The role of stakeholder management and firm logic on the success of open innovation projects

A case study in the Dutch maritime sector

Master Thesis | 2023-2024

Radboud University

Radboud Universiteit

July 27th, 2024

Strategic management MSc. Thesis

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Content

1. Introduction

Innovation helps organizations and society to provide new solutions towards problems for organizational, environmental and social important challenges in the form of newly developed products or firms, by creating, adapting, implementing and realising value from new ideas within different social context (Baregheh, 2009; Wanzenböck & Frenken, 2020). With the need in the world for large scale innovations to address problems such as climate change (Stern & Valero, 2021), collaboration between different external stakeholders is required. This form of collaborative innovation is also known as open innovation (Chesbrough, 2003). With the need for the Dutch society, industry and government to reduce Co2 emissions to comply with the Paris climate agreement, a drop of 49% by 2030 and 95% by 2050 compared to 1990 Co2 emission levels is set (Vringer et al., 2021). This study focusses on open innovation within the maritime sector, in which an absolute Co2 reduction of 70% is required by 2050, with global shipping accounting for 2% of global emissions (Wesseling & Meijerhof, 2023). Since current technology shows no significant reduction, radical technological shifts by means of innovation are required to meet the government set targets and to fulfill the intrinsic motivation of important stakeholders to reduce Co2 emissions (Mallouppas & Yfantis, 2021). Much of the existing research focuses on alternatives for conventional fuel powered shipping, suggesting the use of hydrogen as one feasible form to innovate further into the future, as one of the solutions to address the climate problem (Aarskog et al., 2020; Bach et al., 2020). One such case is the NWO project of SEANERGETIC, in which many stakeholders come together to collaborate in open innovation in a need for an energy transition towards a more sustainable Dutch shipping industry (NWO, 2022).

Whereas earlier research was mostly aimed at innovations from the internal capabilities of firms or unidirectional knowledge flows from the setting around the firms, there has been a shift of focus towards interorganisational networks and feedbacks regarding the innovation collaboration (Winskel & Moran, 2008). Most of the innovation was an internally focussed closed approach, which relied solely on internal research and development capabilities (Urbinati et al., 2021). In previous years, the shift from traditional internal company R&D, towards open innovation projects has been on the rise, due to strong competition, ongoing globalization and growth of technological intensity (Kreowski et al., 2009; Obradović et al., 2021). With highly competitive business environments requiring a combination of skills and knowledge from both within and outside the firm's context, an open innovation approach helps absorb external ideas into new ideas, technologies or business models to be able to grow market share or improve competitiveness (Chesbrough, 2003). Several advantages of open innovation

over traditional R&D are; risk and cost sharing, increased speed to market, access to foreign markets and the possibility to create new business (Urbinati et al., 2021). For organizations to maximize the benefits of open innovation, they must be able to collaborate with external stakeholders by means of exchanging their knowledge, technology and resources into the desired outcomes of open projects (Bigliardi et al., 2021). When being able to collaborate with different external stakeholders, this may result in successful open innovations projects characterized by more knowledge being shared within open innovation networks, shorter duration of projects and an increased financial performance (Chesbrough et al., 2014). Whereas Lamprou and Vagiona (2022) expressed that no straightforward definition exists with stakeholders having different perspectives by their interpretation, with the result of having projects being regarded as either a success by some stakeholders and failures by others. They mentioned however several critical success factors contributing towards project success, and success criteria beings used for the actual assessment of project success.

One such factor to organize towards successful project collaboration in open innovations is by stakeholder management. Given the importance of stakeholder management with the development of capacity of know-how, resources and capabilities on firm performance and business objectives, new focus was given towards the influence of stakeholder management on open innovation projects (Urbinati et al., 2021). In their research Urbinati et al. (2021) tried to elaborate upon the difference of stakeholder management in traditional innovations and open innovations. Furthermore, Aarikka-Stenroos et al. (2017) provided seven key management activities to effectively manage external stakeholders, contributing as stakeholder management tools towards project success. However, Urbinati et al (2021) and Aarikka-Stenroos et al. (2017) also provided one of the main gaps of their researches as the limited context due to these case studies only being implemented in a small set of countries and industries. In addition, several different authors (e.g., Albats et al., 2020; Grama-Vigouroux et al., 2020; Leonidou et al., 2020) mentioned the need for additional qualitative research concerning the role of stakeholder management on open innovation projects in different settings to widen the knowledge of this topic.

Another factor on the field of successful collaboration towards the development and commercialization of innovation can be found in firm logic or logic of firms, which is the alignment of lack thereof the different priorities and interests, key in the implementation of innovations (Öberg & Shih, 2013). Innovation, and open innovation specifically, require a compromise of shared processes between different stakeholders to create new ideas (Chesbrough, 2003). Companies within an innovation network act on their own motive for

engagement towards innovation (Corsaro & Snehota, 2011). However as discussed by Öberg and Shih (2013), within a network of stakeholders, the role of the motives can serve as an underlying prerequisite for stakeholders to collaborate. These motives relate to overall business aims of companies, but also determine whether organizations are determined to collaborate with one another, because of the difficulty of bringing unaligned firms together towards innovation (Öberg & Shih, 2013). To add on the findings of Öberg and Shih (2013), Pera et al. (2016) elaborated on what these specific motives and resources for co-creation within a multistakeholder network entail. Naming key motives such as reputation enhancement, experimentation and relationship building. Although both Öberg & Shih (2013) and Pera et al. (2016) thus recognized the importance of stakeholder motives for innovation success, these are limited because only few studies captured the interactions between stakeholders during the co-creation process by a multiplicity of stakeholders.

For organizations to be able achieve success of open innovation projects, two different streams of thoughts are identified in the literature. On one hand it is the need for a particular way of stakeholder management in open innovation networks as mentioned by of Urbinati et al. (2021) and the other view is focused on the alignment of motives by Öberg and Shih (2013) elaborated on by Pera et al. (2016). Both streams of thoughts linked toward the view of project success through critical success factors as defined by Lamprou and Vagiona (2022). Moreover, the authors themselves (e.g., Öberg & Shih, 2013; Pera et al., 2016; Urbinati et al., 2021) implied that these aspects are key for open project innovation to be successful, and a relationship between stakeholder management and stakeholder motives could be expected to exist. However, the authors failed to capture the condition in which motives influences stakeholder management and stakeholder management influences the alignment of motives towards the successful implementation of open innovation projects.

By conducting this study in a broader ecosystem with a divers set of stakeholders towards open innovation in the maritime industry, closely related to the case of the NWO project of SEANERGETIC, this will provide the opportunity to build upon the studies of Öberg and Shih (2013), Pera et al. (2016) and Urbinati et al. (2021), and to elaborate on how stakeholder management and firm logic contribute towards open innovation projects success. This will add upon their mentioned limitations of context by providing the Dutch maritime industry as a new background. Meanwhile by conducting the study using both stakeholder management and firm logic as variables simultaneously, new insights can be created to find out how stakeholder management and firm logic relate to one another considering both to be

standalone prerequisites for success in open innovation projects (Öberg & Shih, 2013; Pera et al., 2016; Urbinati et al., 2021).

1.1 Cause and relevance of the research

The societal relevance of this research lies in the importance of project success in open innovation projects. When failing to innovate, important societal issues like the Paris climate agreement might not be achieved. The management of the stakeholders in innovation projects and alignment of stakeholder motives is thus part of the key to success. This research will take a closer look at open innovation projects, in which the Dutch maritime sector needs to collaborate and innovate towards renewable power sources such as hydrogen and away from fossil fuels. This research aims to contribute towards achieving successful open innovation collaborations within the Dutch maritime sector. Additionally, this research contributes to the establishment of a framework for future innovation in all kinds of multi stakeholder projects in different sectors of industry and countries.

Regarding the scientific relevance, this research aims at narrowing the current gaps in the literature. Whereas much literature can be found on project stakeholder management in traditional R&D research, Urbinati et al. (2021) elaborated on this by looking at the project stakeholder management in open innovation projects. With this niche of research being relatively new, additional insight can be provided by broadening the context in which this relationship is to be researched. As mentioned by several authors (e.g., Albats et al., 2020; Grama-Vigouroux et al., 2020; Leonidou et al., 2020; Urbinati et al., 2021), current research has been limited to several countries and industries. For firm logic and the underlying motives of stakeholders, Öberg and Shih (2013) and Pera et al. (2016) mentioned the need for additional context these factors need to be researched in. Therefore, this study will provide a new setting by focusing on a different industry and country in which this will be conducted, broadening the generalizability. Furthermore, this research will add upon the research of Pera et al. (2016) by looking into projects not yet being concluded but being in the initial start-up or ongoing phase of implementation, towards project success. Whereas the research of Öberg and Shih (2013) and Urbinati et al (2021) was based on finished innovation projects. Finally, the relationship between stakeholder management and firm logic is not explicitly discussed. In the current literature (Öberg & Shih, 2013; Pera et al., 2016; Urbinati et al., 2021) recognized the importance of stakeholder management and firm logic for the success on open innovation projects as standalone variables. This study will therefore be aimed to gain insights on the

relationship between stakeholder management and firm logic being prerequisites for one another.

1.2 Objective of the research

The objective of the research is to gain additional qualitative insights on how stakeholder management and firm logic as factors affect project success in open innovation projects, by confirming or adding insights based on the works of Urbinati et al. (2021), Öberg and Shih (2013) and Pera et al. (2016). Moreover, there will be focus on the possible relationship between stakeholder management and firm logic whether linkage between these aspects may be observed as each other's prerequisites for the success in open innovation projects, with both variables now only considered as standalone factors of influence towards project success by Urbinati et al. (2021), Öberg and Shih (2013) and Pera et al. (2016).

