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FACULTY OF BUSINESS STUDIES
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Wärtsilä´s Strategic Project Management – The Role of Global Presence in Strategy Implementation

Master's Thesis in
Strategic Business Development

VAASA 2020

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Year of Entering the University: 2018
Year of Completing the Master's Thesis: 2020
Pages: 118

ABSTRACT

Purpose The purpose of this study is to examine the role of global presence as a strengthening factor for achieving strategical goals through project teams. It looks at the inter-organisational framework for complex projects and their resource allocation requirements.

Framework The study combines field from project management in servitization with elements from the resource-based view (RBV). The structures project management firm operate in a broken into their building blocks and trends towards human centred practices are derived. In a next step, research on capabilities are relevant for project work analysed and a framework that combines the fields is introduced.

Methodology The empirical research is conducted as multiple case study, consisting of 3 embedded cases. The date was gathered through 21 semi-structured interviews, the analysis followed an abductive approach.

Findings and Contributions The findings were similar across cases. Global presence takes in an important role in complex projects as it provides the base that allows for capability exchange across teams. It is particularly important when expertise and experience is indispensable. Closely linked to relational practiced, presence allows to build trust, stability during change and local expertise. However, internal process improvement and exchange across internal teams were found to be more important than increasing resources as capability for complex projects are time-consuming to build up and cannot easily be replicated.

KEYWORDS: Dynamic capabilities; Project capabilities; Project governance; Strategic project management; solution integration

1. INTRODUCTION

With over 50’000 vessels operating with at least one Wärtsilä product, Wärtsilä is a major player with the Marine Industry. Active in Energy and Marine, Wärtsilä’s net sales for 2019 amounted to EUR 5’170 million of which 64% was accounted to Wärtsilä Marines. Wärtsilä Marine scope reaches from rom standardized vessels to highly complex special vessels. Their service includes the complete lifecycle of a vessel, from its first engineering designs to the after sales services and includes various components and systems (Wärtsilä Cooperation Annual Report 2019). One division with Wärtsilä marine solutions is Fuel Gas Supply Systems (FGSS), which focuses Gas solutions, including LNG (liquified natural gas) solutions. LNG solutions, named LNGPac, are sold as standalone or part products with bunkering stations, tanks, process equipment’s and monitor systems. With increases focus on sustainability, these solutions are a valuable contribution to Wärtsilä’s portfolio.

Increasing complexity and development across technology sectors led to an international customer base and allowed for the development of a global Wärtsilä expertise network. However, the ship industry is highly competitive and technologic progress as well as innovative ways of working are transforming the industry. Price pressure, challenging time schedules and relationship-oriented networks are some of the pressuring factors. Work must be efficient, effective and yet customer focused and flexible. While the scope of work becomes increasingly complex and diverse, aligning all entities towards the same goals and values can become progressively demanding. Managing a growing organization in this challenging environment thus need strategical direction and comprehensive implementation.

1.1. Motivation for the study

Wärtsilä’s preconditions for successfully implementing its corporate strategy are challenging. Strategy implementation is this per se a difficult undertaking. Content and context are hereby guiding factors and Wärtsilä thus finds itself in particularly challenging

context. Ships are conventionally built in project management structures with each ship representing a single project of unique context and limited period. Strategy thus has to be implemented through project teams. The shipbuilding industry moreover operates on a global scale with different stages of a project taking place at different locations and different shareholders. This stretches the implementation radius across locations and parties. Taking Wärtsilä´s history, and hence market share, as well as project range into consideration, this translates into global project management, aimed to nevertheless pursue a corporate strategy and achieving unified goals.

Project management has grown into a widely used business approach and with such, standards and models have developed. Nevertheless, project management is still a challenge-patterned field, often leaving little focus for strategical actions. Project work implies project specific and varying context and conditions. Pursuing project management on a global scale hence refers to breaking departments into number of project teams, each facing different internal as well as external cultural diversity while at the same time pursuing strategic aims (Aubry, Sicotte, Drouin, Vidot-Delerue & Besner, 2012: 180-181). Unifying the teams across projects and enabling strategy implementation in such changing contexts is thus highly challenging (Alsudiri, Al-Karaghouli & Eldabi 2013: 598-599). In order to grow, FGSS has to understand its internal strengths and how to arrange such in temporary project settings.

1.2. Research gap

Project management and strategy have grown into an increasingly important team when looking at managerial development and strategy studies (Alsudiri et al., 2013: 597; Aubry et al., 2012: 181-182; Görög, 2002: 57). However, only limited studies have focused on the alignment of corporate strategy to project management (Jugdev & Mathur, 2012: 105-106; Alsudiri et al., 2013: 6001; Aubry et al., 2012: 182-183). While Portfolio management is focusing on a suitable assortment of projects and their strategic fit, it can be translated into multiple ways of managing projects and was even identified as weakest aspect within new product development (Miguel, 2008: 11). Implementing strategy through project teams is

hence an important yet understudied area that offers a great spectrum of research opportunities which might become increasingly valuable, especially with service-oriented and global companies such as solution integrators.

One aspect of strategy in project management organisations that has achieved little attention is the role that company presence plays in such a setting. Presence is referring to a company's forms of being in contact with the customer such as visits, offices, communication or representatives. In this paper this will be referred to as presence, or presence infrastructure. As services are based upon interactions and are often technically complex, having the right people at the right place might play an important role for strategical growth. Additionally, the importance of people within project work is recognized across standards. Presence thus accounts for for customer needs as well as internal processes success. Contributions to strategical operations within complex environments can be found within the Resource-Based View (RBV), focusing on a company's capabilities, routines and skills or using projects as a vehicle for strategy implementation (Davies & Brady 2016: 316; Jugdev & Mathur 2012: 106-108). Although project set up is addressed research through project complexity, project and dynamic capabilities and project planning, the impact of global presence and the related effects on capability allocation are hardly addressed. Only few studies on complex projects and their related capabilities have been done, yet with complex projects at rise, a stream of research in that area is emerging. Working in that stream, Davies and Brady (2015) clearly pointed out the need for further research on capabilities related to project work and how they affect the challenges faced in of complex and even temporary project settings (2015: 323). Zerjav, Edkins and Davies (2018, 455-456) build up on the demand to better understand how project capabilities can deal with complex project conditions. Davies and Brady (2016: 323) suggest further research on project related capabilities in uncertain, temporary inter-organisational settings to understand how these affect complex projects such as system integrations.

Each of the above-named concepts are high in complexity and thus offer various niches for further research. To reach depth, three the theoretical contribution of this thesis is thus built

upon three research areas: Strategy, Project Management and Project Governance. Together, they play a significant role in understanding the importance of presence for a growing organisation. This research gap is illustrated in Figure 1.

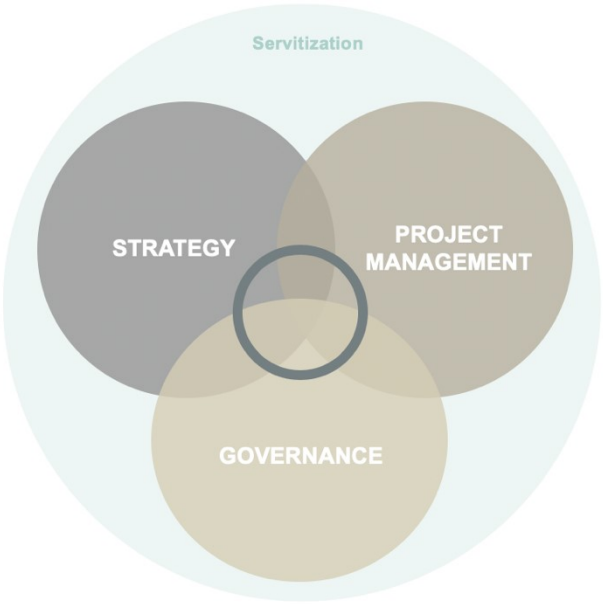

Figure 1. Research gap relevant for this thesis

1.3. Research question and objectives

The purpose of the thesis will be the investigation of global presence as a strengthening factor for achieving strategical goals in project teams. It will focus the current presence infrastructure, as well as on future forms of presence for optimal customer satisfaction across international project units. By doing so, the temporary nature of project structures and the connection of firm specific as well as project specific capabilities are addressed.

The frame is hereby set on Wärtsilä´s Marine Solution LNGPac division, which incorporates global value chains and an international customer base. Special focus is placed on the collaboration with shipyards, Wärtsilä's direct customer. Based upon latest market developments the focus is placed on Chinese, Japanese and South Korean shipyards. The thesis aims to create infrastructure suggestions oriented at the next five years.

The research questions of the thesis thus read as follows:

RQ 1: *What is the role of global presence in shaping the strategy implementation of an integrated solution providers?*

RQ 2: *How can Wärtsilä strategically organize its global presence to strengthen growth?*

In other words, this paper seeks to provide suggestions for Wärtsilä's future presence infrastructure and hence capability structure in order to provide optimal strategical results. The thesis will achieve such by describing the theoretical contributions of previous research, analysing the current market structure for the next five years and by identifying areas of change in the current presence infrastructure and providing relevant suggestions for development. Based upon the two managerial directions strategic business development and project management, and its subordinated area project governance, it combines academic focus with practical demand.

1.4. Thesis structure

This thesis is structured in five parts and starts with the introduction. The foundation is built in chapter 2 where the literature research is conducted and the theoretical background is established upon. This section is divided in three parts, focusing on the main theoretical streams of this paper and their various subtopics. Integrated solutions in project organisations focuses on strategic project management and governance, the resource-based view elaborates on project related capabilities and the synthesis aligns the concepts and puts them into their practical context. In chapter 3 the methodology is described. Adequate approaches for gathering and evaluating data are introduced and the procedure to analyse the data is explained. This is followed by the Findings, in which the results from the within cases analysis and the cross-case analysis are presented. In the last chapter the conclusion is derived and theoretical ad well as managerial implications are presented. Additionally, limitations and indications for future research are given.

2. THEORETICAL FRAMEWORK

Recent literature on business strategy highlights the changing environments firms are confronted with and the shift towards services they find themselves in (Davies 2004: 727-2728, 733). Yet achieving a competitive position within such changing environments requires firms to adjust their strategy and structures to address their customers' needs successfully. Understanding how value is created through the eyes of a customer becomes the defining factor. The following chapters will therefore provide the literature review which focuses on theoretical aspects of such. Firstly, a short introduction into servitization is given, before concentrating on service integration and integrated solutions and their complex set up. Next, literature on strategic project management, based on project management and strategy. is presented. It is followed by project governance literature. The chapter ends by combining the previously introduced topics and applying them to practical context.

2.1. Service integration in project organisations

To stay competitive, firms need to adjust their offerings to current demands and market developments. Yet, increased global competition and alternative sources of supplies have led to drastic changes within nowadays business environment. With Asia growing strong in high volume and low-cost productions, value distributions started to transform. While the past decades were influenced by price competition or product differentiation, competitive advantage from manufacturing and resulting profitability are nowadays declining, predominantly within developed countries. To cope with the economic development and increased competition Western countries look for different sources of advantage (Davies 2004: 729-730). Companies are now moving along their supply chains towards the consumer and focus on delivering added value by adding services to their products, rather than competing on low prices (Martinez, Bastl, Kingston & Evans 2010: 450-451; Kinnunen & Turunen 2012: 55). This downstream movement was first introduced as Servitization by Vandermerwe and Rada in 1988, and is now widely used as such a concept within research streams (Baines, Lightfoot, Benedettini & Kay 2009: 548, 554). Baines et al. define

Servitization as "the innovation of an organisations capabilities and processes to shift from selling products to selling integrated products and services that deliver value in use" (Baines et al. 2009: 563.). Hence, it refers to the shift from products-oriented sales towards value-adding services and the firm's development of related skills, processes and infrastructure. Its benefits can be categorized into marketing, strategical and financial benefits. By offering customer-centric outputs, often based upon co-creation with the customers, services reach levels of uniqueness and are thus difficult to imitate for competitors. Revenues form services are moreover seen as more sustainable and stable since they are often applied to a project's lifecycle, rather than being one-time transactions. By non-standardizing, price pressures can be released and technical knowledge developed at the same time. Applying consumer-centric and customer-tailored approaches furthermore enhances customer satisfaction and can therefore increase loyalty and consequently strengthen customer relationships (Kinnunen & Turunen 2012: 57-59; Benedettini, Neely & Swink 2015: 947-950).

The transition from manufacturing towards servitization however bears various challenges for any organisation. Several studies highlight the number of firms failing to successfully outperform manufacturing profits by the means of servitization (Benedettini et al. 2015: 947; Huikkola, Kohtamäki & Rabetino 2016: 30-31). Firms hereby move from standardization towards the flexibility of customer-oriented services, indicating a shift into the opposite direction of a company's business origin. This can be challenging or even contradicting, and affects existing business structures as well as offerings. This shift is depicted in Figure 2.

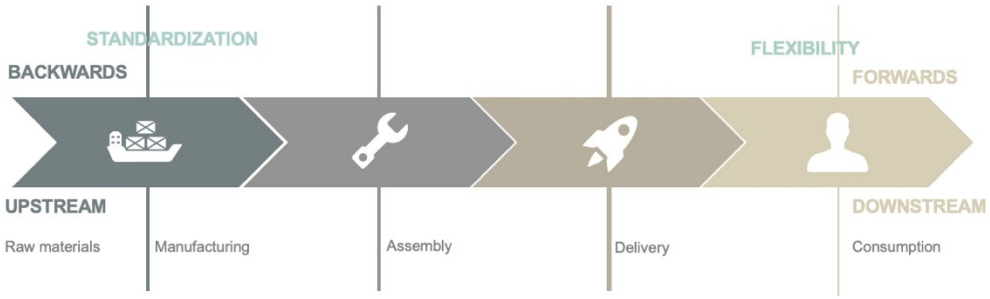

Figure 2. The value chain (adapted from Davies 2004: 747).

Upstream or backwards refers to tangible, standardized and transaction based products, Moving forward or downstream implies shifting towards the customer-involved, flexible and relationship-oriented side of the supply chain (Bastl, Johnson, Lightfoot & Evans 2012: 651; Lenka, Parida, Sjödin & Wincent 2018: 811-812). Dahmani, Boucher, Peillon and Besombes (2016) refer to Baines et al. (2007), when highlighting that "servitization of manufacturing company has to be considered as an innovation process which induces deep strategic and organizational changes" (Dahmani et al. 2016: 504.). These deep changes refer to the complex and throughout reconstruction of business models, processes, firm culture, resources as well as the integration of existing offerings. Kinnunen and Turunen (2012: 60) define five key areas of transition-challenges which include:

- strategic focus
- creating the adequate organizational culture
- customer centric organizational configuration
- the development of market-oriented services
- manging communication

This describes the diverse aspects on how servitization affects firms only briefly. To understand the role of presence for a servitization firm, various subtopics must be examined and interlinked. A firm must understand the environment it operates in, its customers, as well as its internal set up, and align the business operations and infrastructure accordingly (Dahmani et al. 2016: 504, 506). Benedettini et al. also highlight the risk of losing strategic focus or the risks of low performance within newly offered services and the related pressure within relationship-based business models (2015: 949). Lenka et al. further mentions the explicit risk of conflicting goals due to co-existence of products and services and challenges to excel on both ends. These experiences might vary within the levels of a firm and how servitization is extended throughout an organisation, yet the findings are congruent that servitization must be managed cautiously (2018: 813, 823). Understanding these challenges is demanding due to the complex and various company specific internal as well as external factors influencing it. Successful transitions have yet to be understood on a deeper level. To

better comprehend the above-mentioned aspects, they will be elaborated on in more details within the next chapters and eventually channelled into thesis relative subtopics. Firstly, differentiation within servitization must be understood as servitization is only a hypernym for more differentiated service business concepts.

2.1.1. Integrated solutions and system integrators

Within servitization various research streams and subtopics have formed. Some being Products-Service Systems (PSS), a Scandinavian concept more related to the environmental impact, value creation through service offers, or **integrated solutions** (Baines et al. 2009: 554, 556). Integrated solutions are an emerging business concept, often applied within complex projects. In brief, integrated solutions support the client with its unique overall needs by combining services with the delivered product over its complete life cycle. The services can include the design, specification and installation of equipment and many more (2009: 559-560). Davies (2004: 727-729) illustrates this by integrating the concept into the industries value stream as depicted in Figure 3.

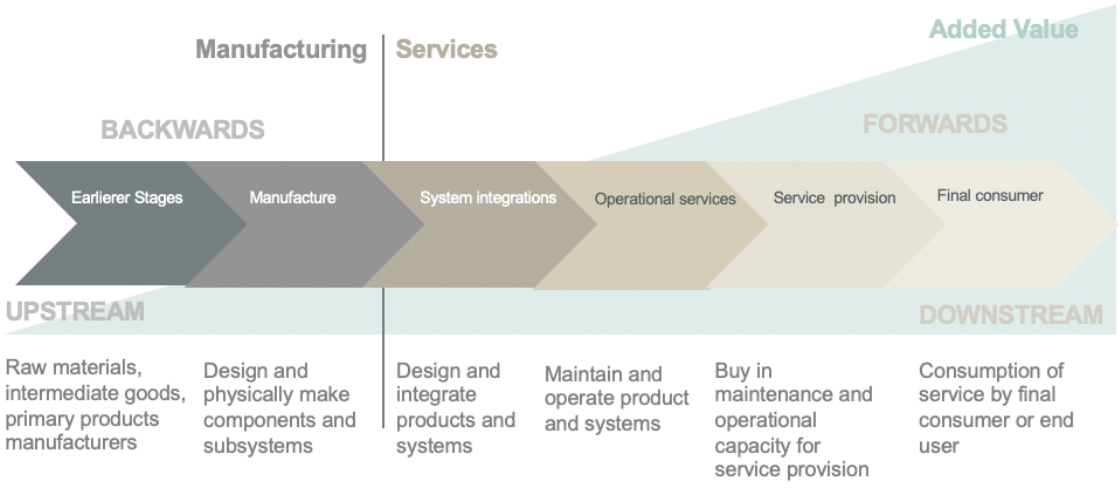

Figure 3. The capital goods value stream (adapted from Davies 2004: 747).
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Davies breaks the value stream into six main sections, with an overall differentiation between the manufacturing and service sector. Value is added at each stage with the output of one stage being the input for the following stage. This way, value is created accumulatively and collaboratively. Throughout the stages the output moves slowly downstream towards the customer (Davies 2004: 736-737). This way, stage-wise development of a solution is guaranteed, in which each phase includes different actors conducting the activities of their field of expertise (Davies 2004: 734; Brady, Davies, & D. Gann 2005a: 572). Defining value can hereby be challenging as the study from Brady, Davies and Gann (2005a: 574-575) on integrated solutions within the construction industry found. Actors focused on diverse aspects such as low costs, quality, or win-win approaches for suppliers and customers. By offering various services over various stage within a lifespan of a project, determining value is multi-layered and value determination is thus based upon co-operation and shared understanding of goals. This starts from an early stage as each step is built upon the previous one and is depended on all the actors involved.

