>- Being aware of regulations</li> <li>- Monitoring market trends</li> <li>- Being aware of industry's changes</li> <li>- Evaluating possible collaborations</li> </ul>	Regulatory and market awareness	
<ul style="list-style-type: none"> <li>- Development of new technical resources</li> <li>- Acquiring new skilled workforce</li> <li>- Use of external collaborations</li> <li>- Mobilising financial resources for future</li> </ul>	Resource acquisition and mobilisation	SEIZING
<ul style="list-style-type: none"> <li>- Interdepartmental collaboration</li> <li>- Clear and horizontal implementation procedures and decision making</li> </ul>	Collaboration and decision-making	
<ul style="list-style-type: none"> <li>- Evaluation of the opportunities</li> <li>- New tools for the implementation of the innovations</li> <li>- Integrating insights from customers and the yachting industry</li> </ul>	Opportunity evaluation and implementation	
<ul style="list-style-type: none"> <li>- Developing a new market strategy</li> <li>- Standardisation of the procedures</li> <li>- Adaptation to market requests</li> </ul>	Strategy and vision	TRANSFORMING
<ul style="list-style-type: none"> <li>- Scaling-up transformation</li> <li>- Following the company's vision</li> <li>- Internal reconfiguration</li> </ul>	Organisational change and adaptation	
<ul style="list-style-type: none"> <li>- Tracking impact</li> </ul>	Impact tracking and evaluation	