This results in the following main question to execute this study: "*How does stakeholder management and firm logic affect the success of open innovation projects?"*

1.3 Research approach and outline

This paper will be structured in the following way. Chapter two will consist of a theoretical framework, including a review of the definition of project success, the usage of stakeholder management in innovation projects and the role of firm logic towards innovation. Chapter three will elaborate on the methodology of the research, including the argumentation for a case study, interview questions, the sample of the population, elaboration on the data analysis procedures and ethical considerations. Chapter four deals with the analysis of the data. This research will be concluded in chapter five with a discussion and conclusion of the research question, including theoretical and practical implications of the study, limitations, suggestions for future research and a reflection on the thesis process.

2. Theoretical framework

This chapter consists of the theories and perspectives of the key concepts in this research. With these theories, a visual representation of the study will be drawn up.

2.1 Project success in open innovation projects

The original definition of open innovation highlighted that; “valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach placed external ideas and external paths to market on the same level of importance as that reserves for internal ideas and paths” (Chesbrough, 2003, p.43).

As a start, open innovation was identified by two separate processes, utilizing external innovations internally or the commercialization of internal innovations, but firms also shifted towards a combination of both (Enkel et al., 2009). From this point on, many authors have written about open innovation (Obradović et al., 2021). Whereas earlier innovation concepts were more focussed on internal aspects, this change in mind created all new kinds of insight into the innovation in external settings, with a combination of inside skills from both inside and outside of firms to be essential (Urbinati et al., 2020).

To build upon the concept of open innovation, it is also important to look at how project success for open innovation can be defined. According to Lamprou and Vagiona (2022), there is no explicit universal definition of project success. This is because stakeholders have different perspectives towards their interpretation of success with different outcomes. Meaning that depending on the type of project or stakeholders, interpretation of project success may be regarded positively by one stakeholder, whereas this can be precepted by another stakeholder as a failure. To determine the success or failure of a project, stakeholders are required to collaboratively consider what the outcome must look like (Davis, 2017). However, Lamprou and Vagiona (2022) distinguished to components towards project success; being success criteria and critical success factors. With success criteria beings used for the assessment of project success by providing principles or standards for the judgement of project success for the concluding of the outcome of a project. The critical success factors, contribute towards increasing the likelihood of the accomplishment of project success, being defining factors during the actual implementation of a project (Lamprou & Vagiona, 2022). As critical success factors, Lamprou and Vagiona (2022) mentioned project mission/goals/objectives/scope/vision, top/senior management and commitment, project communication and the project planning/monitoring/control and the external environment as

main contributors. However, it should be mentioned that critical success factors can be used as a tool of analysis for individual issues of project success of the lack thereof, but these cannot be used as a measurement tool for the project as a whole (De Wit, 1988). Though critical success factors can contribute towards successful project achievements, with the different main stakeholders adopting their own project goals and expectations, there is a difficulty to define a commonly accepted list of success factors (Toor & Ogunlana, 2009). To add on this, without the access of resources or specific capabilities, it is likely that open innovation will not be successful (Brunswicker & Chesbrough, 2018). Furthermore Pera et al. (2016), noted that fundamental enablers towards resource integration and mutual learning for the successful co-creation of value between different stakeholders are; trust, inclusiveness and openness.

Concludingly, there is in most projects not one definition of success which can be attributed for all the different stakeholders (Lamprou &Vagiona, 2022). Background and perception are large determining factors for stakeholders to characterize their own view towards success, meaning that a projects' success can be composed of several different characterizations of when and in what way success can be achieved. However critical success factors can help deal with the individual perception of the stakeholders towards success in a project, by identifying and managing the different stakeholders' perspectives and thus contributing to the overall satisfied success of a project.

2.2 Stakeholder management

According to stakeholder theory, organizations wish to create several benefits for different stakeholders (Mahajan et al., 2023). With Freeman (1984) being the author first introducing stakeholder theory and arguing the importance of considering the interests of stakeholders. From this on, stakeholder theory has developed over the years by new contributions such as stakeholder engagement, indicators for stakeholder management and the usage of stakeholder management to contribute to corporate social responsibility (Mahajan et al., 2023). As research indicated, the opposition between shareholder and stakeholder satisfaction as originally considered, has transformed into a view considering these to be complementary objectives (Berman et al., 1999). Hence the focus in the literature has moved towards stakeholder management as a means through which relationships can be build and improved to influence firm performance and business objectives (Pedrini & Ferri, 2018).

With stakeholder management being key towards project success of open innovations (Rowlinson and Cheung, 2008), the concept helps the identification and analyzation of the different stakeholders who are of influence on an organization or project behaviour and decision

(Grama-Vigouroux et al., 2020). A subsequent split can be made between the internal and external stakeholders. With internal stakeholders directly involved with the primary activities from within a firm, and external stakeholders are only involved with processes from the outside of a firm (Nilsson & Fagerström, 2006). With external stakeholder management being key for the management such as open innovation projects between, the right identification of the external stakeholders, the correct way of managing them and how to influence them is a crucial aspect towards the success of these projects (Chung & Crawford, 2016). This is added upon by Urbinati et al. (2021), who also recognized the identification of stakeholders that affect project results and a strategy to identify all the needs and interdependencies from the different stakeholders as crucial. Moreover, the management of the stakeholders might be handled differently according to the size of the firm or project (Grama-Vigouroux et al., 2020).

Urbinati et al. (2021) provided a comprehensive overview with several aspects influencing the way project stakeholder management is being used, differentiating between open innovation projects involving interaction between external stakeholders within a network, as opposed to internal organization focussed traditional innovation projects. These seven differences indicated a need for a different stakeholder management approach for open innovation projects, with the identification of stakeholders and plan for stakeholder engagement being of influence to the success and time performance towards open innovation projects (Urbinati et al., 2021). Also, the limited number of core stakeholders to be managed is highlighted upon for which no specific stakeholder management tools and methods are required (Urbinati et al., 2021). For the dimension of coordinating the stakeholder's engagement, among important aspects are the creation of equality of the different stakeholders and to enable an open atmosphere in which benefits the build-up of trust and a sharing vision between stakeholders. For this, risk management should be applied to minimize controversies between stakeholders (Urbinati et al., 2021). Finally, the monitoring of stakeholder's engagement indicates a desire for a continuous collaboration even after the end of a project, to be able to consolidate relationships between external stakeholder which can be used when starting new projects again (Urbinati et al., 2021). Although Urbinati et al. (2021) acknowledged the need for stakeholder management for open innovation projects as important towards project success, they do not recognize a set of processes and procedures to be applicable.

Aarikka-Stenroos et al. (2017) however defined seven key management activities to help overcome difficulties within multi-sectoral collaboration in extensive networks between external stakeholder innovation projects. These activities help provide the stakeholders to turn the divers background and knowledge of into an opportunity towards stakeholder success rather

than being an obstacle. These management activities are as follows (Aarikka-Stenroos et al., 2017); motivating, resourcing, goal setting and refining, consolidating, coordinating, controlling and leveraging. Motivating is about the identifying incentives for the different stakeholders, to promote the effort of the stakeholders. Resourcing focusses on putting forward the right stakeholder with knowledge or providing this knowledge for them to be able to cooperate in the project. Goals setting and refining refers to the creation of visionary goals and milestones while changing goals during the innovation project where needed. Consolidating helps building trust and a common ground among stakeholders and enable continuous dialogue between stakeholders. Coordinating refers to the development and communication concerning a task division between the different stakeholders. Controlling gives orders and rules, while also impose and sanction when breached. Finally leveraging consists of the process in which the stakeholders in the network are either prepared for the project by coercive means of by change of mind-set. Whereas during an open innovation project one actor in certain periods during the innovation might be able to manage all different external stakeholders, however it is more likely that the stakeholders influence one another by means of the seven management activities which is more beneficial for open the implementation of innovation processes (Aarikka-Stenroos et al., 2017).

2.3 Firm logic

Businesses have motives to engage or to not towards innovation networks (Corsaro & Snehota, 2011). These motives relate to overall business aims and can limit the amount organizations want to interest or resist themselves into innovation, whereas these motives also determine why firms want to interact with other stakeholders in innovation processes (Öberg & Shih, 2013). These interests, priorities and interaction goals of the different firms are known as logic of firms (Öberg & Shih, 2013). Priorities show the alternatives firms must choose between several alternatives. Interests show whether stakeholders are open for innovative new ideas. And interaction goals determine why stakeholders pick and choose for interaction with other stakeholders (Öberg & Shih, 2013). Öberg and Shih (2013) addressed several concepts about logic of firms. First, they differentiated between convergent and divergent logic. Convergent logic indicates that that all three factors, interests, priorities and interaction goals, of different firms are similar or aligned. As opposed to divergent logic which indicates at least one deviation of the factors among stakeholders. Although convergent logic does not always seem to indicate complete alignment within the network of stakeholders, it is only essential that the stakeholders are complementary. This is the opposite for divergent logic, which prioritize differently and are

thus not complementary. By being divergent from each other, stakeholders are disrupting each other towards the possibility of innovation (Öberg & Shih, 2013). Hence the conclusion that project success is only possible with complete convergent logic. By bringing stakeholder with converging logic together in shared logic nets, innovation can be enhanced, with the requirement of potential customers at least being inside such shared logic nets to achieve commercialization of innovation. This as a means for protentional innovation to succeed. Furthermore, Öberg and Shih (2013) concluded that logic creates additional motivation for stakeholders towards innovation.

As an elaboration on the findings of Öberg and Shih (2013), by looking at the participation by multiple stakeholders when collaboration towards the creation of value collaboratively, Pera et al. (2016) mentioned several key motives like reputation enhancement, experimentation and relationship building. These key motives are main drivers for innovation between different external stakeholder with possible conflicting values, different agenda's, different objectives and their own unique identities. This can thus be linked to the findings of Öberg and Shih (2013) that only stakeholders with convergent motives can achieve project success, making these key motives of Pera et al. (2016) crucial indicators towards success. In addition, Pera et al. (2016) mentioned three fundamental enablers for co-creation towards shared external stakeholder values and thus being able to integrate innovative resources and learn collaboratively, namely; trust, inclusiveness and openness. Moreover, the setting of Pera et al. (2016) takes place in an open co-creation process, as compared to the case studies of Öberg and Shih (2013) in a finished innovation project.