System integration is placed at the intersection of the manufacturing and the service sector. While servitization is concerned with the downwards movement towards services and hence closed to the customer, system integrators or integrated solution providers, take in a specific role within that chain (Davies 2004: 736-737). A system integrator acts as "a prime contractor organization responsible for the overall system design and integrating product and service components supplied by a variety of external suppliers into a functioning system" (Davies, Brady & Hobday 2007: 184.). Hence, rather than pooling components, system integrators bear the responsibility of actions that reach across the value stream towards both ends. They design a system in collaboration with the client, manage the network of internal and external contractors, coordinate the actions needed for the supply and installation of components, provide services across stages and manage the knowledge creation needed for current as well as future systems. This includes various departments such as design, project management, technology development, relationship management and more, depending on the system and on its lifecycle stage. Henceforth, it is the overall safeguarding and alignment of the various subsystems being integrated into a system, tailored to a specific customer (Davies 2004: 735;

Davies et al. 2007: 188; Brady, Davies, & D. Gann 2005a: 573). Integrated solutions, as a consequence, are solutions that are delivered as a complete package, including tangible components as well as services, emphasising on the co-creation with the customer for the prospect of lifecycle usage (Windahl & Lakemond 2006: 807).

Complex customer-needs and pricing competition have been driving servitization and are now fuelling the development within system integration in the same manner (Baines et al. 2009: 563). Especially capital goods, goods not directly sold to consumers or assets used to produce further goods such as machinery, public buildings or vessels, are increasingly coupled to services or solution providers. In comparison to consumer goods, capital goods are highly customer-specific and demand for a larger service scope. Therefore, they are often referred to as **complex goods**. Their complexity and lifetime moreover necessitate lifecycle-oriented services. Solution integrators are thus facing increased competition and the need to compete on larger scales. The market structures within capital goods tend to be Oligopoly oriented with few suppliers and customers including governmental or institutional bodies. Since these are non-standardised but uniquely created goods, the industry is patterned by long-term business relationships that are built on trust, as well as strategical alliances, cooperation and subcontractors.

Just like shifting from products to services, the transition into integrated services in complex projects can take many years as building up the needed skills and organisational structures is by its nature hard to achieve and cannot be copied or outsourced easily. As such, the transition occurs in an exploratory and learning manner (Brady, Davies, & D. Gann 2005a: 578-579). In addition to the challenged related to moving into servitization comes the aspect of risk distribution. Risk distribution is especially important in complex projects. Multiple actors are hereby sharing expertise and contributing in a value adding stream and are mitigating risks. At the same time information is shared. This is crucial as solutions are a collaboration of several players and success is depended on teamwork. Yet at the same time it imposes risks of leaking information crucial for competition and business success. Having managed to successfully shift into servitization, companies need to maintain their business advantage

throughout changes and development. As mentioned, this involves areas such as strategy, culture, service offerings and communication, all pointing towards the optimal resource allocation and hence presence infrastructure for a service integrator. While system integrators are operating within servitization, their unique context and complex working scope demands for a distinct analysis. To understand the role of presence within service integration, one has to understand project requisitions, strategy, and the internal structures within integration solution providers. In the next chapters, the focus will be further narrowed down, the relevant topics introduced and linkages between them established.

2.1.2. Strategic project management in complex projects

Previously, strategical alliances were mentioned as being one of the building blocks for system integration. Strategical is an important term that appears in various areas of this thesis. Strategical decision address the steps a company decided to take in order to develop into its current and future version. Also introduced, system integrators often are project organisations or work with projects, especially complex projects. System integrators therefore have to apply these steps within their project set up, planning and execution. In complex projects, this is achieved with the support of strategic project management. To understand that concept, one has to understand the concepts of strategy and project management. The strategic aspect is anchored in various topics in different ways and will thus be build up throughout this section, and elaborated in more depth in chapter 2.2.

Projects occur in various contexts across industries, yet they can generally be defined as a one-time action or planned undertaking with a set starting and endpoint (Dingle 1997: 4-5; Wells & Kloppenborg 2015: 1-2; Project Management Institute, 2019). While various slightly differentiating definitions can be found, certain key elements seem to be congruent. Projects have a starting and ending point, are unique in their external and internal structures, their context, and their defined objectives, and further highly interdependent on these settings (Dingle 1997: 5; Bender 2010: 16-17; Jugdev, Perkins, Fortune, White, & Walker 2013: 537). Reaching a desired output or outcome is achieved by structured processes which aligns

knowledge, skills, and technique, supported by the relevant tools. Planning and managing the stages or lifecycles of a project, timing the milestones and allocating resources, as well as various other tasks related to the successful coordination of execution, is referred to as project management (Richman & American Management Association 2011: 2; Burke 2014: 5-6, 14-15; Project Management Institute, 2019). Project management aims to generate value within project procedures, to assure objectives and align project outcomes to a company's aim and overall strategy. It translates into managing these critical factors as well as all competences within a team and the remaining project stakeholders throughout the project's lifecycle towards a successful outcome (Bender 2010: 21-22; Alsudiri, Al-Karaghouli, & Eldabi 2013: 599; Jugdev, Perkins, Fortune, White, & Walker 2013: 535). Projects can be unique, or repetitive to some degree. To manage either, temporary teams are created to follow either unique or replicable tasks. Hence, the project management processes and structures are adapted to more predictable requirements or innovative and flexible processes (Davies & Brady 2016: 318-319).

Established tools and **standards** have been developed over the past decades and new versions of such are continuously released. Tools and standards act as a guidelines or supportive procedures for project managers to successfully follow processes and control project dimensions. The most recognized standards and certifications today are Project Management Body of Knowledge (PMBOK) and the Organisational Project Management Maturity Model (OPM3) by the Project Management Institute (PMI), the International Project Management Association (IPMA) which offers the Individual Competence Baseline (ICB4) or the British Association of Project Management's Projects in Controlled Environments (PRINCE, PRINCE2). Distinct tools focus on distinct approaches, such as Six Sigma which focuses on process improvement, or Scrum, which is an agile project management approach (RICHMAN and American Management Association 2011: 2-3; Aubry et al. 2012; Jugdev et al. 2013: 537-537; Burke 2014: 8). Although slightly different in aim and processes, they are mostly focusing on project planning, followed by the controlled execution of projects, including sequencing, focus on leadership and performance-based evaluation (Baird & Riggins 2012: 243; Serrador & Pinto 2015:1040-1041). However, these approaches are

relatively static and hence challenging to apply within changing or dynamic environments and complex projects. One example is the iron triangle, a traditional and well know metaphor for achieving project success. A project manager hereby monitors the targets time, cost and quality within the project scope. Increasing one dimension might lead to trade off in another, improving quality levels might take more time and increase costs. These ways of project management have received criticism as they do not match with today's dynamic environments and unique projects (Caccamese & Bragantini 2012). By the sheer means of strict planning those seemingly quality measures can lead to inability to react to customer needs and challenges within delivery processes. Feedback, changes and demands are creating costs, customer dissatisfaction or outdated products Serrador & Pinto 2015: 1043). Project management standards can limit, yet not eliminate the various challenges of project work. How to create and manage disciplined flexibility within unique or innovative projects has been recognized as an important study and field and researched in projects like the Polaris missile system, Heathrow Terminal 5 or in the London 2012 Olympics. Yet further research is needed on how companies can balance out these opposing requirements (Davies & Brady 2016: 323). Solution integration often falls within such unique and complex projects.

Defining **complexity** in relation to project management is challenging. The terms complex and complicated are often used interchangeably and are characterised by unknown factors, interdependencies or interrelatedness of actors, as well as changes along the different stages of the projects and thus emergent objectives. Complex projects in project management are often divided into subprojects, are of high technical complexity, and detailed long-term planning is often impossible (Azim, Gale, Lawlor-Wright, Kirkham, Khan and Alam 2010: 388-389). Azim et al. (2010: 390-391) refer to the contributions from Williams (1999) when dividing the factors driving complexity into uncertainty and structural complexity. The former hereby leads to unclarity within the project structures while the latter is characterized by larger interdependence and complex interactions. Further research however has added shifts in environments and technology as further distinguishing factors for project complexity. This differentiation is illustrated in Figure 4:

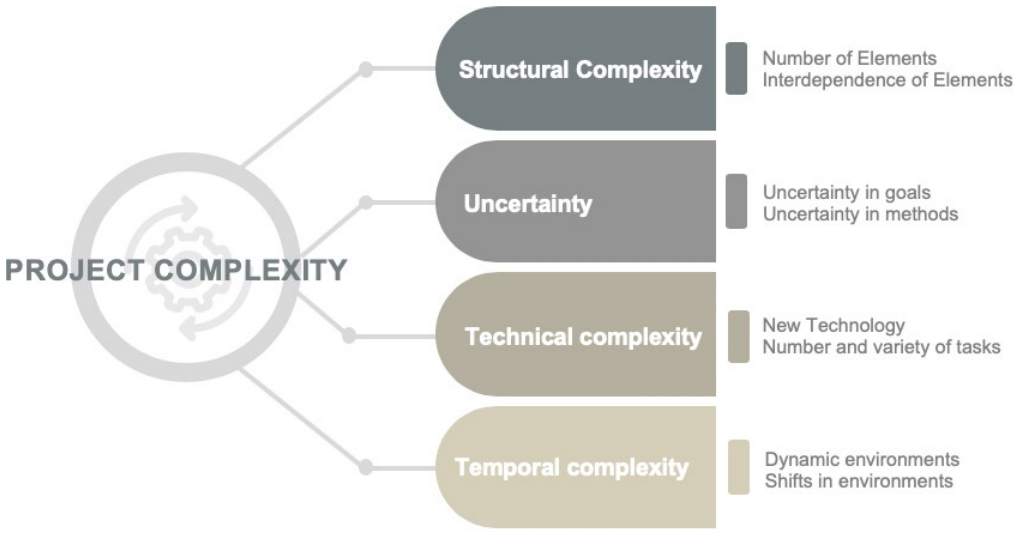


Figure 4. Dimensions of project complexity (adapted from Azim et al. 2010: 390-391).

With an increase in complex projects and integrated solutions, these characteristics are increasingly appearing within project management organisations. They are hence important to understand and to be managed. When creating business structures for complex projects, these factors therefore shape process design, daily operations and collaboration within business division.

The need for more flexible project management framework was already pointed out in the 90s. Williams (1999: 270, 272) refers to Baccarini (1996) when claiming that project complexity is increasing and with this change, the tools designed for ordinary project are becoming outdated and inadequate for complex projects. The iron triangle focuses on predefined measures, conditions in integrated solutions and complex projects are however less static and being able to react to customer needs is crucial. Instead, in complex projects hard and **soft skills** play and important role. While hard skills refer to processes, procedures and tools, soft skills are concerned with managing the human aspects within projects. In other words, hard skills include the techniques for planning and managing and soft skills apply to implementing the planned. Various Project management standards such as PMBOK or the PMI already highlight the importance of people and their impact on project success, yet many

standards are still mostly focused on hard skills. Nowadays the importance of soft skills within project management is increasingly recognized. Hard skills do not account for projects emergent nature, nor for the human aspects within project work (Winter, Smith, Morris & Cicmil 2006: 640; Azim et al. 2010: 392-393). Connecting this to the pervious findings that complex projects demand for disciplined flexibility, to cope high complexity, interdependence or uncertainty, the importance of soft skills becomes clear. One of the factors influencing this development is the recognition that project complexity is traced by to the three P's (Azim et al. 2010: 393), where at least one is accounting for soft skills:

- Product
- Processes
- People

The importance of people is stressed throughout literature as well as project management standards. Azim et al. (2010: 392) state that factors related to people further include communication, teamwork, negotiations and conflict management, leadership, ethics and behaviour. Interactions between people create another complexity, one of the most challenging way; interaction of nations, culture and perspectives. To successfully manage projects, **project managers competences and leaderships styles** have thus been identified as being of great influence. The competences needed are reaching from interpersonal abilities to technical and cognitive competences, to understanding and assessing of situations and people, to leadership skills. Azim et al. (2010: 397-398) examined identified the most important soft skills required internally as well as externally as motivation, delegation, ownership and sense of achievement, leadership, and most of all communication (Figure 5). Communication is stressed particularly as it helps for interpersonal acceptance, team work and motivation. Being linked to leadership and authority, responsibility and delegation is important as it can create trust, a sense of belonging in the team, and motivation (Azim et al. 2010: 397-399). Project leadership includes competences to manage relationships with team members and external stakeholders, and to create a vision and empowerment. Lack of leadership can lead to uncertainty which may affect team spirits, and ultimately project

success. Leadership that allows delegation is crucial as complex projects demand for team effort. It is the people, and not the standards, that are capable of confronting challenges with intelligence and hence reduce complexity (Winter et al. 2006: 646; Pant & Baroudi 2008: 125). Soft skills and eventually relationships can complement the hard skills, especially when flexibility is demanded (Pant & Baroudi 2008: 125; Azim et al. 2010: 394, 397). Thus, soft skills influence project management practices and success (Pant & Baroudi 2008: 124-125). To understand soft skills can affect complex project structures and their temporary nature, the role of people in project work is further elaborated.

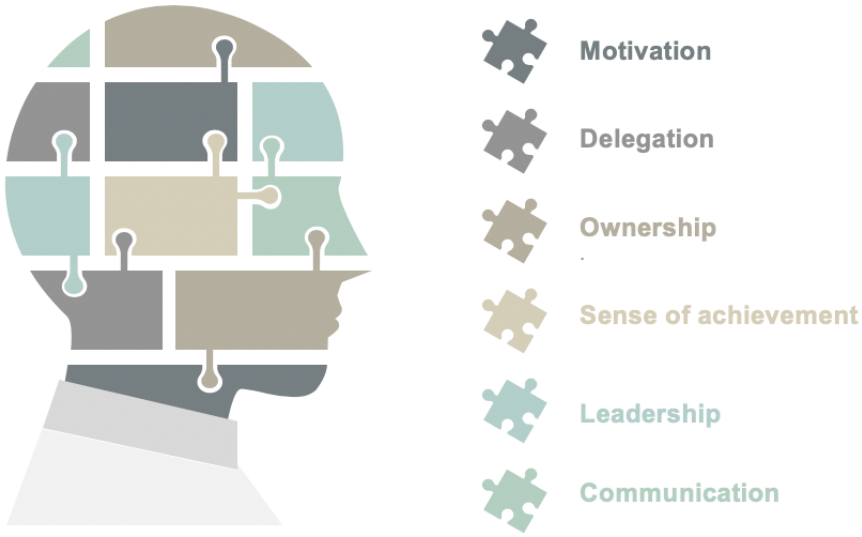


Figure 5. Important soft skills for working with people in projects.

People are one of the foremost challenging aspects within project complexity while at the same time the defining factor for project success. Especially with increased demand for flexibility, as in complex projects, it is defining to have the right people and competences in the team and to offer them the right structure to operate in. The challenge of finding people with the skills and knowledge to cope with complex projects and the loss of such due to the temporary project nature has been addressed by Morris (2013). Team members bring in skills, experience and social ties with prior team members crucial for project success (Davies & Brady 2016: 322). In his book “Reconstructing Project Management”, Morris pushes the

importance of project skills and knowledge even further by focusing on how these have to be distributed across core and non-core project teams and the linkage between skills, trust and individual behaviour (2013: 202, 205). These project specific skills will be in focus for this paper as they might be the key to managing these complex project settings and ultimately determine presence infrastructure. Before further investigating on these skills, the elaboration of strategic project management will be completed.

Strategy, the second part of strategic project management, is a highly complex matter that has been at the core of businesses over centuries. It contains various research streams and focus areas that have been developed and revaluated over the past decades. Given its sheer volume, only the ones important for this thesis will hereby be elaborated on further in chapter 2.2. Due to its high complexity, no universal agreement on its definition on strategy can be found (Porter, 1996: 62, 64-68; Hambrick & Fredickson, 2001: 52; Nag, Hambrick & Chen, 2007: 935-936; Collis, & Rukstad, 2008: 84). In general, however, the following can be said; strategy builds upon a long-term perspective of an organisation, the direction it aims to follow and how to achieve competitive advantage. In economical context it is focused on achieving competitive advantage and the prospering of an organisation. Competitive advantage addresses the concept of how a firm can create superior performance that allows for a unique position in the market. (Prahalad & Hamel, 1990: 89-90; Teece, Pisano, Shuen, 1997: 515-516, 518-519; Harreld, O'Reilly III, Tushman, 2007: 26).

Linking back to the overall strategy direction of a firm; service integrators or companies working with complex project often build their business upon projects and hence project management, which translates into managing several projects at any point. A company's set and thus choice of project defines its project portfolio. **Project Portfolios** determine an organization's objectives, allows for resource planning and refine project scopes. By declining or choosing projects, strategy specific types can be selected, risk can be mitigated and resource gaps balanced. Hence, strategy occurs via projects. The enhanced planning and controlling of several projects at the same time can significantly contribute to a project's success due to derived focus and alignment of resources (Bender 2010: 117; Wells &

Kloppenborg 2015: 17-18; Miguel 2008: 10-11). It can therefore be said that a company's project portfolio is the mapping of projects in accordance with a company's strategy and organizational goals. And hence, a firm's project portfolio is the practical reflection of its direction, values and future aims on a holistic base. While Portfolios focus on the strategical direction on a high level, they do not focus on the organisational aspects of how to get there. This is where strategic project management comes into play.

Looking at the concepts introduced above, it becomes clear that a company's strategy has to be connected to its project choice but also to its project execution in order to create business value. Thus, the idea of **strategic project management** evolves. Defining such proves to be challenging, as no clear definitions can be cited. Artto, Martinsuo, Dietrich and Kujala defined projects in that context as "an implementation vehicle of higher level strategies, rather than an independent temporary organization in its environment" (Artto et al. 2008: 49.). Overall, the concept of a strategic fit between the corporation and its projects is congruent within different authors. Strategic project management is thus concerned with implementing the corporate strategy on the operating level. Artto et al. (2008: 49-50) refer to several authors when explaining that for the implementation of a firm's strategy into its projects, a top-down approach is applied that hereby aims to assure the coherent anchoring of the corporate strategy. Strategy is a holistic concept that is valid and significant in every department of a firm. Strategical decision making that is not understood and hence implemented by a firm's employees is unlikely to be successful and therefore a firm's strategy should be reflected throughout its layers and in its various daily tasks. Looking at it from an organizational perspective, strategy can be divided into three layers: corporate, business and functional. While corporate focuses on the highest level and the overall direction of a firm's development, project management is located in the functional or operational level (Alsudiri et al. 2013: 599). At the same time, a corporate strategy should acknowledge the projects, their uniqueness and the impact single projects can have, and be established in a way that it can be implemented by the means of projects. Strategic project management is thus the fit between projects and corporate strategy. Breaking it down to its details, this refers to the integration of strategic objectives into the various stages of the project cycle. By translating the business objectives into inputs or ideas related to the project context,

and by post-evaluating a project after completion in regards to the corporate strategy implementation, a solid connection can be established (Görög 2002: 56-57).

Strategy and projects should thus be aligned in order to achieve valuable business outcomes. However, the **challenges** to do so are highlighted by several authors. Alsudiri et al. (2013: 596-597) refer to Miller (2002) and Eriksson (2013), when indicating that 30% of all large projects fail to establish that alignment. The reasons for such are various and project-dependent. While certain studies refer to internal aspects such as communication, competences of people involved, others refer to lack of support from higher levels of business strategy development and external factors. These are the factors that have previously been highlighted as critical for success. Their connection to implementation failure thus reinforces their importance. One notion within the challenges of aligning projects plans and corporate strategy is highlighted by Alsudiri et al. (2013: 598-599). Their study mentions a weak point or missing link within the chain of strategy communication and implementation. Due to this unclarities, the corporate strategy is only partly or only partly correctly implemented into the project plans due to misinterpreted objective. Since this study in 2007, much attention has been paid towards the project and strategy alignment, yet there is still a gap of empirical studies that could bring valuable insight. The complexity of aligning corporate strategy and projects seems to lie in the nature of project management firms, even if these are not focused on complex projects. Another notion is the complex structure of project management, built upon processes, milestones, stakeholders and resources involved. On the other side are the firm's components such as portfolio tools, programmes or mechanisms. These factors form a dynamic network of entities where the firm's strategy has to be aligned congruently in every element and synergies have to be formed (Aubry et al. 2012: 182). Another challenge lies within the uniqueness and dynamics of the projects as highlighted by Artto et al. (2008: 50). Projects are by their nature depending on the larger context they are embedded in. This refers to various changing variables and uncertainty and becomes especially important in solution integration, where flexibility is mandatory to allow for custom tailored solutions. Moreover, projects involve various stakeholders that have to be considered and included in decision-making. Adjusting a project's objectives to its surroundings, even allowing for

flexibility within the projects, is therefore often crucial. However, exactly that might translate into projects strategies that are not aligned with the corporate strategy.

Previously, the interrelation between strategy, portfolio management, and strategic project management, as well as their related challenges and skills requirements have been introduced. One can now understand their linkage and their context. The challenge is thus how to apply strategic project management in complex and temporary settings and to identify the role of individuals and their skills. Strategy implementation happens at the operative level, where people interact with the industry they operate in. Especially when that touchpoint between corporate strategy and market occurs via services, and hence interactions. Presence infrastructure thus addresses the allocation of the skills to manage complex projects but also to implement strategy. To reach the implementation level, and hence the presence infrastructure, a further project organisation relevant division has to be considered: project governance. The various divisions are depicted in Figure 6.

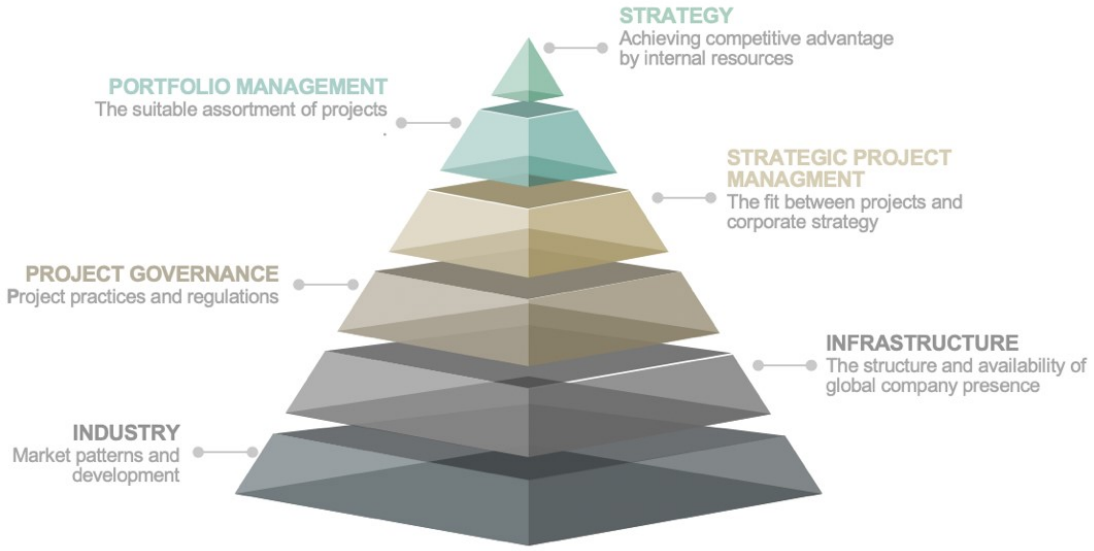


Figure 6. The divisions guiding strategy implementation in project organizations.

The analysis on skills allocation, or presence infrastructure, related to complex projects and their affect on challenges faced within complex project settings addresses the previously mentioned research gap in this field.

2.1.3. Project governance

One now understands the organisational structures of system integrators and the challenges faced in complex projects. In addition, integrated and hence tailored solutions are nowadays supplied on a larger scale. While this sounds contracting, the benefits become obvious quickly: while still supplying a customer with tailored components and solutions, standardization allows for cost reductions, repeatability and increased project output. Combining these seemingly opposing approaches demands for a system that allows for the previously mentioned disciplined flexibility. In other words; to put the soft skills into best practise, solution integrators need processes that can be replicated across different projects, yet that are flexible enough to be in functional alignment with project uniqueness (Davies 2004: 736; Davies et al. 2007: 186; Storbacka 2011: 709; Chakkol, Selviaridis, & Finne 2018: 999). Hence, complex projects demand for a framework that enables stability as well as flexibility in collaborative networks. This consistent set of practices on how to conduct and control projects is called project governance. It is the framework for resource allocation and the final building block to understand how to manage complex projects.

Project governance refers to project responsibilities, policies, processes, and involves legal aspects. It is a consistent set of practices that are reliable and repeatable (Chakkol et al. 2018: 998; Locatelli, Mancini, & Romano 2014: 1396). In literature, various definitions for the term project governance can be found. In 1994, Heide builds up on previously transaction- and contract-focused definitions and defines it as “a multidimensional phenomenon, encompassing the initiation, termination and ongoing relationship maintenance between a set of parties” (Heide 1994: 72.). Joslin and Müller (2016: 613) later define project governance as the systems, structures, processes and corporate frameworks, used to for activities, coordination and resource allocation that are needed for achieving organizational objectives and successful project execution. Ruuska, Ahola, Artto, Locatellli and Mancini (2011: 649) also include safeguards and distribution of risks to the elements of governance. Turner and Keegan (2001: 255) build on their research form 1999 and 2000, highlighting that governance structures adopted by successful project-based organizations should account for two project

categorizations: project size or complexity, and client configuration of either few large and dominant clients or many small clients. This is congruent to Ruuska et al. (2011: 650) whose review concluded that governance for complex projects is consequently complex and a definition for such includes key elements as contracts, procurement and supplier network management, risk management, work monitoring and coordination, collaboration across actors and development practices and communication. Governance can therefore be described as the processes, framework and infrastructure of projects. Interlinked with project management procedures it is a firms' overall structure that guides operations and activities.

Project Governance in integrated solutions or complex projects are patterned by uncertainty, complexity, repletion as well as flexibility, and involves large number of partners (Ruuska et al. 2011: 591; Davies & Brady 2016: 319). This is consistent with the four characteristics of complex projects mentioned previously. Chakkol et al. (2018: 998-999) base their description of governance for integrated solutions on three characteristics of complex project characteristics: temporary nature of project-based partnerships, high complexity and uniqueness with the related uncertainty, and thirdly ambiguous structures and hierarchies due the many firms involved. This leads to unique governance forms as it incorporates both vertical and horizonal relationships, including different teams, project, firms or alliances. Complex projects are hence built upon a collaborating network of actors. Their governance aims to fulfil project specific goals yet also cross-project goals of those different actors. This highlights further why balancing tailored solutions with standardised projects can be so challenging. Not only must corporations collaborate effectively, also efficiency and customer focused decision-making must be achieved. Hence process, routines, practices and especially the right choice of partners are an important part to manage this balancing act successfully. Ruuska et al. (2011: 648) highlights the various problems evolving from the dynamic network of collaborating organizations and the combined resources, capabilities, knowledge and goals. Finding a shared path is the base to enable successful project governance and eventually strategy implementation through projects. To understand capabilities within project work, governance must be understood first.

Complex or solution integration projects face **elements of uniqueness combined with elements of repetitiveness,** dependent on the project. Projects can be classified in either strategical and innovative or routine projects. The former address new markets and support a firm's market position and competitiveness, yet demands for flexibility, experimental learning through the process and ideas. The latter is more predictable in outcomes and can follow sequential processes such as in the traditional project management and exploit existing knowledge. The processes, structures and culture that build the project governance thus have to be adjusted to the type of project. It has to balance these diverse conditions, by adjusting and modifying plans if needed (Davies & Brady 2016: 318-319). Recent studies on the Heathrow Terminal 2 and 5, or the Olympics 2012, has confirmed the need for structures that enable stability and change at the same time, and identified capabilities and thus human aspects as crucial for such (Davies, Dogson & Gann 2016, 39-40; Zerjav et al. 2018: 454).

Another aspect influencing governance of integrated solutions is the **collaboration** within actors. Complex projects include various parties that hold control due to collaborative arrangements. Moreover, each party holds a competence area which is characterized by their specific way of working and henceforth might not be aligned to the other parties involved. All these aspects play into project success, delays or cost overruns. Van Marrewijk et al. (2008: 592, 597) study found that managers within complex projects seek to create sense-making within their work context and cultures by the means of regular project management practices, feeding back to the previously introduced importance of leadership. That creates unique forms of governance flexibility. Collaboration for integrated solutions are often international and cultural aspects are an important contextual element for solution providers. Stakeholders shape the collaboration and the governance as well as demands for adaption, coordination and safe-guard. This requests firms to build relationships which then allows to create a common macro culture, enabling effective governance, going beyond single projects. Standards can help achieve symmetries between actors enhance information flow, yet these are only efficient when implemented by all actors. Naturally, each firm has its individual ways of working, standards and hierarchical structure. Subcontracting brings various hierarchical structures and cultural aspects together, making a purely hierarchical structure

across actors almost impossible. Implementing symmetries is thus challenging as it might intervene with hierarchies and collaborating demands for finding an optimal balance between control and freedom (van Marrewijk 2004: 240-241). Miller and Hobbs (2005: 49) concluded that governance in such complex context is not a static hierarchical process but time-dependent and self-organizing, with actors co-creating the project concept and institutional framework. To achieve strategical goals, the collaboration must be effective. Presence infrastructure can consequently have an influence on the relational mechanisms and on successful collaboration. Presence infrastructure thus not only addresses and affects the customers, but also the various actors building the vital network

Looking deeper into these co-creating forms of framework, one can distinguish between two mechanisms governance is based upon: **contractual and relational mechanisms.** Contractual refers to the formal and legally enforceable agreements, relational refers to socially derived norms. Relation based indicates increased levels of information exchange and problem solving, interdependence and higher commitment by the means of resources and efforts, and trust. They come into place in risk managing, uncertainty handling and coordination of inter-organisational collaborations. Transactional on the other hand typically refers to win-lose approach and competition, where the interactions are limited in time and frequency. Formulated differently; while contractual mechanisms cover the legal framework, relational mechanisms allow to fill in what is not covered by law. Hence, trust in the form of mutual acknowledgement of long term cooperation serve as a supportive function in addition to legally binding contracts (Bastl et al. 2012: 653, 668). Trust has been emphasized for successful in strategic project management. It becomes now obvious that governance and strategic project management are connected and reinforcing elements within project work and influence project cooperation on the individual level.

With the uprising acknowledgement of people and soft skills, research started focusing on **relationship driven or trust-based norms of governance** and their effect on project success**.** Van Marrewijk, Clegg, Pitsis & Veenswijk (2008: 591-592) challenges the study from Flyvbjerg, Bruzelius and Rothengatter, 2003, which found that governance is

responsible for cost overruns, and place human interaction in focus. van Marrewijk et al. focus on "how a project culture and project design supports successful cooperation between partners working in a mega project" (2008: 599.). Specifically, how ambiguities, power conflicts, national, professional and cultural subcultures coexist and how these different interests, values, and working methods, under contractual arrangements, are brought together. They conclude that project design and culture are important for cooperation and project success. Cost overruns are therefore the result of normal practices and professions operating with incomplete data sets, influenced by various forces such as project design and cultures, rather than failure of project governance. This is supported by the findings from (Artz and Brush 2000: 357), stating that cost reductions are a result of behavioural as well as relational aspects, and cannot be minimized by optimal governance structures only. Looking at complex projects, relational governance is thus the baseline for the role of capabilities and soft skills.

2.1.4. Managing integrated solutions

The previous chapters derived the single components of service integration faced by project management organisations and the requirements for capability allocation. Bringing these components together offers insight into the linkages and hence creates an understanding of interdependencies and reinforcements of the different elements. This chapter will focus on the holistic picture and derive the basis for the following analysis.

Service integrators create value by understanding customer's needs and business activities. As one can understand from the theoretical aspects covered above, successful service integration is challenging at a strategical level and even more so on an operative level. A company's strategy must be in alignment with the project choice and its execution. Choosing projects refers to choosing strategic partnerships, upon which the company's overall direction is built, and tight collaborative work which brings its own challenges. The execution, done by strategic project management, is often challenged by its complexity and interdependence. Strategic project management should acknowledge project unique context and its

complexity-related requirements to generate value, yet align to that while at the same time ensure congruency with the corporate strategy. To complete the circle, activities are heavily influenced by the skills and knowledge of individuals that are to be connected by an adequate project setting (Figure 7).

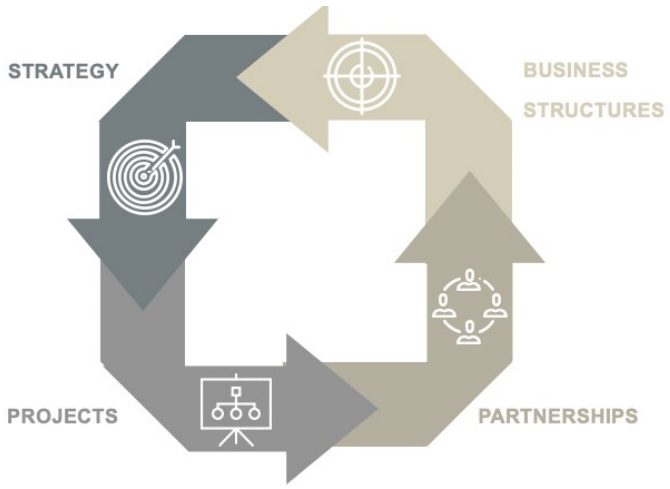


Figure 7. The components influencing strategy implementation for integrated solution providers.

Integrated solutions are built in collaboration and upon on value added mechanisms where phases overlap, and value is often hard to be measured or to be defined. Moreover, value delivery does not stop at the handover, but expands over the solutions lifecycle (Davies 2004: 733). At its base lies successful collaboration as derived when looking at relational governance. Actors engage in interdepended activities and together generate a system that generates value. Each actor is specialised in its field and influences and contributes to the overall system with knowledge, specific skills and resources. A system integrator is thus embedded in a network of meaningful **relationships and partnerships**, aiming to create "a dynamic fit between competencies and customers" (Windahl & Lakemond 2006: 809.). Building, maintaining and stabilizing relationships is a vital part for complex projects on the individual as well as on the cooperate level. Managing them means assigning resources and attention towards them, responding, initiating and managing their effects. It also includes influencing and being influenced, strategizing, planning and adapting. Due to the great value and higher complexity of capital goods or complex projects, business relations also tend to

be long-term oriented since services expand to after-sales periods (Davies 2004: 734). Suitable partners are moreover often hard to find as they require specific expertise and willingness to cooperate. They have to be trustworthy, as the delicate processes of information sharing is risky and business partners thus have to be chosen carefully. The partners not only share knowledge in order to provide integrated solutions, but also risks, rewards, and business opportunities. Properly managed relationships can therefore even result in a source of competitive advantage. Collaborations are henceforth built to last and to generate value and profit. Yet the benefits of collaborations must also be captured.