2.4 The relationship between stakeholder management, firm logic and project success

With no clear definition of projects success, with success being composed as a combination of multiple perceptions of different stakeholders which differs for every individual stakeholder whether the view a project successful or a failure (Lamprou & Vagiona). Critical success factors can contribute towards the successful completion of a project by identifying and managing these different perceptions. Not only do stakeholder management and firm logic affect open innovation projects as independent variables (Corsaro & Snehota, 2011; Rowlinson and Cheung, 2008), but these variables also contribute as factors influencing success. With stakeholder management being used to manage the relationships between the external stakeholders amidst potential conflicts, mismatches of organizational fits and power imbalances (Albats et al., 2020). Firm logic meanwhile serves as a prerequisite in which stakeholders need

some amount of alignment in their motives to conduct innovation together (Öberg & Shih, 2013).

Both variables of stakeholder management (Aarikka-Stenroos et al., 2017; Urbinati et al., 2021) and firm logic (Öberg & Shih, 2013; Pera et al, 2016) thus are individually linked as critical success factors influencing project success in open innovation, while stakeholder management and firm logic also depict a relationship as a prerequisite for one another as a means towards project success in open innovation. It can be said that there is some kind of interconnectivity between firm logic and stakeholder management, with other fields of study such as business model innovation already identifying the need for alignment of values and interests through stakeholder management (Velter et al., 2020). Additionally, Von Meding et al. (2013) argued that collaboration and relationships aid stakeholder management processes, with the alignment of goals and input from stakeholders being essential objectives in projects.

2.5 Visual representation of the research

In figure 1, the key concepts and the relationships within this study are depicted. Both stakeholder management and firm logic indicate a relationship towards project success in open innovation. Furthermore, with both stakeholder management and firm logic being linked with each other as prerequisites, also some relationship between these two variables is expected, before these can contribute towards project success in open innovation. Hence this research tries and find out how stakeholder management and logic of firms individually contribute towards project success in open innovation, while also looking at the relationship of how stakeholder management and logic of firms contribute to each other.

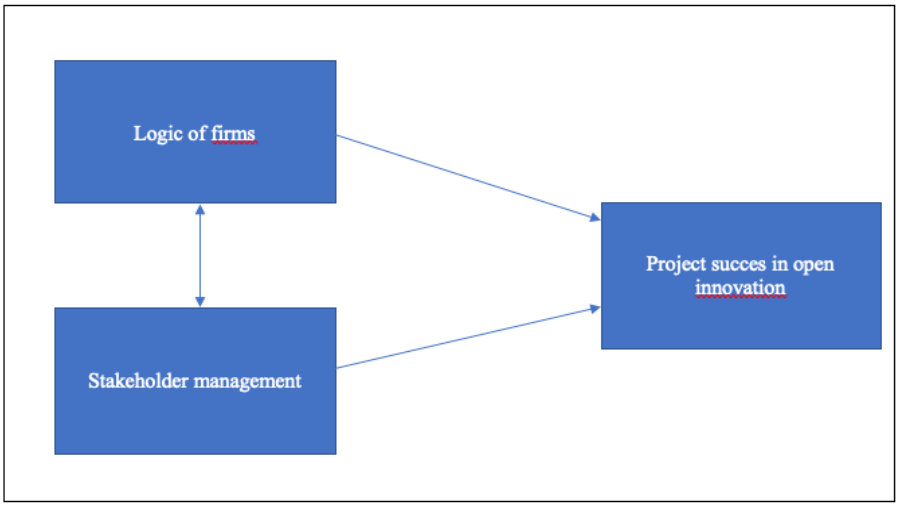

Figure 1. Visual representation of the research.

3. Methodology

This chapter discusses the research method, data set, data analysis, limitations, and ethics.

3.1 Research method

This research uses a single-case study approach (Hunziker & Blankenagel, 2024) whereas it will provide an in-depth analysis of a small sample given the limited time available to conduct this research. This qualitative research method is chosen, based on the argument that it is more capable to address complexity and context towards a phenomenon (Gummesson, 2006). Not only will this study add upon the single-case study of Öberg & Shih (2013) and the multiple-case study of Urbinati et al (2021), by providing additional context in the form of another industry in a different country. However, the single-case study approach will also provide the ability to capture details on activities, relationships and causes (Öberg & Shih, 2013), needed to investigate whether or not a relationship between logic of firms and stakeholder management can be established. Furthermore, insights can be gained as of how stakeholder management and firm logic can be linked as factors contributing towards project success. Single-case studies are therefore useful to gain new insights and determining its influence. With the focus on the Dutch maritime sectors specific geographical and industrial context, findings from the case are expected to be relevant for other such settings by means of transferability (Hays & McKibben, 2021).

The relevant research methods used to conduct the study will be semi structured interviews and content analyses of secondary data. By using semi-structured interviews, questions are formulated in advance based on the theoretical framework (see Appendix A for the list of semi-structured questions). This provides several advantages such as, the addressing of all relevant topics and hence the lack of forgetting to ask certain questions, with the benefit of still being able to dig deeper in particular topics with follow up questions (Bleijenbergh, 2015). Separately the role of logic of firm and stakeholder management towards project success of open innovation projects is considered and checked upon the assumptions already derived by Urbinati et al. (2021) and Öberg & Shih (2013). In addition, it is being looked at if there is a possible relationship between the role of the motives of firms and the way stakeholder management influence open innovations. Furthermore, content analyses of secondary sources will also be conducted with the aim of using written materials of the relevant stakeholders either found online or provided by stakeholders (Vennix, 2011). The written materials can consist of annual reports, news bulletins or sustainability documents regarding the variables of this study. Within these written materials, different focusses may be highlighted such as written down

statements and organizational ideas, as opposed to interviews which may only depict the view of one stakeholder of an organization. Therefore, this written material may not only provide additional insights gained by other sources than the interviews, but also helps in the way of providing a means of triangulation. With triangulation being essential for a decent case study, by looking at similarities in the provided information from different sources (Vennix, 2011).

3.2 Data set

As described in paragraph 3.1, the research method used were firstly semi-structured interviews. For this, stakeholders related with the Dutch maritime sector were identified accordingly. As a starting point, the aim was to interview between 10 and 15 stakeholders, for a minimum duration of between 30 and 60 minutes. In addition, these interviews were conducted in collaboration with Fabian Veldwijk due to availability and time constrains of the interviewees. Hence the interviews were split into two parts. One part covered the general topic of projects success, stakeholder management and firm logic related to this study and one part of Fabian Veldwijk focused on barriers and drivers towards sustainability. Most of these stakeholders were retrieved from a collaboration with the NWO project called SEANERGETIC. This is a collaboration between business government and research institutes. Therefore, stakeholders from all kinds of relevant backgrounds can be interviewed. Furthermore, these stakeholders were selected upon a mix of the stakeholders being either a member of the consortium of the NWO project SEANERGETIC (NWO, 2022) or provided by the interviewees contacted from the SEANERGETIC project. With the SEANERGETIC project being closely associated with the Radboud University, having members of the Radboud University as co-applicants and researchers being already involved for the collaboration between business, government and research institutes. The aim was to reach out to these professionals involved in the decision making, since they are the stakeholders relevant to stakeholder management within open innovation projects. The groups of stakeholders participating and considered to be relevant as stakeholders were as follows; shipowners and operators, shipbuilders and system integrators, fuel cell or battery manufacturers, infrastructural stakeholders, policy and regulation bodies, industry associations and knowledge institutes. In addition to the stakeholders related to the SEANERGETIC project (NWO, 2022), more stakeholders may also be found by applying the snowball effect for increased recruiting of respondents for the interviews (Noy, 2008). This is because of the already known stakeholders through the SEANERGETIC project are limited, implementing snowballing helps to find sufficient stakeholders from all relevant stakeholder groups. Secondly, as already mentioned in

paragraph 3.1, written data concerning the relevant topics will also be gained by either requiring spoken to interviewees to provide documentation related to the interviews. The inclusion criteria to increase trustworthiness (Kyngäs et al., 2020) aim to gain a broad perspective of documentation with at least one or more pieces of documentation per relevant stakeholder group. Digital information is searched for via websites and online sources consisting of annual reports, news bulletins or sustainability documents based of the latest information available from a range of the last five years, besides for exceptions where no data from this period is at hand.

3.3 Data analysis

First data must be collected. After having conducted the interviews with the different stakeholders, the recorded interviews are transcribed using the auto transcription from Microsoft teams with a final review of quality being done by hand.

After the data collection, an analysis of the data is conducted by applying content analysis. With content analysis, meaning of textual communication can be identified and interpreted, by highlighting how smaller pieces of data is depicted as part of larger concepts used to explain different phenomena (Kleinheksel et al., 2020). With the text appearing by the different stakeholders researched in either the interviews or secondary data. Content analyses are useful to gain a deeper knowledge of words, expressions and past knowledge concerning qualitative data. The data analysis is conducted in a deductive way, in which the concepts from the theory are used to form a basis in which the coding pattern is based on the different variables in this research (Bleijenbergh, 2015), with the variables of stakeholder management and firm logic being expected to appear in the data as factor contributing towards project success. The content can be analysed, by labelling segments of data linked to these variables based on the seven key management activities by Aarikka-Stenroos et al. (2017) for stakeholder management and the divergent or convergent priorities and interest (Öberg & Shih, 2013; Pera et al., 2016)) for firm logic (see Appendix B for the codebook). Based on the anonymized transcriptions from the stakeholders and secondary sources, coding has been done using a codebook. By using the codebook, the data can be analysed in continuously the same way, relating back to the concept (Bleijenbergh, 2015). The theoretical framework thus provides predefined starting point to interpret the coded data, whereas the analysis of the data will give indications on how the variables of stakeholder management and firm logic relate among each other and towards project success, helping to formulate both theoretical as practical output.