Within complex and changing environments where long term planning is challenging, the network can become the crucial element to circuit challenges. External factors, of which a focal firm is not in control of, might influence a solution and early identification of these factors with the help of its established network, can prevent risks and even open new opportunities. Dialogue, priority adjustments and close proximity are therefore some of the key factors that define successful collaboration and service integration. One should keep in mind that solutions are derived over the whole supply chain and therefore incorporates the upstream relationships with suppliers as well as the downstream relationship with the end customer. Bastl et al. (2012: 666) found that improving down- as well as upstream relationships are crucial for successful solution integration. They conclude end customer involvement as being a success factor for industrial service development. These findings are supported by further studies from Matthyssens and Vandenbempt, 1998 and Olivia & Kallenberg 2003. Consistency in developing cooperative norms generates and enables technological dependence and eventually creates value. Especially in innovative or strategical projects where uncertainty is high, cooperative norm can enhance cooperation (Windahl and Lakemond 2006: 808-809). Maintaining close relationships can also lead to cost savings. The lack of relationship relates to lacking information regarding the customers' needs and internal processes and hence disturbances in the process of developing and creating (2006: 812, 815; Bastl et al. 2012: 668). The study from Windahl and Lakemond from 2006 examined relationships within solution providers and identified them as unlike relationships

within product providers, which was supported by the research of Bastl et al. (2012: 666). Windhal and Lakemond (2006: 817) define several relationship factors as important:

- the strength of relationship between actors
- firms position within a network
- the solution's impact on existing internal activities and on the customers core processes external determinants

Relationships are therefore the binding elements across teams and organisations. They build the relational governance needed for complex projects and allow for exchange of crucial skills and successful project management. Project governance thus goes beyond frameworks and tools. It connects teams, provides a framework for shared activities and enables optimal conditions in complex and technically challenging projects, building the overarching frame of a firm's presence infrastructure.

Relational practises are henceforth not enforced by contracts or standards, but are emerging in a flexible, collective manner and are enabled by a collaborative environment within the network. Some of the practices identified by Chakkol et al. (2018: 1001, 1011-1012) are listed as follows in Table 1 and structured into their related areas. This list only includes the practises that can be connected to this thesis focus and concepts introduced previously. There are naturally various other practices existing, depending on the project. These practices aim to create a flexible work environment which, despite standardised processes, allows for relational oriented practices and hence for collaboration. The practices are naturally context dependent but overall focus on creating contact and trust between the different parties.

Table 1. Relational practices for collaboration (adapted from Chakkol et al. 2018: 1012).

PROJECT	SUPPLY CHAIN MANAGEMENT	CUSTOMER ENGAGEMENT
Strategic co-location of partners	Synchronised contract training	Alliance building with customer
Regular social events	Workshops with suppliers	On site support
Early contractor involvement to build trust	Relationship segmentation	Individual training and mentoring on client focus and collaborative behaviour
Training of younger multicultural workforce	Establishing supply chain community	Customer becoming part of alliance
Workshops for lessons learned, hazards, 360° and more		Joint introduction programme for customers and suppliers
Behaviour and process correlation models		Customer attending provider's suppliers meeting
Collaborative skills development		

Heide and Miner (1992: 285) support these when stating that frequent contact can enhance a pattern of cooperative behaviour. Van Marrewijk (2004: 240) finds reasons for alliance failure to be lack of mutual trust, commitment and cultural sensitivity. Trust, commitment or knowledge-sharing are some of the most important socially derived mechanisms in relational patterned governance identified by Chakkol et al. (2018: 1000). They further point out that "a strategic intention to collaborate through standardised contractual processes translates into a flexible work environment that allows for the emerge of relational practices for collaboration" (Chakkol et al. 2018: 1011.). It can thus be said that basis for successful collaboration is thus a strong relational governance where project members can create a common macro culture to exchange skills, build trust and routines that allow for changes.

A collaboration itself aims to supply the customer with a tailored solution rather than a product. Hence customer centric, rather than product centric thinking has to be applied, which translates into collectively seeing the solution through the customers eyes. System integrators become part of the customers' operations, therefore also means understanding the customer, and in a larger sense also the customers activities. Matching business competences consequently refers to actors simultaneously aligning their goals and hence adjusting their overall strategies to form partnerships, align in their understanding of creating value and align

their activities efficiently and effectively (Davies 2004: 733; Spring & Araujo 2013: 59). When looking at strategic project success, one can therefore not exclude the solution integrators from its network, up- nor downstream. The network is interconnected on multiple levels and the customer cannot easily be isolated. Presence therefore addresses the customer, to a certain degree the end-customer, as well as suppliers working at the customers side.

Looking at the literature on the role of presence in regard to project success, very limited can be found. Mentioned in the larger context of servitization is the reduction of production facilities when focusing towards service, yet this is not the infrastructure this thesis is addressing. Collaboration between different nationalities is a widely recognized topic, yet there are only limited studies focusing on how local presence affects collaborations. Instead, presence is usually addressed as a form of human resources and the process of hiring an adequate workforce, or supplier networks and training. Table 2 provides an overview of the literature touching on the role of presence of forms of distributing integrated solutions. Closest related to presence in the form as it is important for this thesis are Baine's (2009) and Storbacka's (2011) analysis. Storbacka's understanding of infrastructure is a set of capabilities and practices to support a business transition into servitization. The overall focus is knowledge exchange. Infrastructure hence refers to the controlled exchange of crucial and extensive information, often by the means of skilled people. To do so, several aspects have been identified: specialized an intelligent people to support the sales team with market and trend analyses or competitor information, knowledge repositories to gather the generated business knowledge, and relationship and solution delivery management (2011: 708). Baine's highlights the shift from manufacturing facilities to smaller facilities located in close proximity to the customer premises to support psychological needs and enhance customer experience (2009: 509). However, none of these factors are investigated in more detail, leaving much room for examining an ideal presence structure of solution providers.

Table 2. Significant research related to presence infrastructure.

Author	Theoretical Direction	Focus and Findings
Neu & Brown (2005)	Factors important to service portfolio extension	Shift towards complex systems, the recruitment of suitable employees becomes increasingly challenging
Windahl & Lakemond (2006)	Important factors of developing integrated solutions	The network of suppliers, subcontractors and service providers is part of a solution provider's infrastructure
Davies, Brady & Hobday (2007)	A firm's organisations to provide services	Examples of additional service or training facilities as part of servitization
Baines (2008)	A framework to configure internal production and operations towards services	Smaller and customer friendly office facilities to support relationships
Storbacka (2011)	A solution business model framework focusing on capabilities and management practices	A variety of infrastructure elements suggested for service provision. Mostly related to tools, business models, legal support or knowledge transmission.
Ahola, Vuori & Viitamo (2017)	The integration of supplier's capabilities and its importance for system integrators	The positive effect of involving and training suppliers at an early stage
Léo & Philippe (2011)	Investigation on different entry modes such as alliances or subsidiaries	No clear tendency was found but firms with subsidiaries are among the most dynamic. Technical consulting prefers face to face interactions.

With the above described concepts, it is now clear that to understand the role of presence, one has to understand the role of resources and project collaboration across actors. While project governance offers the contractual and relational framework for complex projects, and the structure to operate in, the actual meaning of presence infrastructure lies within the role of a firm's resources and capabilities.

2.2. The Resource-Based View

As mentioned, strategy plays an important role for a firm's long-term planning and hence practical step taking. Strategy literature looks back on a long history and consequently various streams have developed, especially within the business sector. With environments becoming more dynamic and less predictable, the search for competitive advantage has moved away from static theories such as Porters Five Forces, that can be applied to stable environments, towards sustaining competitive advantage within changing conditions. The

dilemma of combining change, which implies uncertain future predictions, and long-term success, which implies adapting structures and allocating resources, becomes obvious quickly. Research thus started to focus away from the environment and towards the inside of a firm and its resources (Teece, Pisano, Shuen 1997: 528; Harreld, O'Reilly III, Tushman, 2007: 22-23). By such, **the Resource-Based View** (RBV) evolved.

Resources are tangible as well as intangible assets that a firm has acquired historically. They are company specific and cannot be imitated easily. Therefore, the resource distribution within the industry is assumed to be heterogeneous. Having been build up over the past, they reflect a company's managerial decision making and its collected experience and demonstrate the details of its operations. This build- up also assigns a uniqueness and hence value to them. One can now trace this back to the challenge of suitable partners. Heterogeneous distribution of resources makes suitable partners rare and collaboration even more valuable. Strategic partnerships, which are matching on product as well as on business competences must be created and optimally maintained (Davies 2004: 733, 735; Windahl et al. 2004: 220-221; Brady, Davies, & D. M. Gann 2005b: 364; Bastl et al. 2012: 651). According to RBV literature, a firm's sustainable advantage is thus based on resources that are valuable, rare, inimitable and non-substitutable. These are also known as the VRIN resources. Other authors reclassified them as VRIO (Figure 8), whit a focus on organisational support, rather than sustainability (Kohtamäki, 2019).

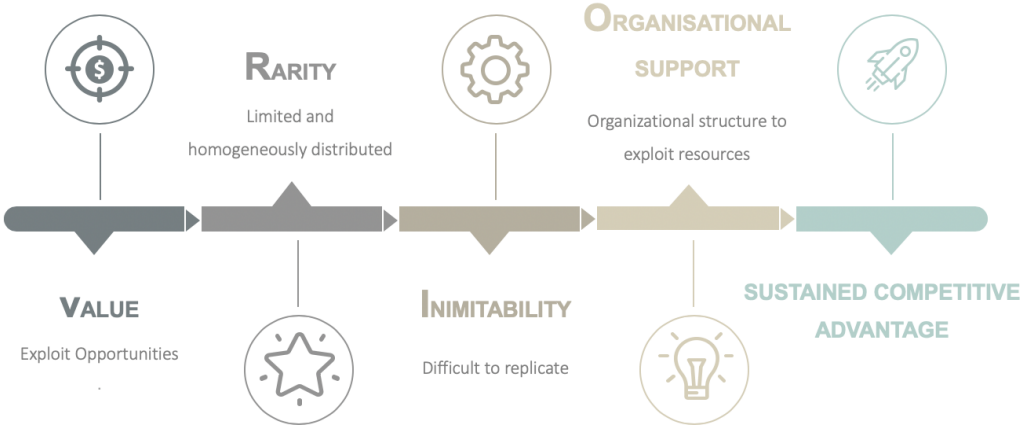


Figure 8. The VRIO resources.

Consequently, a firm's success is largely dependent on its internal set up, rather than its industry characteristics. Strategical decisions should incorporate a firm's strength and replicate such in the consequential development of new or existing resources. This requires management to understand a firms strengths and weaknesses, and its resources and their functionality (Lockett, Thompson, & Morgenstern 2009: 9-10, 22-23; Eisenhardt & Martin 2000: 1105; Teece, Pisano, Shuen 1997: 510). A firm's context still plays an important role in RBV, yet the focus is hereby placed on the main actors a firm engages in, such as its customers, suppliers, institutional bodies and authorities. In order to maintain competitive within dynamic environments, opportunities must be sensed and the addressed through required processes, resources and activities. Achieving this means maintaining and improving resources and competences and investing in future ones. However, RBV is often considered as being static, and neglects resources outside a firm. Given the collaborative network service integrator are operating in, one should not forget the resources anchored within those networks. One could thus say that RBV turns a blind eye to strategical partnerships and their value. The extended Resource-Based View (ERBV) aims to acknowledge such. While research is limited, it mainly focuses on the dynamic development and sharing of resource between firms (Spring & Araujo 2013: 61). From the previous findings once can now connect the importance of resources with the importance of the right collaboration partners and the value of resources. With projects being depended on resources and knowledge, RBV offers the research related to capabilities that allows to find an answer to the research question of this paper.

2.2.1. Dynamic and project capabilities

As introduced, within RBV a company's success is dependent on its resources. These resources include tangible assets as well as skills and **capabilities**. The term has been mentioned in relation to servitization and governance. By putting it into its practical relation first, the concepts and connection to this thesis can be better understood: Delivering integrated solutions is concerned with the up- or downwards movement into different phases. To successfully fulfil the activities in these different environments requires a firm to

development the distinctive and adequate skills and capabilities needed (Davies 2004). Moreover, operating in relation-based networks and across expertise fields, they need to establish the adequate competences and capabilities to successfully manage that complex business setting. Capabilities are thus a firm's ability to function and develop. Core competences can be defined as the competences that are defining for a firm's fundamental business and can be a combination of its offerings or also complementary assets (Teece et al., 1997: 516). Aligning these unique capabilities or competences with the strategic processes leads to the capabilities. Capabilities are experience, knowledge or skills that allow a company to perform a certain activity needed for its business (Spring & Araujo 2013: 61). Given that they are mostly embedded within in a firms managerial or organizational processes, or the soft assets as culture or routines and skills, they are firm-specific. Being incorporated into the RBV school of thought, they are difficult to imitate and might take several years to be built up. This enhances complexity and also difficulty for duplication. A specific issue for late movers. (Teece et al., 1997: 524, 528-529; Harreld et al., 2007: 26). A firm might find it challenging to compete with its competitors if a market opportunity or a market shift has not been foreseen and the firm's competence has not been aligned (Prahalad, Hamel 1990: 80-81). Moreover, change on a late stage can become exceedingly costly and could put firms out of business (Teece et al., 1997: 521). Therefore, firms in dynamic environments need to be responsive, flexible in innovation and able to coordinate internal and external competences and adapt static competences to the ongoing changes (Teece et al., 1997: 515 Harreld et al., 2007: 24). Consequently, the theory of dynamic capabilities as emerged.

Dynamic capabilities are strategical resources used to change, regroup and build new competences, including resources. Eisenhardt et al. describe them as knowledge creation routines that establish new ways of thinking (2000: 1107-1108). Or in other words, dynamic capabilities are needed to create new capabilities (Spring & Araujo 2013: 61). They are complex to understand since they might include skills, experience or knowledge of people, embedded in as well as interlinked with several layers and departments and processes of an organization (Hamel, Prahalad, 1990: 82). Dynamic capabilities allow forms to align

resources and competences to changes and to achieve innovative forms of competitive advantage (Teece et al., 1997: 515-516). Having pointed out the challenges of moving into servitization several times, it comes naturally that the creation of the required capabilities is fairly demanding as they are at the very base of this move (Huikkola et al. 2016: 36-37). Solution integrators have to create new capabilities while maintaining the still required ones and henceforth reviewing and adjusting existing resources and capabilities to creating new capacity. To create them, a firm has to enable and welcome the development and integration of new skills and knowledge across divisions. This often demands for a change in the firms' culture, behaviours and physical assets such as offices. Creating new capacities therefore may also mean eliminating product delivery-oriented assets or unlearning behaviour.

Looking at capabilities relevant to solution integration, Davies (2004: 746-747) identified a set of four main capability areas, which have been widely recognized across later research:

- System integration
- Operational services
- Business consulting
- Financing.

System integration addresses the capabilities to design a solution into a functioning system and coordinate the related activities such as project management or design. Operational service capabilities are needed for maintaining and operating the solution throughout its life cycle. Consulting and financing are related to capabilities needed for advising the customer regarding their solution and consulting regarding their finance planning as solutions are priced uniquely (2004: 751). Although building a base, these categories leave much room for more precise requirements. Davies' set further focuses mainly on a single perspective, rather than the network structure system integrators find themselves in and where capabilities can be transferred and collectively developed. Tuli et al. (2007: 7) points out the importance of transferring capabilities to external parties in order to enhance efficiency and enable a wholesome implementation of the solution. Information exchange and training can provide

people with the adequate technical capabilities. Windahl, Andersson, Berggren and Nehler (2004: 220-221) investigated on the capabilities and their relation specifically within the manufacturing sector where technical expertise plays a key role. They adapted Shepherd and Ahmed's model *organisational competence of a solution provider* from 2000 to integrated solutions, which now suggest four competence areas, needed for providing integrated solutions. While there are overlaps with Davies set of four categories, this model includes technical and maintenance capabilities, integration competences and partnering competences. Partnering competences refers to the ability to build alliances and partnerships on a long-term orientation and, together with contractual arrangements, have been identified as being core competence for service integrators (2004: 226-227). While partnering and technological competences might seem to be on opposite spectrum ends, the two connect by the means of understanding technological challenges and development. Moreover, this combination might be the key to turning integration competences from a challenge into achievement.

People are also here the key component for success. They are part of the company's structure and assets. For international companies, this may require shifting people among locations or effective hiring processes to assure optimal position covering across business locations. It can also be linked to collaborations and the right placement of people, allowing capabilities to connect. Presence infrastructure thus becomes a key element for providing and developing the capabilities that ultimately are a solution integrators foundation of success. Further research has thus differentiated on important capabilities for solution providers and has included collaboration within other actors, which can strengthen core capabilities and activities related to system integration (see Table 3 for overview). The list of detailed competences recommended by research papers is long. It becomes however clear that the important capabilities identified are mostly addressing changes within the processes and structures, collaboration and networking, as well as client-focus and employee-focus without taking the project context into consideration.

Table 3. Overview of research on dynamic capabilities.

Author	Methodology	Key Findings on Capabilities:
Miller, Hope, Eisenstat, Foote & Galbraith (2002)	2 years study across 30 solution providers, interviews, observations and primary & secondary data gathering.	• Firms should focus on client-oriented capabilities and the ability to adjust and leverage capabilities to facilitate change.
Davies (2004)	Case study, interviews across 5 firms.	• The provision of solutions demands to develop core capabilities in systems integration and leverage capabilities in operational services, business consulting and financing.
Brady, Davies & Gann (2005b)	3 years research project with case studies, total of 92 interviews in the UK, Sweden and France.	• Successful solution integrators need capabilities in the following skills area: legal skills, key account management, innovation management, risk analysis management, financial acumen, information management, and portfolio management. • The organizational capability to provide large volume of integrated solutions is based on routinized activities and standardized processes. This is patterned by the willingness to invest in new capabilities.
Davies, Brady & Hobday (2007)	Case study with 5 firms.	• Integrated solution customers move away from in-house product capabilities towards service offerings. • Component integration from a range of from a variety of internal and external suppliers is highlighted as required activity.
Teece (2007)	Not provided.	• Dynamic capabilities reside with the enterprise's top management team and are impacted by the organizational processes, systems, and structures. • Maintaining dynamic capabilities requires entrepreneurial management -
Tuli, Kohli & Bharadwaj (2007)	Qualitative interviews.	• Effectiveness of a solution depends supplier and supplier variables. Supplier variables include contingent hierarchy, documentation emphasis, incentive externality, customer interactor stability, and process articulation. Customer variables include adaptiveness to supplier offerings and political and operational counselling and their respective capabilities.
Ceci & Masini (2011)	Multiple-case study, surveys and questionnaires. Data collection in Italy, Spain, the UK and Sweden.	• 7 key capabilities are identified to provide solutions: Software development capabilities, hardware and infrastructure manufacturing capabilities, consulting capabilities, financial capabilities, delivery capabilities, post-sales capabilities, Systems integration capabilities

Storbaka (2011)	Multi-case study, interviews and workshops with representatives from Finland, the Netherlands and Switzerland.	• 12 identified capability categories (listed) with 64 respective capabilities and management practices for effective management of solution business: Value research, value proposition, value quantification, value verification, solution development, solution availability, solution configuration, solution delivery, strategy planning, management system, infrastructure support, HR management, • Category Infrastructure refers to market and customer intelligence, knowledge management, legal support and information and communication technology applications. • Additionally, cross-functional coordination is important.
Kohtamäki, Partanen, Parida & Wincent (2013)	Web-based questionnaires across 91 firms.	• Network capabilities have a strong impact on sales growth
Huikkola & Kohtamäki (2016)	Comparative, qualitative case study with 9 Finnish technology firms, semi-structured interviews.	• Identified different processes for creating, leveraging and releasing caps. • Systematically investing in resource realignment to develop dynamic capabilities can significantly boost performance in industrial markets.
Raja & Frandsen (2017)	Case study, interviews in China and Denmark.	• Focus on challenges between Chinese and European actors in Servitization • There is a need to transfer and develop the required service capabilities locally by transfer, training or other means.
Huikkola & Kohtamäki (2017)	Qualitative comparative case study, 35 interviews across 6 solution providers suppliers and customers.	• 7 strategic capabilities are identified within solution development and deployment: Fleet management capability, technology-development capability, mergers and acquisitions capability, value quantifying capability, project management capability, supplier network management capability and value co-creation capability.

This gap has highlighted the need for more specific research by combining strategic aspects with project aspects. A focus are has emerged, yet due to their novelty, limited literature is yet available. Complex projects require a bundle of skills, capabilities and knowledge to create a solution while at the same time coordinate and execute projects. Thus, the concept of **project capabilities** has emerged. Davies and Brady (2016: 315-316, 317) are building on previous research on capabilities describing them as capabilities that allow firms to handle projects within uncertain yet also repetitive context, address learning from previous projects and cover the projects life span from back- to front-end. Connected to complex projects and their type, they are either of operational or strategical nature and are the core activities of a project firm. Operational capabilities address company specific knowledge and learning and are concerned with providing stability, strategical capabilities are concerned with strategical planning, distribution, purchasing or general management. Located at different levels, they also differentiate in their planned top-down versus emerged bottom-up indications. Project capabilities thus combine the various elements of managerial skills on strategic project management and hence organisational level, and individual skills on project level embedded in teams. They therefore align challenging project structures, temporary nature of teams, uncertainty and routine and learning from previous experiences. Davies and Brady (2016: 316) refer to Amsden and Hikino (1994), Morris (2013) and Söderlund (2005), when criticising that previous research has addressed project capabilities as important for entire organisations. Only now are the temporary and unique settings of complex projects taken into considerations and the focus on project capabilities is shifted to resource combinations within temporary teams and project types. Understanding project capabilities within the temporary nature of project and the resource sharing nature of solution integrators could push research on project work and collaboration further.

Davies and Brady (2016) focus on how dynamic capabilities affect the strategical choice of resource allocation between routine and strategic projects. They emphasise on the importance of a clear vision by senior managers and conflict avoidance and exploratory learnings. Focusing on the project and portfolio level, as well as on the strategical level, they link project and dynamic capabilities in their importance in strategical development. Additionally, they

highlight the paradox of capabilities, build to last, and projects, defined by a starting and ending point and eventually point out the need for more research in the field of project capabilities within project-based organisations. Zerjav et al. (2016: 445, 453) build on this by investigating on the key mechanisms and practices of such temporary collaborative projects. They find a strong interconnection between dynamic and project capabilities, bringing in the field of strategy and project management closer together once more. With strategic decision guiding the beginning of the project and operating decisions leading the final stages before and during handover, the two field are interdependent. They also highlight the importance of mechanisms and practices within projects to support these capabilities. Davies et al. (2016: 40) moreover add that dynamic capabilities are used for outbalancing routine and innovation across projects, addressing capability transfers. Although more research is needed in that field, it is an interesting input regarding overall presence as it highlights that capabilities can be transferred within an organisation. These latest studies aim to understand the connection between project and dynamic capabilities and their role in temporary as well as routine and innovative project structures. To understand how to best combine project governance and resources, the two capability streams thus seem to be inseparable. Following, their role within the governance structures must be determined and understood for gaining a comprehensive understanding of presence on a holistic level.

2.3. Synthesis – A framework for studying the role of presence for integrated solution providers

Previously, three main concepts related to solution integrators were introduced: project management, governance and capabilities. In this chapter these three chapters are merged and the lens for analysing the global presence as a strengthening factor for achieving strategical goals in project teams. Following, a model to analyse the role of presence for integrated solution is presented. This model is the base for the empirical part of this thesis.

Strategy is explained as the development direction a firm aims to build. Project management are the practices to manage projects, the building blocks of a project management company.

Governance is the overarching framework for achieving global solution integration in a channelled and legally secured matter. In the centre of these areas lies the importance of firm presence. However, all of those areas overlap, consequently creating specific focus areas that give a more profound understanding for the need of presence (Figure 9).

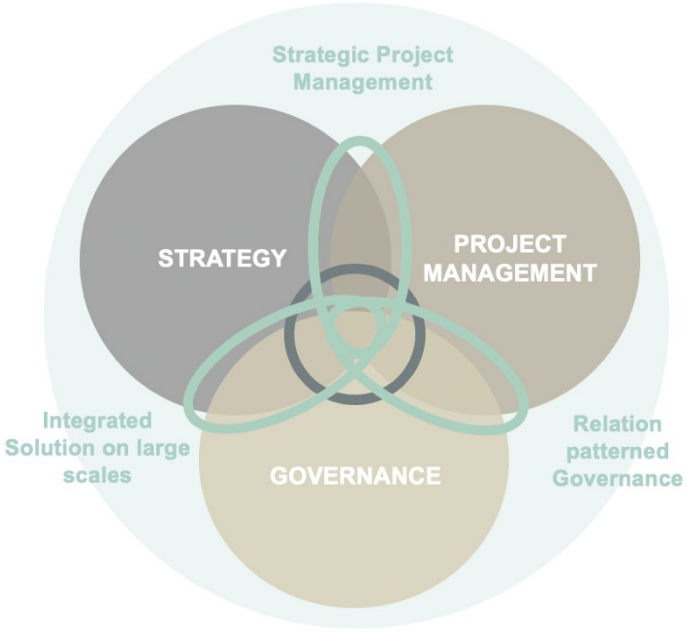


Figure 9. The detailed research gap.

Strategic Project Management is concerned with the complexity of projects, which patterns projects as well as project teams by including technical complexity and interdependence and complex interactions. Managing this complexity starts with managing people as they are the key for project success. They are creating as well as solving complexity and bringing the unique skills to deliver complex solutions. Strategic project management is therefore concerned with conducting projects in accordance with a company's corporate direction, yet also with soft skills and managerial competences and practices. It refers to managerial practices within complex projects and hence, the way projects and capabilities are managed

Project management and governance in the context of integrated solution and the previously explained complex environment demands for relation-based structures. The frequent

exchange and interdependency with other actors can create tensions as well as benefits. While contracts build the legal part of the governance framework, the interaction across teams is often based by relationships and trust. Cost overruns have been blamed on insufficient governance for many years. Later findings however focus more on trust and relationship building, which can lead to increased information exchange across teams, common micro cultures and hence project success. **Relation patterned governance** is thus concerned with the collaborative network of actors and in a furthers step with the coordination of resources. It enables a base for the collaborative working methods across teams and activities.

Solution integrators provide customer unique solutions that are costly and time consuming. They are thus provided on smaller scale than standardized products. To stay competitive, a solution integrator nevertheless requires a stable customer base and a certain degree of **standardization within their processes**. Combining dynamic and project capabilities with the appropriate governance structures aims to create disciplined flexibility that allows to perform routine as well as innovative projects.

The fields are interconnected and reinforcing on various levels. To understand how the presence has to be organised, one cannot ignore the importance of collaborative networks, their governance and their relational base of interactions. Combining these subjects is challenging due to the sheer complexity and the current gaps in research. Previous literature has focused on the importance of capabilities, when and how to maintain or transform capabilities or their role for solution integrators. This paper aims to build on these components by combining the various reinforcing elements such and identify how they affect the allocation of project relevant capabilities. To achieve an understanding on how these elements interconnect and reinforce each other, a model is chosen that allows to compare all of the topics while at the same time focus on specific aspects. The model, depicted in Figure 10, constructs a systematic analysis among the different project's stages, oriented at the project management framework of a global service integrator.

Within each stage, different dimensions important to company presence can be investigated. The dimensions are derived from the theoretical aspects above and are: Managerial Practices, Infrastructure, Processes and Activities, and Resources and Competences.

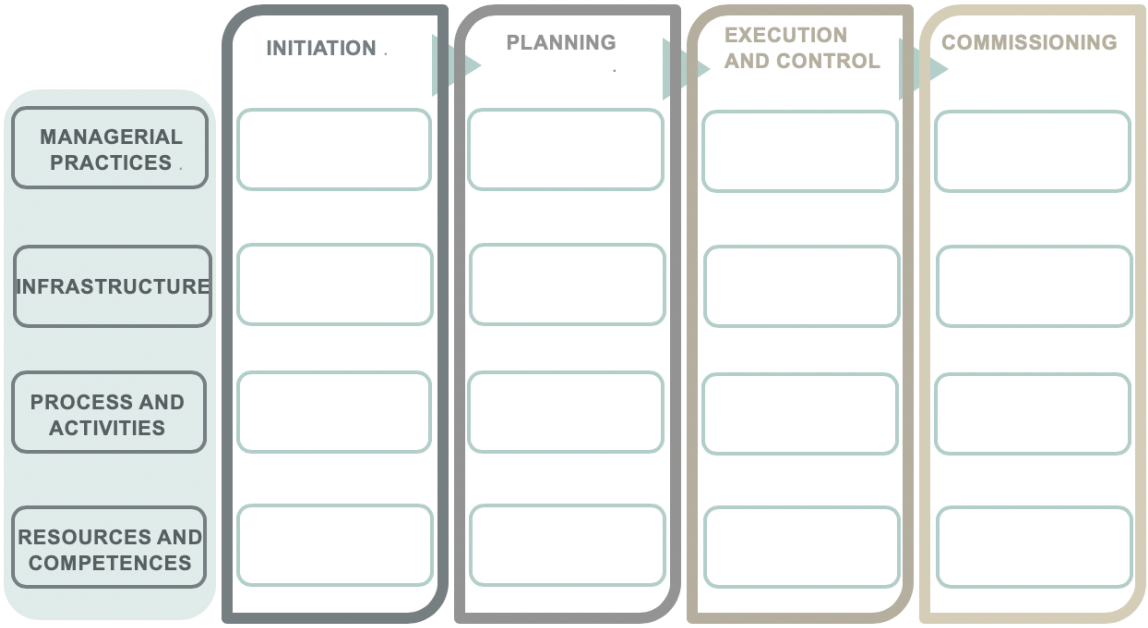


Figure 10. A framework for studying the role of presence for integrated solution providers.

3. METHODOLOGY

This chapter describes the methodological procedures applied in this thesis. The research design and methods of the empirical part are described and reasons for their choice is given. Following, the sampling, data collection and their analysis is described. The chapter closes with the limitations of this thesis and its reliability and validity requirements.

3.1. Research method

This thesis seeks to identify the optimal form of presence for Wärtsilä within the next five years and how the future infrastructure would be best aligned with the current business models and corporate strategy. It aims to understand different demands within the focus countries and possible changes needed. Therefore, experiences must be analysed and underlying reasoning for the mentioned must be identified and understood. Furthermore, this paper aims to contribute to the understanding the role of infrastructure to implement corporate strategy through project management structures to provide optimal service integration. This demands for finding in-depth answers from Wärtsilä employees and interpreting these findings.

Research can be conducted in quantitative and qualitative methods. While the former serves the purpose of finding answers by applying scientific procedures, the latter seeks to understand underlying phenomena by applying interpretive practises and studying natural settings. These practises may include interviews, conversations or observations (Davies & Hughes, 2014: 8-9). Qualitative Research aims to reconstruct experiences, is concerned with the ‘why’ of a question in a given setting and seeks to understand the reasoning behind certain behaviours (Rubin & Rubin 2005: 2-3). As described by Davies and Hughes, this approach serves to “improve your understanding of complex issues and relationships” (2014: 165.). Since this applies for this thesis’ research question, the qualitative narrative research approach has been chosen.

The methodical procedure described above will follow an abductive approach. Hereby, research data is gathered, analysed and theories are derived simultaneously moving back and forth in the process. This aims to develop a theory that reflects the true nature of the research (Davies and Hughes 2014: 237). The abductive approach shows similarities to the inductive approach, in which data is gathered and a theory is established upon (Research Methodology, 2016, para. 2-3). The abductive approach follows this structure, yet it works with an incomplete data set. This often refers to complex situations where only the information experienced and delivered by the interviewee is at hand. Therefore, the derived solution refers to a best-fit approach with an incomplete data set (Butte College, 2016, para. 4). For Wärtsilä's complex projects, this approach is suitable as it incorporates changes within project team members, one-sided perspectives and project scope limited experiences.

3.2. Research design

Case studies are commonly used within social, political and related areas of research, which includes economics. Case studies aim to understand contemporary situations or real-life phenomena. This phenomenon can be a process, maturation of industries or behaviour of industries with a focus on how and why research questions. Given their contemporary, rather than historical nature, observations and interviews are often used to access the full spectrum of data available for studying such event. In comparison to experiments and laboratory like conditions, researchers within case studies cannot influence the unfolding of events (Yin 2009: 3, 11). Case study research hence reflects on real-life situations by observing, rather than intervening.

Case study research can include both single-case or multiple-case studies. Multiple-case studies observe several cases, often within a similar setting or framework. This allows to draw cross-case analyses over several cases and generalizations of findings (Yin: 2009: 19-20). The cases must be carefully selected to allow for replication of the research. Hence, their condition must be similar so that the same logic can be applied. This design is built upon a solid theoretical base that creates a framework to conduct the research with. Multiple-case

studies can further be holistic or embedded. The former hereby refers to holistic cases, while the latter translates into cases, embedded in a larger shared context (2009: 54-60). This thesis aims to support Wärtsilä's performance in three specific target countries. Consequentially, each country is examined by the means of a project, hence a case. The cases are overserved from different angles throughout their phases. The research design for this study is thus a multiple-case studies whereby the cases are embedded within Wärtsilä's FGSS framework. Each case is unique in certain ways, yet a cross-case analysis will allow to make some generalization in regards to Wärtsilä's presence structure in Asian countries.

3.3. Data collection and analysis

To collect research data various methods are available, each serving different purposes and being applicable to different situations. For this research, semi-structured interviews are chosen. Interviews enable access to the facts and authentic insights into the client's experiences first hand and in depth (Silverman, 2006: 118; Rubin and Rubin 2005: 3). This allows the interviewer to adapt to the flow of conversation and to seek for unforeseeable answers, or to adjust the procedure in delicate topics. Interviews are often based on interview outlines which add as a structure to reach depth and guide the interviewee towards the main direction and helps focusing on the target. In semi structured interviews the questions are formulated openly, enabling the interviewee to express themselves in their own on words. This way, an authentic experience can be reconstructed (Silverman, 2006: 110, 118). This approach is most suitable for this thesis as it allows the interviews to give perspective on their individual experience that is differentiated in project stages and roles. Moreover, it allows different communication cultures to engage in a pace and structure they feel comfortable with.

Three cases were selected to be exanimated. A case hereby refers to a project or a vessel. To exanimate the three different focus countries individually, yet with the prospect to draw cross-comparison, a representative project was chosen for each country. The projects and the related interviewees were chosen by the FGSS management. Each vessel is of similar

complexity and progress stage. An exception was Japan where inputs from different product lines had to be taken into consideration due to limited experience with LNG projects. To guarantee consistency, a consistent set of roles across the project stage and project locations were interviewed. As each case is unique, slight variations within the roles and the number of interviewees can be found. Some interviewees participated in two cases and were therefore asked to assign each statement to the related project. The interviewees furthermore had to state in the beginning in which phases they were present or had insight into.

The interviewees were conducted one-to-one via Teams Tool due to the Covid-19 related lockdowns. This naturally limited the natural interactions such as body language, yet it also synchronised the conditions for all interviewees. All interviews were conducted in English as this is the business language used in Wärtsilä. Familiar team members, common language and the communication tool used for regular meetings facilitated a comfortable environment. The interview followed an interview outline, oriented on the analysis model presented in Figure 11. To allow the reconstruction of experiences, the interview was adjusted to the interviewees answer and direction. The questions therefore differ within interviews. The interview outline can be found in the Appendix. A total of 21 interviews were conducted, their length reached from 32 to 94 minutes. The interviews were recorded and afterwards transcribed by research services. The transcripts were then used for the coding and analysis.

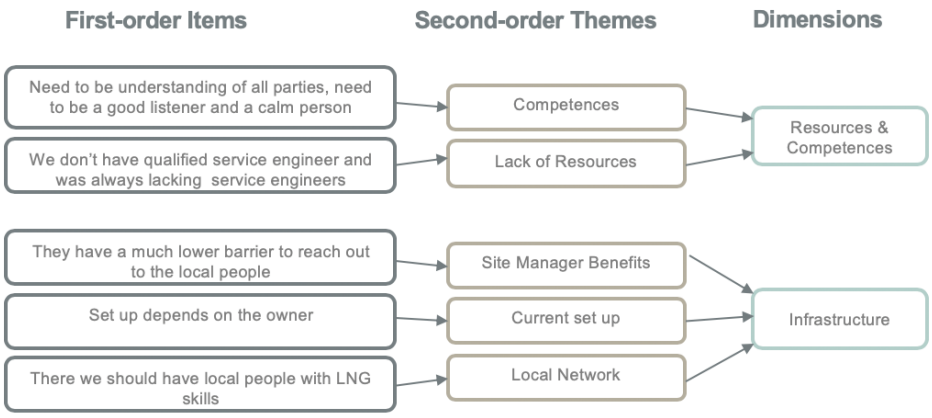


Figure 11. Data structuring and coding for Analysis.