The coding will also help to unravel, combine and interpret these statements and text segments (Bleijenbergh, 2015). This coding will be analysed using the ATLAS.ti tool. ATLAS.ti is computer assisted qualitative data analysis software that helps create a systematic organization of the unstructured data resulting from research (ATLAS.ti, 2024; Soratto et al., 2020). Using ATLAS.ti provides several advantages over manual coding; the efficiency gain by being able to quickly organize, categorize and analyse large volumes of data expected to come from the interviews, it helps with the creation, modification and arrangement of codes and categories, and finally helps to facilitate the identification of patterns and relationships between different data sources (ATLAS.ti, 2024). The analysis of the interviews and secondary written data will thus go as follows (Soratto et al., 2020); the first phase consist of the pre-analysis needs to be conducted to consider the relevant data to be added in ATLAS.ti. The second phase will explore the added data by attaching codes to quotations, by means of adding a colour code containing the main variables from the theory. The final phase is about the interpretation, in which the data is used to create meaningful results which can be linked to the research objectives and theoretical framework. Based on the coding, results are to be presented from which conclusions related to the research questions can be made (Verhoeven, 2023).

3.4 Limitations and Ethics

3.4.1 Limitations (validity & reliability)

To retain the quality of the research, validity and reliability need to be considered. With the primary purpose of deductive research being to look at the literature already at hand and gaining additional insights which eventually could lead to new theory building (Bleijenbergh, 2015). For this, the validity can be divided into internal and external validity. Internal validity is the extent to which a conclusion can be justified based on the data collected in the study (Bleijenbergh, 2015). This is guaranteed by the operationalization of the theory, which helps to describe theoretical definitions accurately in the way these are relevant for the research, thus minimizing ambiguity (Bleijenbergh, 2015). The external validity, also known as the generalizability (Bleijenbergh, 2015) which relates to the extent to which a study can be applied to a population other than the one on which the study was conducted. Generalizability is more difficult to achieve, whereas this study is conducted in one industrial sector in one country. However, with the overall aim of gaining new insights into the relevant phenomena, this lack of potential generalizability is being mitigated by using a consistent theoretical framework which shows the relationship to existing theory.

Furthermore, purposive sampling and selection is used to ensure that the case being researched contains the relative information and stakeholders. Also, this research builds upon earlier case studies (Öberg & Shih, 2013; Urbinati et al., 2021), therefore widening the existing knowledge towards a more comprehensive image of a wide range of stakeholders. Finally, reliability, the accuracy and precision of the measurement procedure (Bleijenbergh, 2015), is to be secured by providing interview questions towards participants within the same research setting and context, using a consistent coding scheme and a straightforward data analysis procedure. Furthermore, the interviews are not the only method of research, whereas the analysis of secondary data will help to gain additional insights on the various topics, thus providing triangulation for the research increasing reliability because statements made in the interviews can be substantiated by data written down (Vennix, 2011).

3.4.2 Research ethics

The ethical standards for his research will be retrieved from the *Ethical Principles of Psychologists and Code of Conduct (Ethics Code)* of the American Psychological Association (American Psychological Association, 2017). This Master Thesis project will follow the rules of conduct described by the American Psychological Association, which align with the rules of conduct given by the Nijmegen School of Management within the Radboud University.

First, section 8, about research and publication from the American Psychological Association (2017), makes several statements about how the research will be conducted. Section 8.01 requires the researchers to conduct the research according to the approved research protocol dictated by the institution (American Psychological Association, 2017). This Master Thesis project will follow the instructions from the Nijmegen School of Management.

Furthermore, sections 8.02 up to and including 8.09 are about the rules of conduct concerning participants and the subsequent data retrieved from them (American Psychological Association, 2017). In line with these rules, this research is expected to respect the participants' privacy by anonymising data described in section 4.01 (American Psychological Association, 2017). In addition, no misleading of participants should be involved. Participants should obtain appropriate information about the goals, results, and subsequent conclusions of the research and are always free to withdraw participation at any time (American Psychological Association, 2017). Section 8.10 requires the researchers to refrain from fabricating data and taking steps to correct these errors in case of the discovery of significant errors. (American Psychological Association, 2017). Finally, section 8.11 states that researchers are obligated not to present portions of another's work or data as their own (American Psychological Association, 2017),

also known as plagiarism. This is to be avoided at all costs by providing original work by the author. When another's work is used, referencing should follow the APA standard.

4. Results & analysis

In this chapter, the results are presented based on the analyses of the interviews and secondary data. First an overview of the collected data, followed by analyses of the stakeholder management aspect and firm logic.

4.1 Overview of collected data

A total of 11 interviews were conducted, all with the required minimum duration of 30 minutes. With these 11 interviewees, the aim was of being a broad representation of the different stakeholder groups composing the SEANERGETIC initiative. However, because it was not possible to contact stakeholders only related to SEANERGETIC, with the project being in its initial start-up phase. The shift was made towards a broader cross section of the shipping industry. Hence, the focus of the research regarding success in open innovation projects, stakeholder management and firm logic was no longer exclusively focused on the SEANERGETIC project but aimed at finding out what the broader perspective in the Dutch maritime industry is about the transition towards sustainability and how related open innovation projects will or have taken place. Therefore, a perspective at sector level in the Dutch maritime industry was considered, looking at the different challenges concerning project success, stakeholder management and firm logic. To be able to still find relevant stakeholders with knowledge concerning the sustainability transition in the maritime industry, the contacted stakeholders all needed to be in a work-related position being either high enough in the management in an organization to have enough knowledge about the overall strategy of its organization or by being directly involved through its function into sustainability. All stakeholders interviewed qualified for this by having relevant experience from both the past as current projects in the implementation of new technology in their subsequent field of operation, making them aware of the concept of open innovation. A total of 22 stakeholders were contacted, with 16 listed as being involved in the SEANERGETIC programme (NWO, 2022) and six being snowballed through interviewees from SEANERGETIC. Contact was laid by means of calling, emailing and chatting via LinkedIn, with a formal invitation in both Dutch and English (see appendix C for the interview invitation), which resulted in response from 11 stakeholders. The aim was to gain in between 10 and 15 stakeholders, and efforts have been

made to gain more response. However, this was limited by a lack of interest from stakeholders, unfamiliarity with the SEANERGETIC project overall or stakeholders being listed as participating with SEANERGETIC when in fact were no longer working at a particular organization. After multiple attempts to gain more response from the other 11 stakeholders not participating, in deliberation with the supervisor the decision to continue with the 11 stakeholders to participate has been considered the most feasible given the amount of time available for this study. Moreover, the group of 11 stakeholders participating in this study represented a broad profile of the different stakeholders involved with sustainable open innovation in the Dutch shipping industry in general or the SEANERGETIC project. The stakeholders participating were shipowners and ship-operators (SSO), shipbuilders and system integrators (SSI), fuel-cell and battery systems manufacturers (FCBSM), infrastructure stakeholders (IS), policy and regulation bodies (PRB), industry associations (IA) and knowledge institutes (KI).

For the secondary data, 23 different sources of secondary data were analysed (see Appendix E for the list of secondary sources). The secondary data relates to two different stakeholders, either being related to the stakeholders already interviewed or by addressing the one group of policy and regulation bodies not having any stakeholder interviewed at all, thus adding additional insights not yet acquired through the interviews. Overall, of the 23 different sources of secondary data, 14 were websites indicating information concerning projects which the stakeholders mention to have participated in or indicating the overall firm logic through mission and vision statements of their organizations. In addition, 9 secondary sources were reports publicly available on the internet being annual reports, sustainability reports or project reports. One report, as already mentioned, involved the view of a policy and regulation body on sustainability in the Dutch maritime industry. Thus, contributed to gaining insights of knowledge from this stakeholder group, not being interviewed. With most these secondary sources being closely related to the stakeholders and organizations already interviewed, these were also anonymized as not to expose opinions and information as discussed in section 3.4.2.

4.2 Analyses of stakeholder management

Stakeholder management will be analyzed based on the seven key management activities as given by Aarikka-Stenroos et al. (2017). All seven management activities in a certain extent appeared in the interviews and secondary data. With resourcing, consolidating, coordinating and goal setting and refining being mentioned the most, and controlling, motivating and leveraging relatively less. Below the results will be represented per relevant aspect.

Motivating

One aspect being mentioned by the stakeholders as an incentive needed for the facilitation of innovating efforts is the resources of such projects. In interview 1-7, it is being mentioned; "What you're working one, yes, to find alternative finance methods. Because financing this energy transition is a challenge which we have not tapped on, but to make innovative finance concepts available to the transition, that's important. That can be crowdfunding". This is further elaborated on in interview 1-1, with the stakeholder asking the question how the sector can pay and afford the green transition while still making enough money to contribute to their operational existence. Also, in report 2-6B an example is provided in which stakeholders can be motivated to contribute to innovation, because this innovation provides them better emission credentials in their operation, thus contributing to their financial performance. Stakeholder 1-4 adds on the financing by stating that also the investment of time and knowledge is needed as a contributor to innovation. Finally in interview 1-8 also a social incentive is mentioned to gain a competitive advantage over the competition by creating a sense of urgency in projects; "then it could certainly work and with stakeholders to get it done".