The case analysis is conducted in two steps. First the cases are analysed separately, leading to three within-case analyses. By focusing on the cases separately, in-depth understanding of the practices and needs can be generated. It also allows to understand specific project context and its consequences and to draw country specific conclusions. Moreover, building up the understanding case by case facilitates the future analysis and their similarities and interconnections. The within-case studies are conducted by the means of the transcripts and repeated for each case. Relevant information is marked and, in a later step, grouped into relevant code themes, depicted in Figure 19. These code themes are then grouped to the analysis model relevant dimensions and analysed by the means of the previously introduced analysis model. In the second and final step the three cases are analyses in a cross-case analysis. This is done with the same model as for step one. Hereby overlaps and links within the analysis are evaluated and eventually generalisation upon reoccurrences generated. This gives insight into aspects applicable to FGSS projects in general.

3.4. Validity and reliability

When analysing data by the means of interviewing, the two concepts of validity and reliability must be taken into consideration. Reliability is concerned with the consistency and the accuracy of the data collected. Especially in the area of quantitative research, reliability can prove to be difficult. Interviews might not capture every aspect of reality and the data might be biased in different ways by different research. Hence, repetition of the research should lead to similar, if not same results (Silverman, 2006: 46-47). Although this proves challenging within semi-structured interviews, an interview outline and transcripts can help as it allows third parties understand the interview process and the interpretations. In this thesis the outline was structured upon a described model. Moreover, the theoretical background provides the ground for the questions. Together with the transcripts, reliability ought to be enforced.

Validity on the other hand is concerned with factual representation and stands for the truth behind the data. Data in qualitative research should be both reliable and valid (Silverman,

2006: 46-47). Validity in this case is enabled by clarifying answers during the interview and repeating them so that the interviewee can correct or add to their statements. However, validity is limited to the addressed cases and generalization can only be done to a certain extend before challenging validity.

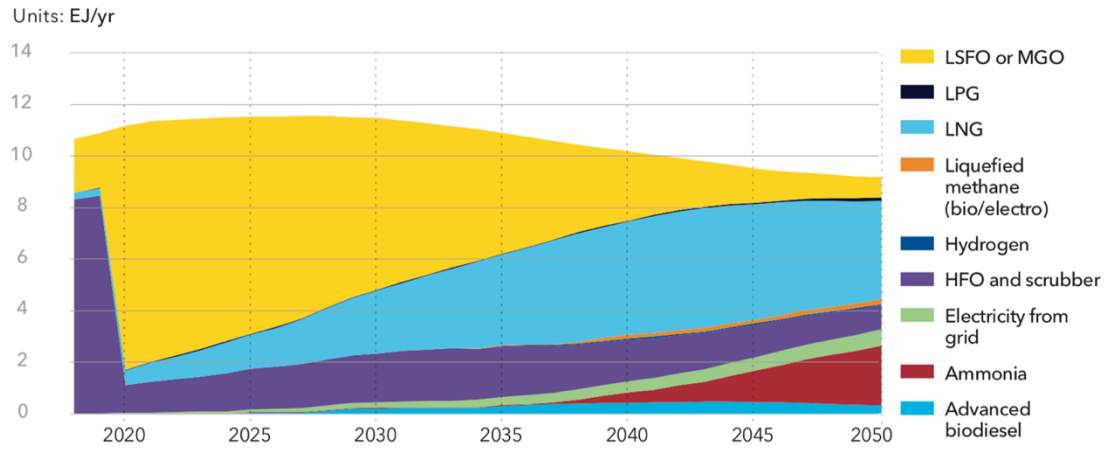
4. FINDINGS

This chapter presents the findings of the empirical study. First each case is introduced and then within-case analyses are conducted. This is done for all three cases. The findings from the within-case analysis are then consolidated into a cross-case analysis. Together with the theoretical base, it provides insight into Wärtsilä's current and future presence requirements, as well as future research areas.

4.1. Company case presentation

This chapter will focus broadly on Wärtsilä's environment and more specifically on its internal structure. First, an overview of market forecasted developments is given, which serves as a base for assessments. The data presented below has been provided by the related Sales and Business Development unit. The sources are therefore Wärtsilä internal. Its derivation is not derived in more detail as this would exceed this thesis' scope. Next, Wärtsilä's internal set up is described and upon that, a value map for the supply chain is created. This map is the bridging element for the next chapters, which will analyse those internal structures more deeply and in support with strategy theories.

Market regulation within the shipping industry have been sharpened, limiting fuel options that meet the CO_2 standards. LNG is thus estimated to increase in market share and hence affect Wärtsilä's future orders. DNV-GL, a Classification Society providing research and industry reports, estimates a rapid increase for LNG over the next 25 year with an average of 1,5% until the development of a novel alternative. LNG is thus estimated to take in the majority of the marine energy market share, depicted in Graph 1. Clarkson, an international organisation providing data and services for the shipbuilding industry, presents a similar forecast with LNG being the clear market trend until 2030 (Graph 2), when a shift to novel solutions is presumed.



Graph 1. LNG forecast for the upcoming 30 years (DNV-GL, Wärtsilä internal).

With increase in orders to be expected, optimal business conditions should be created within selected focus regions. Clackson's report over the past 25 years reveal valuable insight into the ten most dominant countries in shipbuilding. Countries hereby refers to Region of Build, hence shipyards. The numbers are illustrated in Figure 12 and reflect the total of ships built over the past 25 years, with the 3 top countries market in green.

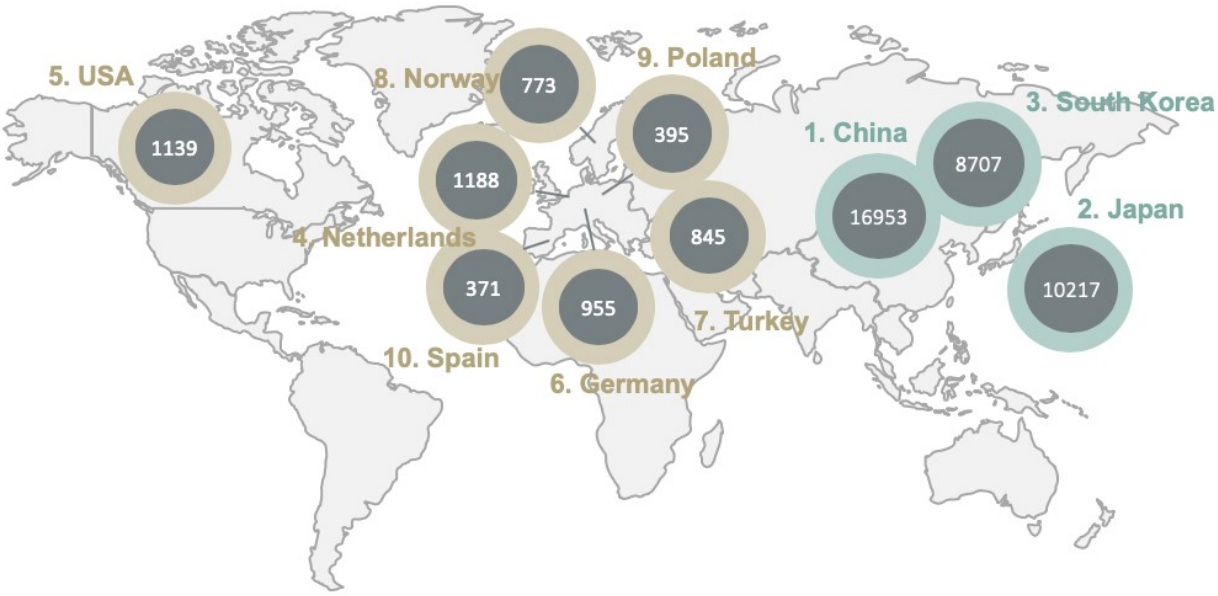
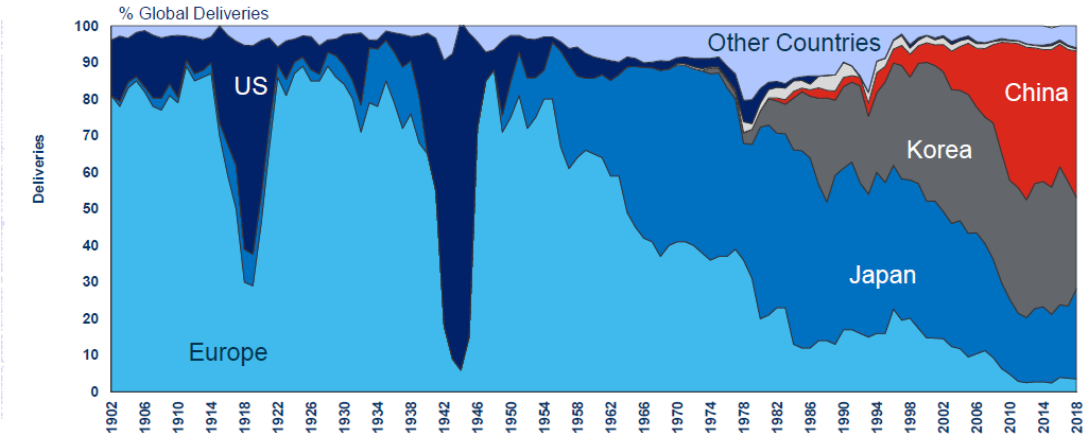


Figure 12. The historically top 10 dominant countries in shipbuilding (Clarkson, Wärtsilä internal).

Looking into these three top countries, China, Japan and South Korea provides further insight. Their development is depicted in Graph 3, showing their market share in comparison to Europe and the US. Despite a steady decrease in orders after 2008 affecting the whole market, Clackson further reports a steady and dominant order intake from shipyards in China, Japan and South Korea. Combining this with the LNG forecast (Graph 4), these markets provide the target for Wärtsilä's future business operations. Asia's overall price competitiveness is moreover a further marker on why Wärtsilä should strongly focus on improving in efficiency and customer satisfaction to guarantee project success and sustainable profits.



Graph 3. Global market shares of shipbuilding countries (Wärtsilä internal).

Graph 4. LNG market share for the focus countries (Wärtsilä internal).

Moving from the external towards the internal conditions, enables understanding on Wärtsilä's operations. Wärtsilä Marine's project standard is the Gate model. To cope with the different levels of complexity, each vessel or project is classified in a different class, reaching from A to C. All the classes then follow the same model, yet depending on their complexity additional Gates have to be passed and deliverables are added or reduced.

The model is built is structured into four phases; initiation, planning, execution & control and closing. For each vessel, different business lines can be applied (Figure 10), which are executed parallel and under its responsible team. These lines can include for example Engines and Propulsion. The overall decision authority lies with the Steering Committee (STECO). Each phase involved different roles. Certain roles, such as project manager, stretch several phases. In the first phases, sales managers and engineers are responsible for contract development and scope definition. This is followed by the execution phase where the operations team is responsible until handover. The execution phase is the longest and task-richest phase, it is followed by commissioning and closing. The typical operations project teams itself is structured as depicted below in Figure 13. The team size can vary, depending on the project specifications. It is subordinated to the STECO, together with a variety of division such as Strategy and Business Support or Sales and Marketing. Collaborating with the operations team are Business Controllers, Production Managers and Business Development and the teams working in prior or subsequent phases.

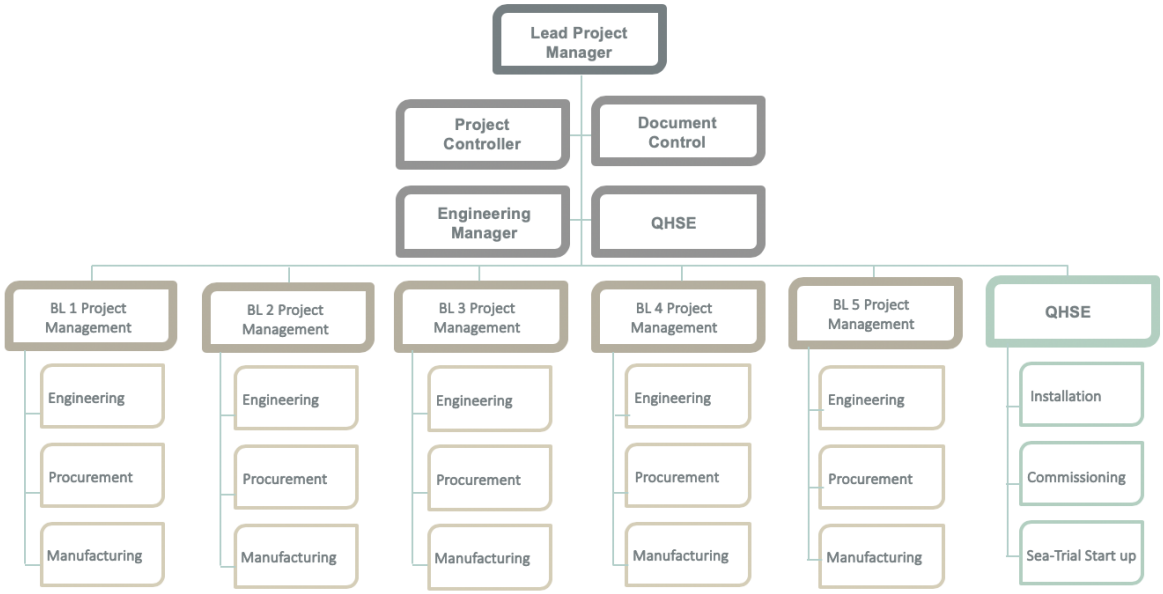


Figure 13. The structure of the operation team (Wärtsilä internal).

Looking at the form of presence, Wärtsilä is represented at the yard either through local visits of the team, local offices, or site managers located at the construction side. Each operations

team organises itself with meeting schedules and details of working methods. In larger projects, site managers are placed at the yard or other construction sides. The FGSS team further frequently visits the local operations to assure quality and progress. Naturally, tests and commissioning are conducted on site. Sales negotiations and kick-off meetings can take place locally face to face or virtually with the related external and internal parties. Wärtsilä is present with offices and site-workers worldwide, therefore local resources are accessible when needed. Schedules and cost can however challenge this. Visits from team members are still needed occasionally, driving cost and time resources additionally. Depending on culture, expertise or operational norms, the best fit for local presence is chosen. This leaves room for improvement and for deeper understanding of the best practices.

Wärtsilä's working methods are governed by its code of conduct, setting out standards for legal and ethical business practices and to be followed by Wärtsilä. Congruent to the presented theory, governance also affects the external parties in which the operation teams are embedded in. Each actor acts in its own area of responsibilities and is contractually obliged to fulfil its requirements. The main external stakeholders are the classification societies, non-governmental organisations responsible for setting standards and securing safety within structures and designs, suppliers, the customer, and the owner. In addition to the contract-based association, each stakeholder stands in relationship to the others, patterned by values, expectations, experience and shared working methods, enabling successful project execution. These relationships are of distinctive nature, have different strength and are of individual duration.

4.1.1. Wärtsilä's value and activity systems

The importance of presence of Wärtsilä in its different forms can be traced back to the underlying importance of capabilities. Knowing which capabilities need to be strengthened will allow to translate such into demand for employee placement and hence presence suggestion. To do so, the value system has to be understood and Wärtsilä's key activities mapped out.

Understanding the underlying values that guides actors provides an insight into the complexity of collaborations. Wärtsilä's directing values are *Energy, Excellence and Excitement*. Yet these are general guidelines and for each actor a set of additional, more specific values and expectations provide the base for a successful collaboration and partnership. Figure 14 depicts this value pattern, illustrating the shift from transaction based towards collaborative relation-based governance.

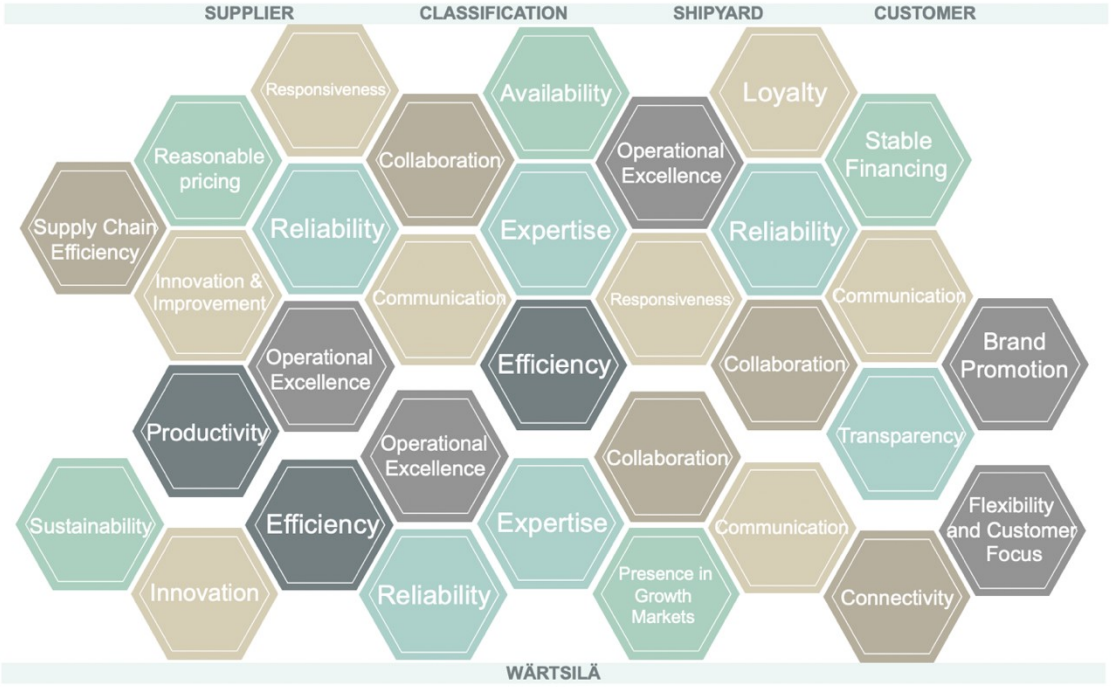


Figure 14. The FGSS values map.

The value system is derived from the value chain, a concept introduced by Porter in 1985 with the aim to understand advantage creation. Each value chain is built a firms' activities, giving insight into their effect on cost and final output. Looking at the network of firms within the industry, each actor incorporates their own unique value chain. If these chains are placed into the larger context, a connected system of value chains evolves: the value system. Given their collaborative nature, some activities might be shared or interlinked with other actors, creating a downstream flow where actors overlap in phases. This leads to value adding activity structures across the supply chain. Or interconnected processes and activates,

eventually leading to value to the consumer, respectively shipowner. For Wärtsilä, the value system reflects its complexity in terms of technical complexity, interdependence and complex interactions. Figure 15 depicts this network. The horizontal axis represents the different stages across the supply chain and the related actors. The arrows represent the actors value chains, located in the larger network. Wärtsilä is located at the intersection between manufacturers and customer as integrated solution provider. It has to be noted that the shipyard and Wärtsilä, unlike depicted, actually overlap in stages and are both in close contact to the customer. Listed below are Wärtsilä's main LNG operations related actors and their inputs.

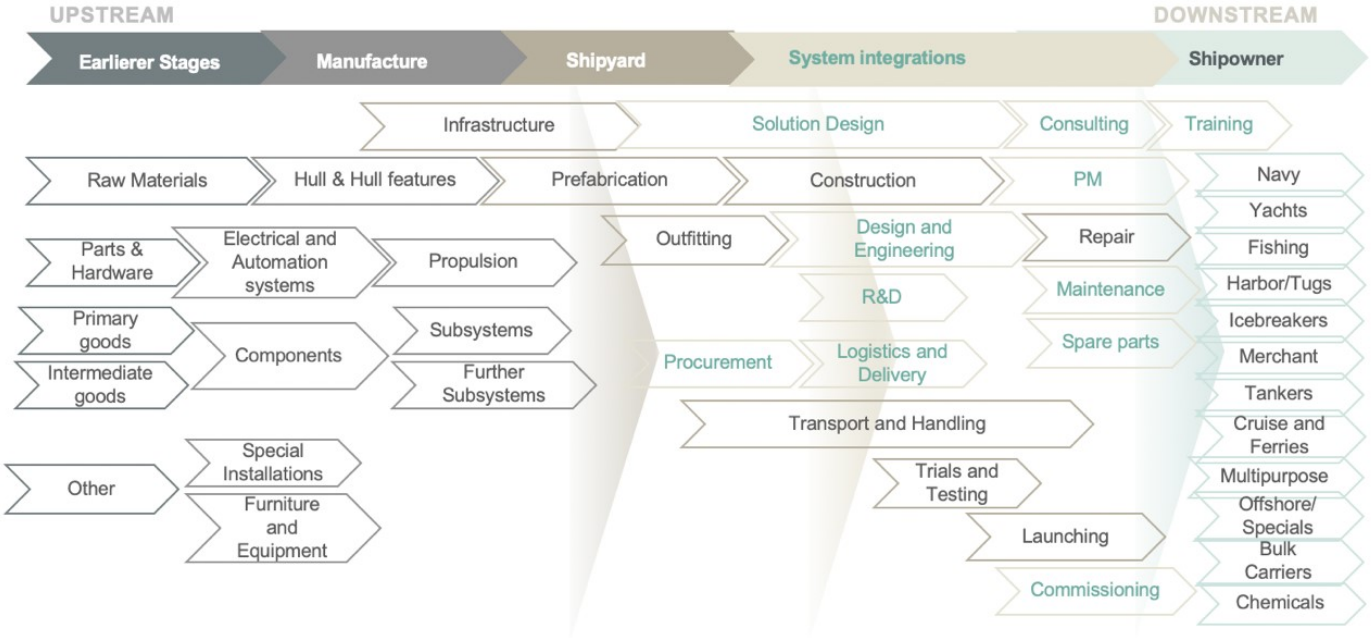


Figure 15. The FGSS value system.

The complexity increases noticeably as interdepended and interaction increase when moving downstream. Although value is created throughout the process, successful collaboration with the shipyards are key. Even with only the main inputs depicted it becomes obvious that the activities and processes are shared at the last stage. This supports the findings regarding most important capabilities for successful service integration addressing collaboration, networks, structures, processes and people focus. Also, this further emphasizes on social competences within project management and leadership styles. Moreover, this can be reconnected with the

values map, where a shift from price-oriented towards collaboration-oriented values is visible towards the downstream side. Wärtsilä's tight collaboration is structured through contractual arrangement, yet values important for this collaboration tend to be relation based. Values, soft skills and capabilities should be in focus.

The value map conceptualized Wärtsilä's inputs, embedded in its larger context. The next step is then to focus on Wärtsilä itself and its activities. This aims to strengthen the understanding of the company's structure, the details of collaboration, and eventually the capabilities behind the actions. Collaboration hereby also refers to internal cooperation. Activities are created by people and hence are not isolated events. Cooperation addresses all actors in the project and therefore starts from within each company by linking internal business units and cross-functional collaboration. Only with successful coordination of the internal departments and its activities and processes integrated solutions can be developed. (Windahl and Lakemond 2006: 814). By grouping activities into their intercorrelated fields, linkages and capabilities shared by various activities can become visible. Figure 16 depicts FGSS' activities and offers a more detailed view on how they are interconnected.

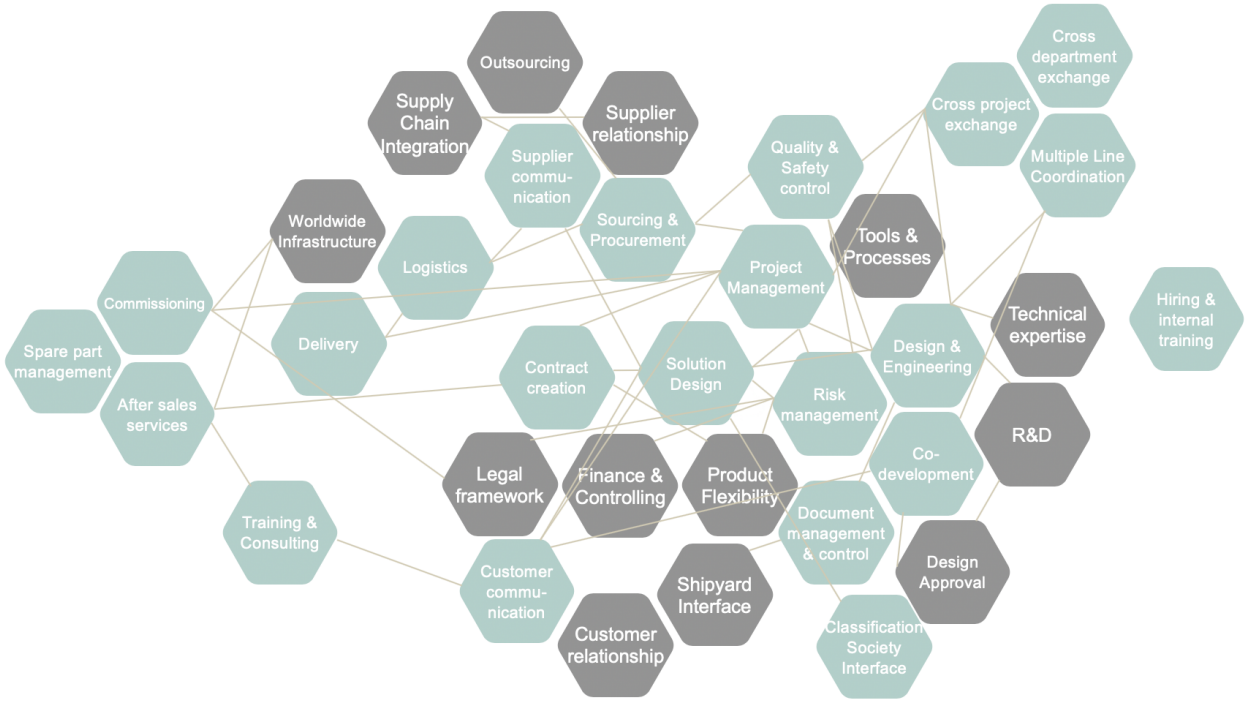


Figure 16. The FGSS activity system.

Clusters are found within different stages of the projects, such as during contract creation and during services after handover, as well as clusters within divisions. Especially within divisions the various internal as well as external linkages become obvious. Communication, relationship management, project management, solution design and engineering as well as exchange of experience are some of the most embedded actions. These are actions that are concerned with collaboration across the value system. Having the adequate resources and competences in these areas could be the base for successful collaboration. On the other side, understanding what competences are lacking can give insight into the current limitations as well as future opportunities. Activities that are shared among actors might not require internal capabilities only, but could be built upon its broader network. Changes in the presence infrastructure can reinforce weaknesses within the clusters by redistributing capabilities or take advantage of strong clusters by linking them to others. With this data, one can now derive a strategical analysis and combine the concepts to analyse the demand of local presence for Wärtsilä's FGSS division.

4.2. Within-case description and analysis

Each case is first briefly introduced, giving the context relevant information to the project. The cases are than analysed following the phases of the project Initiation, Planning and Execution. As the closing phase is mostly concerned with after sales services, the last phase to be focused on is commissioning. By discussing each phase, project-stage relevant findings regarding presence requirements and their underlying reasoning can be identified. The phases are examined by focusing on the dimensions relevant to presence. Eventually, the findings are presented in the analysis model that was introduced previously.

4.2.1. China Project

The China project was a complex project that also experienced several changes in the management team. The FGSS team was from Finland, Poland and Italy, with the Project Manager and the lead Engineers located in Poland and Italy. The project was completed with the support of a Site Manager.

Initiation

The initiation starts with identifying the customer needs and hence focus. As this phase is closely connected to the Planning phase, some topics are stretching over. In this project this was recognised as being the solution as the integrated package, including the experience of Wärtsilä., the comprehensive scope and Wärtsilä's support. However, that added value of integration is was declared as being missing. Also mentioned were to find a balance between quality and the highly competitive and time-oriented competition. Especially in China, the competitors are highly cost-oriented and Wärtsilä finds itself under pressure.

> *"The Chinese market is very particular, also because of the competitors arena, so we are several competitors in China, and they are all cost oriented so their value proposition is to be the cheapest alternative available."* (Interviewee 6)

> *"So this leaves basically our customer to be the solution integrators."* (Interviewee 6)

> *"So you have to bring both things together, improve relationships but also make the costs more competitive."* (Interviewee 6)

> *"I would expect that the especially the inputs and outputs from the different designs, they are… they are aligned so it is… you're actually delivering one solution and not many small solutions, which are basically not communicating."* (Interviewee 8)

Sales has reported that Feedback has not been received, limiting improvement with the help of previous experiences. Large portfolio offerings allow Wärtsilä to propose large spectrums yet limit its specialisation. Looking at customer needs, they however demand expertise in all fields. At the same time, project member working in the China project highlighted differences within expectations and deliveries and thus that communication must be improved. Especially in a competitive area as China, late changes that can increase cost must be avoided.

> *"I think both organizations fail to state clearly their needs. So there might be differences in expectations, or misunderstandings of the contract scope or the contract terms."* (Interviewee 6)

In favour of such improvement is one Wärtsilä's strengths: customer focus. Focus on the end customer has hereby be highlighted as crucial to reduce late changes.

> *"Probably one of the strengths of the Wärtsilä sales approach, is thinking about the end customer, and starting a very deep dialogue with that one."* (Interviewee 6)

Planning

During the Planning phase the project budget is defined. Here the first challenge was noticed. For the China project, not enough commissioning days were planned in, resulting in challenges later on, pressuring the responsible resources.

> *"Maybe one of mistakes during sales phase, that we didn't assure more commissioning days."* (Interviewee 3)

The focus within conversations with the shipyard tend to be on technical content. Values are less taken into consideration as shipyards are mostly cost driven. Improving efficiency could help balance the focus on technical and value related content.

> *"(the shipyard) focusing more on the technical content, rather than on the values.- ... if we would like to be more let's say efficient or more successful with the shipyards, it is more difficult to highlight the value, as the shipyards are cost driven."* (Interviewee 6)

Technical knowledge is a driver for contract placements. In at least one occasion a competitor was outperformed by highlighting the contractual shortcomings and technical expertise. Technical expertise is clearly essential, yet a balance between cost and value should be kept in mind.

Trust with the customer was built by obtaining an objective attitude, rather than highlighting Wärtsilä's strengths. Taking in a consulting instead of a supplier role has benefitted the collaboration. Combined with having a local contact at reach for any questions, this created a solid and highly valued relationship with the end customer. With local network close, contracts can be developed together with the customer over various meetings. Moreover, local networks keep relationships with the yard and the suppliers.

> *"We didn´t highlight our say greatness, we just based on the facts highlighted the differences. And we let the customer take the conclusion so. I think that that was a good approach, which also builded the trust with our customer(...). So we acted as a consultant, not as a supplier."* (Interviewee 6)

> *"A trusted relationship, definitely opens more doors."* (Interviewee 6)

> *"It's much easier to cooperate when you know to who you are, to whom you are writing. -They need to have the trust and without knowing people it's difficult."* (Interviewee 3)

> *"Important is that you have from time to time meeting with your customer. Also more informal and you can drink something with then and eat."* (Interviewee 3)

For China, to build up this relationship, the local presence of the existing local sales network as well as the need for a project manager was mentioned. Congruent with their cost driven approach, collaboration with shipyard is less patterned by face to face meetings. Communication mostly happens via mail and focuses on technical specifications, much like checklists. With increased efficiency a value-driven focus could be enhanced.

> *"So the overall feeling with China is that they are not focusing on with whom they are speaking, and that could be the person or the organisation, but they are just focusing on what the supplier is providing.* I *think, it´s destroying the business itself. because then the business relationship is reduced to a shoping list."*
> (Interviewee 6)

With agents replacing Wärtsilä in some business lines, the relationship is further challenged as the agent's relationship management intentions and practices might not be congruent and most value adding for Wärtsilä. Additionally, a filter is added to any mail correspondence, possibly altering information and lessons learned.

Execution and Control

To ensure working progress, the project manager and the project engineer are responsible for involving the team and the relative team members. Working procedures are guided by milestones, templates and meetings. Usually this is started with a kick off team between the project team and the customer to clarify technical specifications and discuss open questions form any side. Criticised was however that in complex projects this is not sufficient to cover the demand. A large amount of mail exchange was needed to cope with the technical specifications. Although this was also due to the project rather than country specific characteristics this could be taken for reference for future Gas introduction projects. This yard was not experienced with Gas and therefore needed substantial support. The early stage of the phase are thus pattered by a local kick off meeting, followed by visits.

> *"Then the first phase is to kick-off meeting where we go in detail to the technical specification. See if also we from project management understand what has been sold. What the customer wants. So this kick-off meeting is made with the customer. When the product is bigger and the scope is very big, one kick-off meeting is not enough. So we have to do several."* (Interviewee 11)

The procedures following the kick off reply on a comment - reply scheme through commination tools as IPIX. A time-consuming process that also leaves many technical specifications, especially related to, unaddressed and are often discovered during commissioning. This challenges the commissioning engineers and the related resources

> *"But the... this is just to give you an example of integration that sometimes this is not properly addressed. But then the minimum will allow to consume the boil-off of the LNG. Never checked. So we are always in the commissioning phase, filling this*

> *tank and saying "then who will consume the boil-off at the beginning?" "Oh, I don't know. What is the pressure the engine can accept?" "I don't know."* (Interviewee 11)

Challenges were faced as the communication between the end customer and the shipyard changed. First, the project team had frequent meetings at the customer's premises and shipyard was only involved at a later stage. This change meant that the shipyards needs were not integrated from the beginning and the team then had to abruptly focus on the yard's requirements. This led to quality issues within the equipment.

> *"Then during construction, the main challenges with ship yard were in construction and commissioning, but as I said, they were not due to design or due to technical issues or due to what we delivered or engineered. They were related to quality issues. (...) just to give you an example, we were almost ready to bunker and (...) then we gave pressure to the tank and the phalanges, the main phalanges on the tank started to leak."* (Interviewee 11)

Site management was identified as being crucial. It allows for continuous exchange with the customer and to follow up the progress of the project. Moreover, problems of a wide scope are managed such as supplier challenges, schedule irregularities and balancing interest of different parties. Hence, site managers are the eyes and ears that follow up the real progress. As the site manager is following the whole scope of supply it affects the overall performance of Wärtsilä. The Asian have also been described as shortcut taking. Monitoring is henceforth needed. This however also includes being closer to the workforces to overlook workload and the take care of related interactions. Naturally, having a Chinese speaking person helps overcome language barriers.

> *"And then all aspects of the projects; both financial, deliveries, manpower, time schedule and attending these meetings and then can delegate to mechanical side electronics and side automation side, to get feedback... He's really a spider in a web."* (Interviewee 16)

"Especially when we are building in China, it's, I would say that it's a must. Without any local supervisor, we wouldn't be where we are." (Interviewee 1)

"But then also as we are in Asia, it is many times that the Asian culture is such, that you, if there's a short cut that you can take, you take it. - I feel it very important to, that I go there from time to time monitor what they are doing. Also see how our manufacturers are doing, what is there, do they have huge workloads and listen to the people at site and then interacting between different stakeholders to get things moving in a good way." (Interviewee 2)

"At the Chinese shipyard, you have the project people maybe also the sales, they speak English, but then if you go to the technical personnel, they speak only native language and then you have a translation game starting." (Interviewee 2)

"This is because positive effect for both our customer and for Wärtsilä. We are going to catch every day and every hour what the customer want, what is the best way to go forward for each and every issue." (Interviewee 11)

"They would appreciate someone (...) with whom they could speak freely and who understand all nuances of their habits and behavior and the way of cooperation, because also sometimes for us it's maybe not very clear, because they have very specific way of cooperation and totally different culture. - Because sometimes customers are not so eager to inform that they don't understand something." (Interviewee 3)

Interestingly, also the Chinese customer demanded for a project manager and a project engineer speaking their native language and being available for requests. As this has been established from Wärtsilä already, this practice can start building on experience and further training. The optimal set up for China was henceforth defined as an experienced project manager and locally a Chinese support engineer or a site manager. The Chinese shipyard is also known for working seven days a week and expecting the respective support. Therefore, the local support could be strengthened to comply with the Chinese way of working.