Resourcing

With resourcing, several things come to light. First, several stakeholders identified that not one stakeholder can do it alone for open innovations in the maritime sector. Within interviews 1-7 and 1-10 it is being said that solutions need to be found in the total value chain. With stakeholder 1-10 talking about the current playing field that; "At this moment it's too closed. And that's also has to do with the fact that the industry is really, uh, too self-focused. So all the companies are really, really focused on themselves". In report 2-4 from a PRB perspective, it is said that collaboration is crucial towards the scaling for alternatives fuels in the maritime industry with the resources being spread among several stakeholders. Knowledge sharing is identified several stakeholders to provide the resources to innovate. Stakeholder 1-2 mentions that; "I think there's certainly a lack of knowledge within most organizations to make this transition". Even stakeholder 1-1, who's organization is defined by stakeholder 1-3 as maybe the only stakeholder having enough resources to innovate on their own, mention that their large organization "believe in semi-open access approach where the knowledge on the learnings from these new examples are shared because that will help to set out the legislation. And as I said, we are into new fields here and we cannot do it alone". This is acknowledged by stakeholders 1-4 and 1-7 that cooperation can only work if knowledge is shared without stakeholders thinking of their

own interest, with the open-source idea being much more relevant nowadays. However, stakeholder 1-11 recognizes one limit towards knowledge sharing being the retainment of intellectual property by stakeholders "because of the fact that it's every company has their own specialism, it's not, uh, it's not always needed to share this intellectual property, but there is some intellectual property that they can't share, and there's also some commercial information that they can't share. But it's not a, this is not an obstructive to go for work with each other. So it's not a, it doesn't hold us, it doesn't hold us back, it's just not really an issue". Stakeholder 1-8 adds on this by indicating that due to commercial advantages within the sector, it is good not to share company specific knowledge. However common practices or standardization knowledge is already shared.

Goal setting and refining

Among the stakeholders, there is recognition of the importance of common goals contributing to the success of open innovation. This is expressed in interview 1-9 that "I think a clear course should be, yeah, it's important I think for, yeah, like in order to make it work". This is added upon by stakeholder 1-1 saying "You need to collaborate and collaboration means working together on the same goal. It's different than cooperation. Then you work together. Collaboration means working together on the same goal and target". Moreover stakeholder 1-8 mentions that a shared sense of urgency and a shared goal will help the industry to move towards sustainability as fast as I could. However, a difference is noticed among the stakeholders about the presence of a shared goal. With stakeholders 1-1 and 1-2 indicating that there is no "joint dot on the horizon" and "we don't have clear dates lite it at this point, you have to be below this amount of emissions and this year the cost for producing emissions will be at a certain level like that". Contrarily in report 2-10 it is said that the common goal for the industry is the 2050 European Green Deal. In report 2-4 it is mentioned that uncertainties can cause organizations failing to determine a strategic course, limiting their ability to make a proper business case towards innovation. Still though, in several of the reports, 2-1, 2-3, 2-5B and 2-11B several induvial targets for stakeholders are named being broad such as "drive decarbonization in marine and energy" and "emission-free shipping as the ultimate goal".

Consolidating

When looking at the willingness to cooperate in innovation, several of the interviewees mention the trust and creating common ground among each other as important when collaborating in projects. Stakeholder 1-6 refers to a previous project in which they need "we put some effort in the beginning that you really have common ground to have the showcase developed". This resulting in an open project with good sharing of knowledge and collaboration. Furthermore, in interview 1-5 it is mentioned that "It's a bit an open mindset. I think you really need, you need to have the attitude to work together". As elaborated on by stakeholder 1-8, this balance of having trust with another stakeholder or not dictates for example how they collaborate and share their knowledge. Another example is presented in interview 1-11 about the meeting of a consortium four times a year, helping create common ground. Finally, also in several reports and websites, 2-1, 2-7B, 2-8B and 2-10, mention that close collaboration helps lowering costs, trust as an indicator for future collaboration and references to enthusiasm following previous cooperation agreements.

Coordinating

As for the coordination aspect, it is suggested by several of the stakeholders that there is a need for one or more stakeholder's being in the lead for the coordination of innovative projects in the industry. This is being portrayed by stakeholder 1-10 saying "If there would be better cooperation, then I think that would be one of the, well crucial or key elements to well, to get better in what we do". There are however several different views on who should be coordinating towards success. With stakeholders 1-5 indicating that "maybe the governments in the end. Every day, or at least have the coordinating role, or at least tot the, they should make set the level playing field as you go". Also, stakeholders 1-7 and 1-9 see a leading role for the government as main coordinator. But there are also stakeholders, as indicated in interviews 1-2 and 1-5 and reports 2-3B and 2-5B, viewing the academic or knowledge institutes as being the main coordinator. This is highlighted by stakeholder 1-3, being a knowledge institute, as; "we try to be the glue or whatever you may call it, the oil to, in between the wheel to smooth it a bit, but it's up to the sector at the end to do it". Finally, also several of the other stakeholders also mention other stakeholders which should be coordinating projects, such as cargo owners mentioned by stakeholder 1-8, ship operators mentioned by stakeholder 1-1 and in report 2-1.

Controlling

With controlling, being about the imposing of orders and rules among stakeholders during an innovation project, there were few indications for it as being influential towards the project success. With stakeholder 1-6 mentioning that when six CEO's gave orders on a priority project, the priority for it among the stakeholders did rise. Moreover stakeholder 1-4 indicated that projects will gain momentum if larger stakeholders' pressure for it whereas they consider it important. However, with the few other indicators for controlling, these are mainly focused on the imposing of rules and sanctions on the end results of projects by the governmental stakeholders. With stakeholder 1-1 telling; "the government plays a part in this, but I would not overestimate the effect the government has, of course, if you have very strict and strong legislation that gives you a level playing field". And with stakeholder 1-10 indicating that "What I like to mention is that there is a specific role her for governments, … they have the switch in hand, so they have an important and specific role where they can influence the business case

Leveraging

As preparation towards the sustainability innovations for the Dutch maritime sector, several stakeholders indicate a soft approach to changing the mindset in the industry. Stakeholder 1-2 indicates that they are "more trying to influence the regulators to, make to push them for more clear regulations and guidelines". Additionally, several of the reports also mention this influencing of stakeholders. With report 2-1 communicating about the active engagement of stakeholders, 2-2A about the improvement of everyone's understanding, 2-6A mentions their stimulation of dialogue between the different stakeholders, report 2-10 indicates about their stakeholders' focus on the improvement of mutual contact and knowledge development and 2-9A talks about; "For example, regarding the latter, we are conducting intensive consultations with the relevant parties about the reduction of CO2 emissions from shipping".

4.3 Analyses of firm logic

The logic within the setting towards open innovation for sustainability in the Dutch maritime sector will be analyzed by looking at the convergency or divergency of the different priorities and interest.

Several findings from the analysis are important to consider for the influence of form logic. Firstly, the stakeholders mention different motives being of importance for themselves and the industry towards collaborating in open innovation projects for sustainability, these

being sustainability goals, monetary motives, innovation of technology, social performance, knowledge sharing and complying with regulations. However, when looking closer, multiple stakeholders indicate a differentiation between the stated motives, and where the actual interest and priorities of the stakeholders are in the industry. With the most important one mentioned being the statement of becoming more sustainable by several stakeholders in the market, whereas their focus is on other interests. Stakeholder 1-1 notices that; “No, everybody sort of says we are, we want to become greener. But how can we do that by still making money and that’s where the deviation between the stakeholder starts”. This is added upon by stakeholder 1-2 saying that; “Yeah, they probably all try to bring it as it is their motivation and that they really want to do it for making it a better world. But most of the decisions behind it are all related to money. So. Yeah, they. I think most companies stay, they only take those decisions if there's actually money to be made, not just because they think it's something that they need to do as their responsibility”. And stakeholder 1-3 indicating that the most common motive is the monetary by earning money, with stakeholders in the sector with a green ambition still wanting to make money and sell their products. A nuance in this is given by stakeholder 1-4 by differentiating between smaller and bigger stakeholders, with smaller organizations mainly focused on technical solutions whereas bigger organizations also want to create shareholders value. Also, investments cycles are indicated as being influential towards the green ambitions of stakeholders in interview 1-6, with the additional remark made by stakeholder 1-8 that the margins in the industry being too small to only focus on green priorities, therefore alignment of stakeholders is about “not losing money” as a means of survival. Finally also stakeholders 1-10 elaborates on this view by stating that; “ I think there are some companies that that really believe that that this whole transition, or no, sorry, there is a part of the industry that that's really like their own motive, say, OK well, we need to be green, we need to be more sustainable, but I think the vast majority of people and companies who believe in this whole transition, they believe in it from that it will be a business opportunity or could be a business opportunity for them”. Therefore, with stakeholders for themselves all indicating different motives as being important for themselves, mostly it relates back to monetary interests. However, within this, the priority is different depending on the type of stakeholders, with some looking more at the survivability whereas others want to look at stakeholder profits and investment cycles.

Moreover, this focus of earning money as the biggest motives in the industry is defined by several stakeholders due to uncertainty in the industry caused by a lack of clarity. With stakeholder 1-1 indicating the priority of many stakeholders being the continuation of their current business model, because sustainable technology is considered too expensive.

Stakeholder 1-6 adds that the will of becoming sustainable is there, but there is a lack of financial incentives for the implementation of new technology. As indicated by stakeholders 1-2, 1-3 and 1-4, the cause for this uncertainty lies in the lack of governments taking control and implementing regulations. As said by stakeholder 1-2; “so uh, for important stakeholders would be the ship owners and their motives, for, for going through this energy transition would be mainly based on regulations I assume. As I said before, they yeah, they're trying to make money with these ships. So, it's difficult for them to make a choice or go into a direction that will make them less money, if it's not absolutely needed”. Stakeholder 1-6 adds that; “government only follows it from the sideline, we should have a kind of collaborative interaction”. In addition to this lack of clarity by the government, uncertainty is also caused by too many differences in regulations globally. So again, the government should act on this as indicated by stakeholder 1-4 and implementation will not happen without the government playing their part. To summarize this view on the logic within the industry, this is best displayed by stakeholder 1-9; “When I speak to our members, then I mostly hear that of course, we want our world to be green. We want to leave it green. We have grandchildren, for example, that need to live in a green world. However, the way it goes now, we go bankrupt. They asked a lot of us and they ask it in a way that not all countries need to comply, so there's not a level playing field, so therefore we really want to, but we need help with this financially, but also with regulations and also with, of course, because there are so many ways to, yeah, to be more sustainable, that it's hard to choose where, yeah, which course are you going to take”. Furthermore, looking at the stakeholders’ views on the possibility of successful collaboration with either convergent or divergent logic, differences can be seen with several stakeholders highlighting the necessity of alignment in motives whereas some exclaim that collaboration is possible without this alignment. For this alignment, stakeholder 1-1 mentions that “if we just focus on the same things and on the same modules and so on, we can do it much more effective and we actually get it going”. This is added upon by stakeholder 1-3 proclaiming “because it’s the transition, it can only be done in corporation with what I said, the end user, the shipyards, all the suppliers that they all see, there’s a common benefit and also economical benefit for us and we do it together”. Also, stakeholder 1-5 as a shipbuilder, sees the building of ships requiring integration of technology, which will be difficult to implement without a collaborative approach and motivation. Stakeholder 1-8 mentions that “it makes it really challenging if those [the different stakeholders] are not aligned”. Additionally, this stakeholder continues by saying that “I think that is in the end the most biggest difficulty in this transition, that you need to align all those stakeholders to get things up and running”. Another example is given in 2-2A where it is stated

that a topic for which there is overall alignment of motives, and thus good cooperation, is the safety aspect of the maritime industry. Finally, stakeholder 1-11 mentions about a project for the implementation of hydrogen that “Everybody has their own goal. But what you see in this project if you're in this project with the intention to make it a pilot project and then build up on a later stage, then you're OK. There was a party, there was a company also involved for the “vervoer”, the logistics of the hydrogen and they were only in it with the commercial goal and then it becomes very difficult. And so they now more or less out of the project again and we don't have a substitute right now. But if you're in it with the same vision, we start with the pilot project, it cost us money. But we're in it for the for the higher, for the longer term and the higher goal. Then you see that there is an equal, uh, an equal line for everybody. And then it's very open, very open conversation”. Nevertheless, contrary to the stakeholders endorsing the need for convergent logic, two stakeholders mention divergent logic as well possible towards open innovation. Stakeholder 1-2 mentions that “If these organizations have different motives than we do defensive bits on their motive, of course. But it’s not per say a problem if their motives are different”. Also, stakeholder 1-9 talks about the case of Shell, in which the stakeholder does not expect any other stakeholder not to cooperate with them when Shell can provide alternative fuels. Whereas there may be no alignment in motives with customers following their green ambitions and Shell on the other hand being seen as quite pollutive.

4.4 Stakeholder management and firm logic implications

Looking at the analysis of both stakeholder management and firm logic, several findings have been presented. Table 1 summarizes the outcomes used towards project success in the Dutch maritime industry based on the seven management activities of Aarikka-Stenroos et al. (2017). Figure 2 shows a case summary of the firm logic influencing project success in the Dutch maritime industry. With the monetary motive being the most important, being influenced by the lack of a clear regulatory framework.

Management activities contributing to project success	
Motivating	Using financial and competitive advantage incentives
Resourcing	Identify and involve multiple stakeholders. Also use knowledge sharing to help stakeholders gain resources to co-innovate.
Goal setting	Using shared goals
Consolidating	Building trust and common ground to better collaborate
Coordinating	Have one or more stakeholders coordinate the project
Controlling	Imposing orders and rules among stakeholders aimed at the end result of a project
Leveraging	Preparing actors for innovation by changing the mindset

Table 1. Overview of the management activities for success in the Dutch maritime industry.

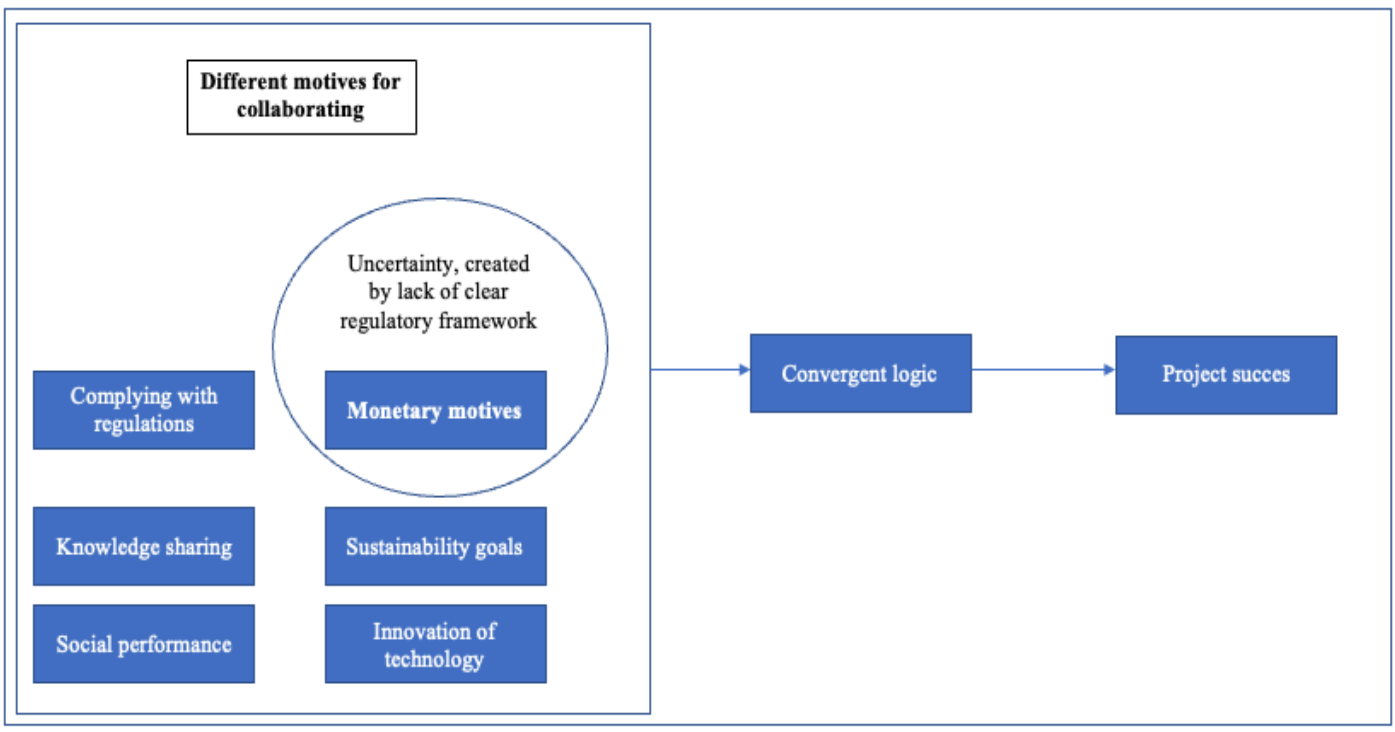

Figure 2. case summary with most important motives and influence of logic on project success.

5. Discussion & conclusion

This chapter will elaborate the interpretation of the results in the light of the research question, the overall conclusion, the contribution for theory, managerial implications, the limitations of the research, suggestions for future research and a reflection on the study.

5.1 Interpretation of the results

In this paragraph, the results will be discussed in greater detail with additional elaboration. Firstly, with prior study's findings that a set of good practices and project management is needed to manage multiple stakeholders in open innovations (Urbinati et al., 2020) and a set of management activities for it being given (Aarikka-Stenroos et al., 2017), this study present stakeholder management as factor influencing to the project success of open innovations. In the context of participating in innovation projects with a network of various stakeholders, there is recognition among the stakeholders involved in this study that the seven management activities from Aarikka-Stenroos et al. (2017) contribute as practises, with several being more influential than others. These being motivating, resourcing, goal setting, consolidating and coordinating. With controlling and leveraging being of lesser influence or not in line with original interpretation as given by Aarikka-Stenroos et al. (2017). To start, motivating is seen as two different incentives, financially and the gaining of competitive advantage within the industry as the most important once's, linked to the individual stakeholders' goals. This being used to facilitate co-innovation. For resourcing it is mentioned that with broad playing field in the maritime industry, it is key to identity the key stakeholders and using their differences in knowledge optimally by sharing this to a great extent. Goal setting is considered by all stakeholders important and could help them overcome the difference existing in the context, with one group believing there is a shared goal, and the others don't. Consolidating is recognized by the stakeholders as key to ensure open collaboration. Finally coordinating is recognized to be able to collaborate successfully, with opinions on who should be in charge differentiating. These five management activities are therefore in accordance with the study of Aarikka-Stenroos et al. (2017). However, controlling and leveraging are deviating from the study in this context. With controlling being about giving and implementing orders and rules during a project, in this study the stakeholders fail to mention this in general. They put more focus on controlling of the outcome of projects. Furthermore, leveraging is only of influence as a management activity using mind-set changes in the current context, with no mention of coercive means. Thus, contradicting or missing out on how it is presented by Aarikka-Stenroos et al. (2017).

Secondly, the analysis indicated several highlights about the contribution of firm logic towards project success in open innovation. Several different interests and priorities were indicated as being important by the stakeholders in the maritime industry. This indicated divert logic to be present, which could limit successful co-creation within innovative processes (Öberg & Shih, 2013; Pera et al., 2016). However, when asked for the most important motive for the industry, almost all stakeholders indicated that all other priorities and interests are inferior to the monetary motive. With for example many stakeholders mentioning their ambition to become sustainable, but this being of less importance as opposed to the survivability of their organizations. This is caused due to uncertainty created by a lack of a clear regulatory framework, with clear goals towards the future of the maritime industry. Even the stakeholder groups such as knowledge institutes who don't have monetary goals as their primary motive, acknowledge the need for this as being good for the industry to eventually become sustainable. Therefore, the required convergent logic as a contributor to success (Öberg & Shih, 2013) is considered present in this context. The only remarkable thing is that, while most of the stakeholders agree that convergency in priorities and interest is necessary for success, two of the stakeholders imply that success is achievable with divergent logic.

Moving on, the study also aimed to look at the relationship between stakeholder management and firm logic. With the management activities (Aarikka-Stenroos et al., 2017) used for success being differently for each stakeholder, logic influences how big these differences are to overcome. Contrastingly, stakeholder management can be a tool to align the different priorities and interests between the stakeholders. Uncertainty, which is a cause for the current convergent logic in this case, might be overcome with the right use of goal setting, consolidating and motivating. Furthermore, several of these management activities (Aarikka-Stenroos et al., 2017) indicate close relationship to the fundamental enables for successful co-creation (Pera et al., 2016). These being trust, inclusiveness and openness, which are like the management activities used in this case to help reduce differences among the stakeholders.

5.2 Conclusion

The present study provides insights on how stakeholder management and firm logic affect success as conditions in open innovations projects based. This is used to answer the main research question; "How does stakeholder management and firm logic affect the success of open innovation projects?".

This question is answered by differentiating between the individual roles of stakeholder management and firm logic towards success in open innovation projects and by looking at the

influence these variables have on each other. Stakeholder management is seen as a factor contributing to project success in open innovation, with several management activities to be used to a greater or lesser extent to identify and manage the individual interests within a network of stakeholders. Furthermore, also logic is considered as an influencing factor towards project success. Although in this case convergency of logic is shown to be present, there is disagreement if success can also be reached with a divergent logic. Finally, for the relationship between stakeholder management and firm logic, there are indications that they influence each other. But it's difficult for this study to determine the exact extent.

5.3 Theoretical and practical implications

This paper has provided a more comprehensive picture of how stakeholder management and firm logic are of influence on project success in open innovation projects. By looking into an open innovation project in the maritime sector towards sustainability, an extensive network of stakeholders has been analysed with their use of stakeholder management (Aarikka-Stenroos et al., 2017; Urbinati et al., 2021) and the given firm logic towards projects success (Öberg & Shih, 2013; Pera et al, 2016). The management activities developed by Aarikka-Stenroos et al., (2017) have been identified influencing factors of stakeholder management. Furthermore, the importance of logic is also recognized, however not with the same clarity as with Öberg & Shih (2013), with some stakeholders indicating that divergent logic also suffices for project success. Relationships between stakeholder management and firm logic as prerequisites for each other, not earlier elaborated on by the authors (Öberg & Shih, 2013; Urbinati et al., 2021), have been indicated as to be influencing each other. Moreover, the paper builds upon the case studies of Urbinati et al. (2021) and Öberg & Shih (2013), with both having stated the additional need for studies in different sectors and countries as compared to their studies. With this papers case study taking place in the Dutch maritime sectors, these needs have been filled in.

There are also several practical implications suggested by the paper that are important for project and innovation managers for future innovative projects. Firstly, stakeholders in open innovation settings should aim to collaborate with other stakeholders who are either likeminded and have the same goals and interests. Otherwise, success will be difficult to accomplish. Projects should be initiated with other stakeholders who have the same intrinsic motivation or otherwise they should look towards collaborative motives like the monetary one. However, without similarities, stakeholders should try and look for other organizations to join an initiative. Furthermore, a set of managerial activities have been identified helping to achieve good project management. It should be clear who the stakeholders are and a clear framework

of what the role of each stakeholder is should be defined. Preferably an independent stakeholders should lead such projects to prevent difficulties. Helping stakeholders to understand each other and creating an attitude to collaborate are also key towards project success, while also preventing uncertainty to take place.

5.4 Limitations

This paper presents a single case study. Different settings, both geographical and industrial wise might influence the findings, whereas the current research design limits the generalizability of the findings. Moreover, this study at the start was aimed to look at a project like SEANERGETIC, with the assumption of either being in a far stage towards completion or being completed entirely. However, this was not the case, with even some of the stakeholders not being familiar entirely with the project. The stakeholders were therefore required to elaborate on similar open innovation projects known from their past experience in the shipping industry. Also from the contacted 22 stakeholders, only 11 responded, in which some groups were represented more than others. Especially the lack of participation from the policy and regulatory bodies limits the study towards this case, because several of the stakeholders mention the government as highly influential towards open innovation in the shipping industry. This limitation has been tried to be reduced by using secondary sources, however it was preferred to have spoken to stakeholders from this group. The final limitation is by the chosen method of analysis. Although the content analysis provided deeper insight in identifying the relevant topics in a large amount of data, this type of analyses is prone to subjectivity of the researcher.

5.5 Future research

For future research, several suggestions can be made. Firstly, the contextual setting of this study can be replicated in a different industry or country. As also mentioned by the stakeholders interviewed, the shipping industry is aimed at the global market so similar studies might even focus on this global context. Secondly, with this research focusing on an innovation project not yet being finished, a continuation towards a longitudinal study should be considered (Hopwood et al, 2021). Meaning a study exploring the long-term collaboration within open innovation projects such as SEANERGETIC, learning about the actual end results. The outcome of such projects and the opinion from the stakeholder may differ, causing changes to be detected among these stakeholders over a longer period. Also, further research may look into the view of the two stakeholders indicating divergent logic as being applicable towards success as well. With

this being contradictory to the outcomes of Öberg & Shih (2013). Finally, with an interdependency between stakeholder management and firm logic being identified as prerequisites for each other, it would be beneficial to gain more insights on what the strength of this relation is. Possibly by conduction quantitative research about this topic.

5.6 Reflection on design choices and positionality

When reflecting on the execution of writing this thesis, several topics can be noticed. First, from the start of this thesis until the analysis phase, difficulties arose around the positioning and defining of project success. With no clear definition, several factors contributing towards success were first considered, but this made the analyses of data inconsistent. This was thus adjusted in a later stage of the research. Moreover, the data collection phase was challenging, whereas the SEANERGETIC project was an ongoing project in which not all stakeholders reached out to were familiar with or had insufficient knowledge. Therefore, a shift had to be made to a more generic context of innovation in the Dutch maritime industry. This had the consequence that the process of reaching out to enough relevant stakeholders was a challenge. Also, the data itself, especially in the interviews, contained much irrelevant information for this study. With many of the stakeholders giving information about the technological solutions as project success and less was mentioned about the stakeholder aspect towards this success. This should have been better directed. Positively, the qualitative design of the research was most likely the good choice, by gaining in-dept knowledge about the relevant topics. This contributes well to the knowledge building in the master trajectory of strategic management, both scientifically as personally.

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Appendix A. List of Semi-structured questions and interview introduction

Hello we are Guyon de Lau and Fabian Veldwijk, masterstudents strategic management at the Radboud University Nijmegen. Firstly we would like to thank you for taking the time and effort for us to be able to conduct this interview. This interview is part of our masterthesis, which is the conclusion of our study this year. This research is part of the seanergetic consortium, a consortium funded as an NWO project with the main aim of making the maritime industry sustainably viable for the future for a wide range of maritime applications. We are specifically looking at the barriers and driver for the energy transition towards green hydrogen in the Maritime industry for Fabian, and stakeholder management, stakeholder priorities and the successful transition towards a more sustainable Dutch maritime sector for Guyon.

Now some practical information about the interview itself. We will try to conduct the interview about the topics concerning the energy transition, between 30 & 60 minutes. The first part of the interview will be about green hydrogen adoption and these questions will be asked by Fabian. The second part about stakeholder management and priorities which questions will be asked by Guyon. Is it fine by you to conduct this interview either in Dutch or English? Next to your valuable knowledge with which we will be able to gain an elaborate insight in the Dutch maritime industry, we are also looking for secondary data to complement the interviews. Hopefully, we have made it clear what this interview will be about, do you have any questions about this interview in advance?

In order to conduct the research as completely as possible, a recording of this teams meeting will be made, which will automatically be processed into a transcription, with possible adjustments made by us afterwards to guarantee the usage of the exact words given. This recording will only be listened to by ourselves and people part of the seanergetic program at the Radboud university. After this research, the recordings will be deleted, and the transcripts anonymized. Is this fine by you?

Finally, if required, a copy of the initial and final report can be provided to you including our findings. The interview will now start;

Questions Fabian:

Alternative sustainable fuels:

- *Can you tell us what the global trends in relation to more sustainable, alternative marine fuels are?*
- *How do hydrogen fuel cells fit in the global panorama of alternative marine fuels and technologies?*
- *How does your organization evaluate and prioritize different energy substitutes and what factors influence their decision-making process in adopting hydrogen technology over alternatives?*

Barriers and drivers:

- *How do different economic factors either drive or hamper the transition towards hydrogen in the Dutch shipping industry?*
- *How do societal pressures create behavioral incentives for the industry to make the transition towards green hydrogen?*
- *How do governmental incentives (in terms of subsidies, carbon taxing etc.) influence behavior in relation to the transition towards hydrogen/alternative fuels?*
- *What steps and policy options should be taken (by government) to facilitate the large-scale deployment of hydrogen fuel cells for Dutch shipping?*
- *Is the necessary infrastructure available for the transition and how do you think it can be enhanced?*
- *How does the access towards financial (funding etc.) and human resources (knowledge) accelerate or hinder the adoption of technologies such as green hydrogen?*

Competitive landscape:

- *How do you perceive the competitive landscape, in general, will evolve as shipping companies try to establish themselves as leaders in sustainable maritime transportation through the adoption of technologies like hydrogen?*
- *How might the increasing demand for hydrogen, related equipment/materials, technology, and expertise affect the bargaining power of suppliers in the Dutch shipping industry?*
- *How do you think the growing demand for environmentally friendly shipping solutions, such as hydrogen-powered vessels, is influencing the bargaining power of shipping companies and other stakeholders in the logistics chain?*

- *How do you perceive the entry of new players, particularly those involved in green hydrogen production or other sustainable technology developments, impacting the Dutch shipping industry's transition towards sustainable energy solutions?*
- *Concludingly, what are the main concerns for the large-scale deployment of hydrogen fuel cells for Dutch shipping?*

This was the first part of the interview about hydrogen adoption, now the second part about stakeholder motives, management and project success will start.

Firm logic/motives:

- *Could you indicate which are the most important stakeholders in the Dutch maritime industry towards a green transition?*
- *How would you describe the motives/ interests of these different stakeholders, are these aligned with each other, or can differences be seen between them?*
- *What are the motives for you as a stakeholder/organization to collaborate or not to collaborate in a collective initiative towards a green transition of the maritime sector, such as the NWO initiatives like Seanergetic?*
- *How important is the development of new partnerships or collaborations for your organizations and what would you expect from other stakeholders?*
- *How likely is it for your organization to collaborate with other stakeholders with different motives, not aligned to your own motives?*
- *How feasible do you expect this transition towards sustainability in the maritime sector will be?*
- *Would you describe this transition to be more incremental (gradual) or radical, and which would you think is best suited for the maritime sector?*

Stakeholder management:

- *What bottleneck do you expect to appear in collaboration with different stakeholders, and why?*
- *How should the stakeholders engage with each other during the initiative? Do you expect a stakeholder to take the lead depending on their amount of influence or motive?*

- *How does the relevance and influence of the different stakeholders change during a collaboration?*
- *How should project managers interact with the different stakeholders in order to accomplish the possible projects objectives?*
- *How should knowledge be shared toward and between the stakeholders?*
- *What other expectations do you have about collaborating with other stakeholders?*

Success in open innovation projects:

- *What would you consider to be important for a successful collaboration towards a sustainability transition in the maritime sector to succeed, and why?*
- *Do you think the effort put into this sustainability transition are equal among stakeholders compared to the outcome or would you say that certain stakeholders profit more from this value creation, and why?*

This was the interview; do you have anything to add at this moment? Then we would like to thank you for your time and cooperation with our research.

Appendix B. Code book

Variable	Code	Definition	Example
Stakeholder management	Motivating (n=16)	Identifying short- and long-term incentives for stakeholders to facilitate innovating efforts	"What you're working one, yes, to find alternative finance methods. Because financing this energy transition is a challenge which we have not tapped on, but to make innovative finance concepts available to the transition, that's important. That can be crowdfunding" [Interview 1-7]
	Resourcing (n=45)	Putting forward the right stakeholder(s) and providing the right knowledge for stakeholder(s) to cooperate	"No I believe in semi-open access approach where the knowledge on the learnings from these new examples are shared because that will help to set out the legislation. And as I said, we are into new fields here and we cannot do it alone" [Interview 1-1]
	Goal setting and refining (n=35)	The setting of goals and achievable milestones	"So I think a clear course should be, yeah, it's important I think for, yeah, like in order to make it work" [Interview 1-9]
	Consolidating (n=37)	Building common ground and trust	"It's a bit of an open mindset. I think you really need to have the attitude to work together" [Interview 1-5]
	Coordinating (n=33)	Developing and communication the division of tasks	"The Network initiates an active dialogue between shippers, carriers and solution providers in order to boost the adoption of innovations, leverage best practices and to

			stimulate the implementation of cleaner technologies" [Report 2-3B]
	Controlling (n=16)	Imposing orders and rules among stakeholders	"What I like to mention is that there is a specific role her for governments, … they have the switch in hand, so they have an important and specific role where they can influence the business case" [Interview 1-10]
	Leveraging (n=12)	Preparing stakeholders for the forthcoming innovation	"For example, regarding the latter, we are conducting intensive consultations with the relevant parties about the reduction of CO2 emissions from shipping" [Report 2-9A]
Firm logic	Convergent logic (n=61)	The same priorities and similar or complementary interest	"I think there's a general understanding within the industry that batteries are part of the future and there's, there are no conflicts with that anymore" [Interview 1-2]
	Divergent logic (n=72)	Different priorities and/or interests	"our strategy is based on creating sustainable societies. Driven by technology and innovation. And so it's on our strategy, knowing that a big part of our current supply is based on, say, diesel engines, and we want to make them ready for future fuels. But of course today we cannot force our customers to use clean energy." [Interview 1-1]

Appendix C. Invitation for interviewees

Dutch:

(For English version, see below)

Geachte heer/mevrouw,

De maritieme transportsector wordt geconfronteerd met aanzienlijke uitdagingen vanwege zijn afhankelijkheid van fossiele brandstoffen, wat tot hoge emissies leidt. Om dit aan te pakken is er een dringende behoefte aan innovatie op het gebied van emissievrije energiesystemen. Het SEANERGETIC-project zal een impact hebben op de toekomst van batterij- en brandstofceltechnologieën voor effectief gebruik in maritieme energiesystemen.

De transitie zou echter kunnen worden verbeterd door opkomende technologieën en de alsmaar oplopende kosten. Verschillende pilotstudies wijzen al op mogelijke kostenbesparingen door opschaling en verhoging van de kosten van fossiele brandstoffen. Toch bemoeilijken de uiteenlopende belangen in de sector de transitie. Om dit te ondervangen moeten stakeholders samenwerken, om een gemeenschappelijk doel vorm te geven en tijdig actie te ondernemen. De belangrijkste onderzoeksvragen richten zich op de manier waarop stakeholders hun bedrijven kunnen transformeren, zich gezamenlijk kunnen voorbereiden en nieuwe energiesystemen effectief kunnen implementeren. Het project heeft tot doel transitiemogelijkheden met stakeholders te verkennen, noodzakelijke bestuursstructuren te ontwikkelen en de betrokkenheid van stakeholders te vergroten.

Om dit te onderzoeken wil de Radboud Universiteit meerdere interviews afnemen om een aantal aspecten in kaart te brengen waarop stakeholders de transitie in de maritieme sector beïnvloeden. Hiervoor hebben wij een interview ontwikkeld waarin wij graag willen dat u ons helpt onze vragen over dit onderwerp te beantwoorden. Het interview zal tussen de 30 en 60 minuten van uw tijd in beslag nemen en kan door teams of persoonlijk worden gedaan. De door u verstrekte informatie wordt als vertrouwelijk en anoniem beschouwd en dient voor wetenschappelijke doeleinden. Uw antwoorden worden uitsluitend beschouwd als uw mening, er is dus nooit sprake van goed of fout.
Wij zouden het zeer op prijs stellen als u meewerkt aan dit onderzoek. Alleen met uw medewerking kunnen wij dit onderzoeksproject tot een succes maken. Indien u dit wenst, kunt u een management samenvatting van de onderzoeksresultaten ontvangen.

Met vriendelijke groet,

Dr. Ir. G.W. Ziggers
Guyon de Lau, master student strategic management
Fabian Veldwijk, master student strategic management
Nabeel Hoorani, PHD student

Radboud University Nijmegen
Nijmegen school of management
Department of management studies
Thomas van Aquinostraat 1
Postbus 9108
6500 HK Nijmegen

English:

Dear Sir/Madam,

The maritime transport sector faces significant challenges due to its reliance on fossil fuels, which leads to high emissions. To address this, there's a pressing need for innovation in zero-emission energy systems. The SEANERGETIC project will impact the future of battery and fuel cell technologies for effective use in maritime energy systems.

However, the transition could be improved by developed technologies and high costs. Pilot studies suggest potential cost reductions through upscaling and increasing fossil fuel costs. Yet, the sector's diverse stakeholders with differing interests complicate the transition. To overcome this, stakeholders must collaborate to shape a common goal and take timely action. Key research questions focus on how stakeholders can transition their businesses, prepare jointly, and implement new energy systems effectively. The project aims to explore transition opportunities with stakeholders, develop necessary governance structures, and increase stakeholder engagement.

To research this, the Radboud University is going to conduct several interviews in order to determine several aspects in which stakeholders affect the transition in the maritime sector. For this, we have developed an interview in which we would like you to help us answer our

questions about this topic. The interview will take between 30-60 minutes of your time and can be done either by teams or in person. The information which you provide will be considered confidential and anonymously and serve for scientific purposes. Your answers will only be considered as your opinion, so there is never a right or wrong.

We would very much appreciate it if you would cooperate in this research. Only with your cooperation can we make this research project a success. If you wish, you can receive an executive summary of the research results.

Best regards,

Dr. Ir. G.W. Ziggers
Guyon de Lau, master student strategic management
Fabian Veldwijk, master student strategic management
Nabeel Hoorani, PHD student

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Appendix D. List of interviewed stakeholders

Abbreviation interviewee	Type of stakeholder organization	Position of interviewee	When
1-1	Shipbuilder and system integrator	General manager market innovation	June 11th
1-2	Knowledge institute	Managing director	June 14th
1-3	Knowledge institute	Senior project manager	June 19th
1-4	Shipowner and ship-operator/infrastructure stakeholder	Managing director	June 19th
1-5	Shipbuilder and system integrator	Principal research engineer	June 21st
1-6	Shipowners and ship-operators/policy and regulations body	Board member and coordinator	June 24th
1-7	Shipowner and ship-operator	Manager hydrogen	June 25th
1-8	Fuel cell and battery systems manufacturer	Chief commercial officer	June 27th
1-9	Shipowner and ship-operator/industry association	Policy advisor	July 4th
1-10	Knowledge institute	Sector manager	July 8th
1-11	Infrastructure stakeholder	Commercial manager	July 11th

Appendix E. List of secondary sources

Abbreviation secondary source	Type of secondary source	Type of author
2-1	Annual report	Shipbuilder and system integrator
2-2A	Sustainability policy statement	Knowledge institute
2-2B	Website	Knowledge institute
2-3A	Website	Knowledge institute
2-3B	Report	Knowledge institute
2-3C	Report	Knowledge institute
2-3D	Report	Knowledge institute
2-4	Report	Policy and regulation body
2-5A	Sustainability policy statement	Shipbuilder and system integrator
2-5B	Sustainability report	Shipbuilder and system integrator
2-6A	Website	Shipowners and ship-operators/policy and regulations body
2-6B	Website	Shipowners and ship-operators/policy and regulations body
2-7A	Website	Shipowner and ship-operator
2-7B	Website	Shipowner and ship-operator
2-8A	Website	Fuel cell and battery systems manufacturer
2-8B	Website	Fuel cell and battery systems manufacturer
2-9A	Annual report	Shipowner and ship-operator/industry association
2-9B	Report	Shipowner and ship-operator/industry association
2-9C	Website	Shipowner and ship-operator/industry association
2-10	Website	Knowledge institute
2-11A	Website	Infrastructure stakeholder
2-11B	Website	Infrastructure stakeholder
2-11C	Website	Infrastructure stakeholder