"One of their actually comments, was that they would like to have a local person there. (...) they would like this person to be Chinese speaking, because it's for them

> *of course easier to speak daily in Chinese. (…) it would be wise to have one person from project management located there…"* (Interviewee 3)

> *"So it's important for them to know that they have support in our office. So I think that would, could be improved is the supporting such projects in Asia."* (Interviewee 3)

> *"We see it's a big advantage of having these network offices in the countries where we operate."* (Interviewee 16)

The site management also takes in a crucial role for the relationship building since the communication between the customer and the team is simplified. While project managers are often occupied with several projects, the site manager represent an assigned person that is available whenever needed.

Local presence in any form was stated as being crucial, for various reasons, one of them being the time difference within the European and the Chinese office. Another one the factor that unnecessary correspondence can be eliminated. A local project manager would however only be of help when actually located at the shipyard. Given the proximity factors in China, someone placed in an office can likely have the same effect as someone being placed in Finland. Instead of placing local project managers, a budget should be reserved for occasional travel as this is needed despite having a site manager. This also signals the customer importance and willingness to an open dialogue. Given challenges with supplier qualities, Local Wärtsilä network could also bring benefits for such challenges

> *"And this is more efficient in the end, because you waste much less time discussing minor things."* (Interviewee 2)

> *"And then that's in the project phase, during technical discussions and so on. Then maybe you can have one or two interface meetings and the rest is, can be handled at site by this local guy. Meaning that unnecessary travel from, for the whole project team is avoided.*" (Interviewee 2)

> *"It's im*portant to discuss and to, and they see that you have interest. *That from time to time someone is visiting them and asking how it is ongoing, if they are facing some problems."* (Interviewee 3)

Site managers however need be skilled people that fit a certain profile. They need to manage the split between the local and European project lead and be the supportive catalysator.

> *"If they want to have full control themselves. (…) They don't share everything maybe (…) or if the site manager takes a huge role and he tend to take over the whole projects from the PMs. (…) but if both side has a same, similar mentality that they helping each other, then it works very well."* (Interviewee 16)

Important attributes for a site manger mentioned were: the right attitude, dedication, empathy and understanding of needs as well as being diplomatic, being proactive and ahead thinking. Given its position, technical and commutation skills are crucial. This includes also information management as information has to be send and received as well as assessed. The site mangers also reflect one of Wärtsilä's strengths: taking responsibilities for error. By demonstrating such to the yard, they themselves may reduce hiding of their wrongdoing. A site manager therefore takes in an important role from a technical, project management and human perspective. Additionally, he can also be used for selling additional services.

> *"When we could get some more skilled people to site, then we could start solving things.*" (Interviewee 2)

Identified as being important in this phase was also open and honest as well as fast communication. Mentioned several times and introduced above was also that Integration engineers as well as procedures that enable a smooth transition into commissioning are missing. Suggestions of improvement include checklists and processes as well as training of local engineers.

> *"Have yeah open dialogue with customer and in front them, instead of hiding something. - I think it's really difficult to gain their trust and also very easy to lose*

it.- you will have to look in customer eyes and say sorry, that's our mistake, but we will fix it." (Interviewee 3)

"It's hard to get feedback. It might be weeks of silence." (Interviewee 16)

"...we don't have integration engineers. - But this is not enough to integrate. You should have process, you should have template, you should have series of check lists to be followed to ensure that two equipments are working together." (Interviewee 11)

Commissioning

This phase is started with a kick off meeting on how to proceed, discuss experiences from previous projects establish a plan. These meetings tend to also include social events to strengthen the relationship beyond business. Information is shared on IPIX, making it crucial that this documentation is improved. These meetings also highlight errors from previous phases. It was thus highlighted that a kick-off meeting with intense discussions are to be done at the beginning of sales, engineering and then commissioning to prevent as much error and hence time and cost as possible.

"Face-to-face is good in the beginning of the project. You get to know the persons that you will work with for a long time and through all these demanding times. (unintelligible) a lot with these external kick-offs that we get to know the yard persons, we get to know the customer at site. -. In China they don't do business until they know you - And not only talk about business. It's like becoming friends with them." (Interviewee 16)

" So this is something that we can improve, but it is the most... this is giving the best value for the customer. When we prevent the issue in sales, in engineering, we are still preventing, because we didn't build anything, so we are still catching information in an early phase. And then also in commissioning, at the beginning, we can still prevent hell of issues by saying "please, clean properly that compressed air system" or whatever." (Interviewee 11)

> *"(What) we need to build up local organizations. This is really… I'm taking about China and also Korea. Especially China. It seems, they really value this, to speak to a local person."* (Interviewee 2)

> *"So they will then come back to us if they can't solve it locally, they come back to us and ask us for support and then we again ask here, around here in Finland or Europe."* (Interviewee 16)

For commissioning the lack of commissioning engineers was criticised. By training local engineers, they can take care of projects and be supported by European engineers. In complex projects, at least one European engineer should additionally be stationed at the Yard. With this mix of European and Chinese workers, communication can be enhanced while at the same time Wärtsilä quality standards achieved.

> *"I mean site manager and our service engineers and that was one of the comments from the customer, that our people are very experienced and many times they solved the problems within few minutes, but also they claimed, that our people at the same time were extremely overloaded and they worked too hard, because there's supposed to be more people present on-site."* (Interviewee 3)

> *"When we have these more complicated projects, bigger projects with multiple scope, then site managers at those shipyards. That would be ideal. We don't have too many site managers available in China. That's a challenge finding good site managers to locate, relocate to China for a longer period."* (Interviewee 16)

At the same time, it would be important to keep the same people in a project. As project handovers to a next phase are by itself under the risk of information loss, complex projects enhance that risks further. With the change of relevant project team members, loss of information is almost unavoidable.

> *"Ideal team is the same team from the beginning to the end of the project, unless you face serious issue with someone."* (Interviewee 11)

The findings from the China within case are summarized and depicted in the analysis model in Figure 17.

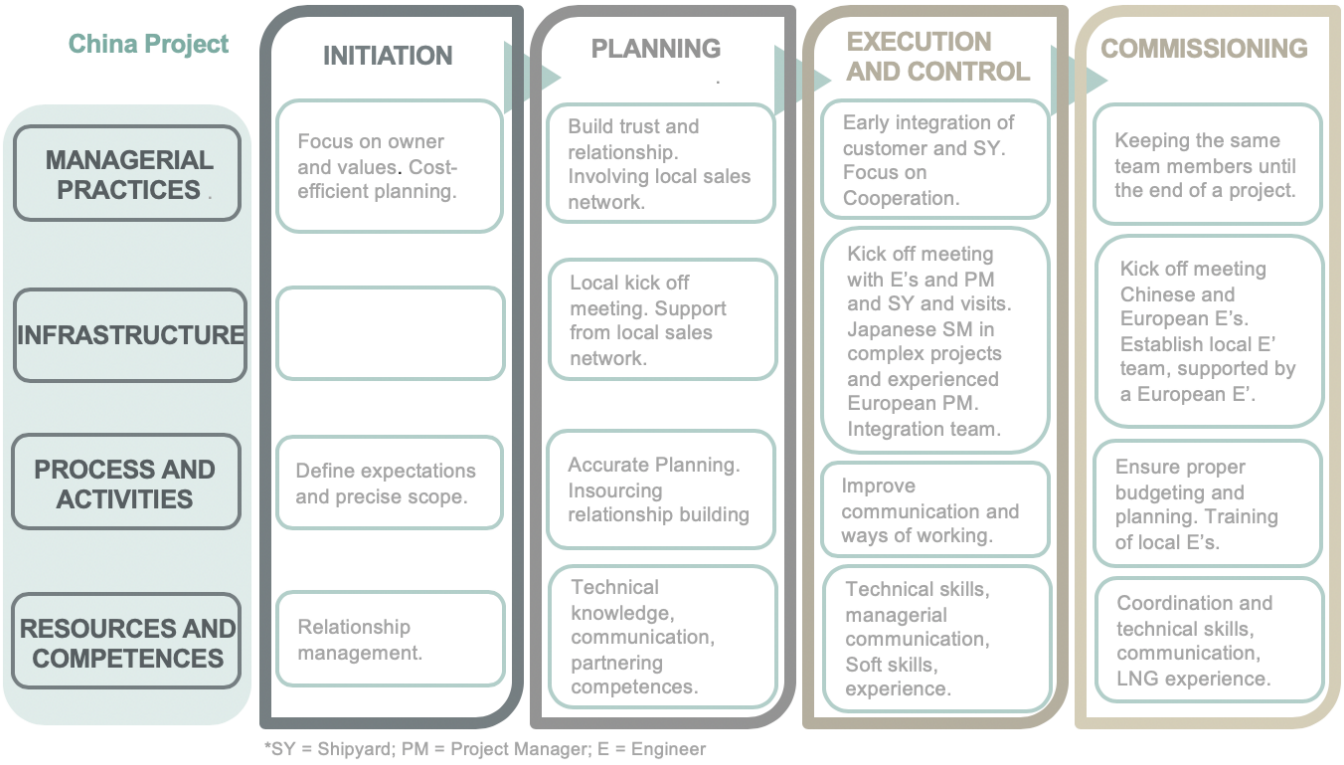


Figure 17. Practices and areas of improvement in China.

4.2.2. Japan Project

The Japan project represents a special case as LNG is only introduced to Japanese shipyards now. Here, reference from a standard project from a different business line was drawn as it reflects many of the work processes in the exact same manner. Future Gas projects in Japan are likely. The team was from across Europe with the Project Manager. The project was completed with the support of a Site Manager.

Initiation

Japanese customers have been described as being highly demanding and not easily giving in on their demands. Fulfilling customer demands was stated as being important, yet given these high levels of demand, finding a balance or compromise early on and being patient was stated as being important.

> *"They don't stop before they got the question answer, answers to the questions and they dig into as deep as they need to get the correct answer they need, they want. So, you have to have a high… big patient to work with them".* (Interviewee 20)

> "T*hey are very thorough, and they are checking everything, sometimes that generates unnecessary workload for us."* (Interviewee 17)

> *"The quality thinking, it's quite on high level. - when you have a Japanese customer, they know very well what they have bought, they know very well what they have agreed like in the contract and so on and they really follow up, that they receive what they have agreed and in the contracts and so on."* (Interviewee 4)

Wärtsilä on the other hand was described as proving a valuable package of services and products, as well as fulfilling what has been promised.

> *"We provide everything they need to know, to understand with our products, to manage, to install them in a safe and efficient way."* (Interviewee 20)

> *"Well the client would choose Wärtsilä because they think that they can get everything from one place. And so that Wärtsilä could take care of integration between components and parts."* (Interviewee 17)

The sales team was also identified as being the starting point for a good customer relationship and their understanding. Local sales organizations are crucial in Japan as they reflect a contact point, even if they are not experts in everything. Having a local organization at reach was also stated as being strengthening for business.

> *"It's also important in many cases, that you have a local organization even if they are not expert, but they, at least they understand the customer's need and can discuss many… I think in Japan it's quite important to have these I think we were in much weaker position, if we handled everything like straight from Finland."* (Interviewee 4)

Planning

While this phase is concerned with the contractual specification, it also includes planning and budgeting. Highlighted was the need to plan in resources for a site manager early enough. This accurate planning is tight to an adequate team that includes the right experts. With the right people involved early on expectations can be set realistically. Given the Japanese customers detail focused approach, Wärtsilä can present itself as reliable and save costs and other resources later on.

> *"Finding the correct people to discuss certain things with. Because no one is an expert on everything. I don´t know really how to describe that in a better way but I mean... if two experts on the same area discuss things are clarified much easier."* (Interviewee 17)

The details identified then need to be communicated to the project team in a secured and structured way. For this project a new tool, a functional description, was tried. This file was shared with the project manager, the project engineer and eventually the customer. While still being in early stages it was described as potentially successful in improving communication and change at a late project stage. Additionally, it aimed to reduce differences in expectations and delivery. This tool might bring an interesting future results.

> *"Well then, the challenges is to identify these misalignments between our delivery and the customer expectations. That are the, the difficult part to identify. - even if something gets discussed there might be people misunderstanding each other."* (Interviewee 17)

Based on their high-quality approach, errors are followed by a thorough investigation, including official statements. As this is highly resources consuming, clarifying technical details and expectations are important.

Execution and Control

The Japanese customs are highly focus on the Japanese way of working, which differentiates itself from Wärtsilä's way of working in terms of processes, structures and responsibilities.

Depending on the Wärtsilä line, more or less alignment of methods is achieved. Clarification and explanation are thus needed, often by the means of a site manager.

> *"Japanese customer try to keep Japanese way of working. - Totally different from the Wärtsilä way of working - first we have to ask (...) why they need and then try to explain internally. And understand Japanese way of workings internally. So much explanation for internally is needed to get acceptance (...) from the customers."* (Interviewee 22)

This phase should also be started with a kick off meetings between the experts, hence with the European team and the customer. Technical specification should be clarified by involving experts across business lines. Fast communication, being frank and honest was highlighted as being crucial. Additionally, face to face meetings are also used to get to know the people involved, overcome cultural hurdles and establish a relationship and trust are needed at the challenging beginning and end of the phase. Relationship building was also highlighted as playing a big role and being important for the customer.

> *"In other way how it's affecting the relationships, but maybe the trust is, is affecting the trust between people that you have seen each other eyes to eyes so."* (Interviewee 20)

> *"Skype meetings or similar with customers that can quite quickly clarify things. But then I do think that the let´s say meeting with the customer is usually much better, that usually resolves a lot of things."* (Interviewee 17)

> *"The most beneficial thing would be to send technical people there that can discuss technical details with the customers. Technical people."* (Interviewee 17)

> *"(trust is built) by example (...). I think you are challenged in the beginning of the project to deliver and if they see that you are delivering you are building up more trust."* (Interviewee 8)

Customer needs are integrated by direct and honest commutation but also by explaining Wärtsilä's way if working. This is usually done via mails and calls, in complex matters face

to face meetings with the European team are taking place. Mail correspondence has been described as being successful as it can also overcome the hurdle of time zones. One of the biggest challenges is hereby the language and cultural norms. Discussion and especially meetings are thus managed with the help of a site manager to overcome these barriers.

> *"Most challenge is the language. Japanese and English. I'm sure Japanese customer would like to communicate by Japanese always It is difficult to explain it in details by English by for them. - But on the other hand our side it is better to discuss in English to understand everyone internal."* (Interviewee 22)

> *"And other area it can be some cultural, other cultural things to need to understand what we are talking about."* (Interviewee 20)

> *"Your (European) people (...), always involved on with me."* (Interviewee 22)

Site managers take in the role of a direct and present contact person. In regular meetings procedures and progress was discussed and the European service engineers benefited from the translations. They are involved in coordination, communication and involving the right people. By participating in meetings and updating the team by weekly reports progress can be followed up more efficiently. Additionally, site managers are following the project form the beginning to the end, easing hand-overs into a new phase and securing information and project knowledge. They need to have management skills and technical expertise. By such, they also allow the engineers to focus on their tasks.

> *"Then you lose like the follow up. When you have the site manager from the beginning to the end, he's following the whole project from the beginning to the end. You know what they have discussed couple of months ago and can act accordingly."* (Interviewee 4)

Site managers are thus often, but not always needed when operating in Japan. For new projects and challenging customers site management was recommended. Challenges for the site manager have been identified as the precise translation of technical specifications.

> *"We don't have site managers on all projects, but recently for the latest projects in Japan we have had the site manager that is very much appreciated by the customer."* (Interviewee 20)

> *"Can be that it's to reduce the warranty costs and so on and hopefully it's also, I think creates a satisfaction for customer and then we get new business."* (Interviewee 4)

A crucial role is also the project manager. As the Japanese shipyards are not yet that experienced with Gas, the need for an experienced project manager for complex or prototype project was highlighted. Next to technical skills, abilities to manage the customer and the whole team like an Orchestra has been mentioned several times. As many projects are to be managed at the same time, structural and systematic ways of working are important attributed for a project manager. Important not only for the project manager but for the whole team were tools and training in tools and project management.

> *"You don't need to have a good memory, if you are working in a logical and systematical way."* (Interviewee 20)

Areas of improvement mentioned were Wärtsilä's documentation and tools such as IPIX. Especially with a highly demanding client high quality levels should be demonstrated. Further future request is the presence of an integration team that is responsible for the interfaces in the solution. Also, internal quality improvement have been mentioned and the tendency to find symptoms of earlier issues during the commissioning.

Another point was the improvement of communication across the project. The usage of an lead project manager was hereby stated to be beneficial. In regards to LNG, it was highlighted that no LNG experienced resources are currently stationed in Japan. A site manager as well as LNG experienced engineers form either Europe or Korea would therefore be needed. Well trained resources were stated to be key, cheap sub-contractors are to be avoided.

> *I think that when they introduced like a main PM, that is responsible for a complete project. I think that was a quite good improvement. - Hopefully, we would have the local site manager and then we would bring LNG engineers from Europe or could be Korea as well."* (Interviewee 4)

> *"You have to have certain skilled engineers for certain disciplines like well-trained local, well-trained inter-, engineers from Wärtsilä. (...) Well-trained resources…Not any cheap sub-contractors."* (Interviewee 4)

Commissioning

As commissioning is happening locally, the need for dispatching service engineers was expressed. In comparison to the project managers' global approach, local events will occur under the stricter Japanese way of working. Also, this phase starts with a local kick-off meeting. This is done with some of the European team member as well as with representatives from the local office in Japan and the customer. The installation is discussed and expectation as well as time and budget are addressed. Additionally, contact persons are identified. It is also common to include activities as going for lunch to strengthen the collaboration.

> *"Then you have like a face on the person that you are sending, and you have met and you maybe went out at least for a lunch and so on together. So that is quite important".* (Interviewee 4)

The commissioning work has been reported as being of great quality and the engineers as being highly skills. Late feedback has however highlighted the long response time needed from Wärtsilä indicating need for internal improvement. It was suggested to have a Japanese trainee commissioning engineer. The current Covid-19 situation has highlighted the need to spread the LNG knowledge and have key resources available. While the business sector can rely on the European offices, local knowledge must be preserved or enhanced. All findings are depicted in Figure 18.

"They are satisfied like with like the service engineers. - That is the feedback that comes quite often that we have skilled service engineer, we have like these field service people is acting well, they have knowledge, they listen to the customers. That is maybe strong, strong point for this commissioning work, but they use to claim that (...) if they have questions. It takes too long." (Interviewee 4)

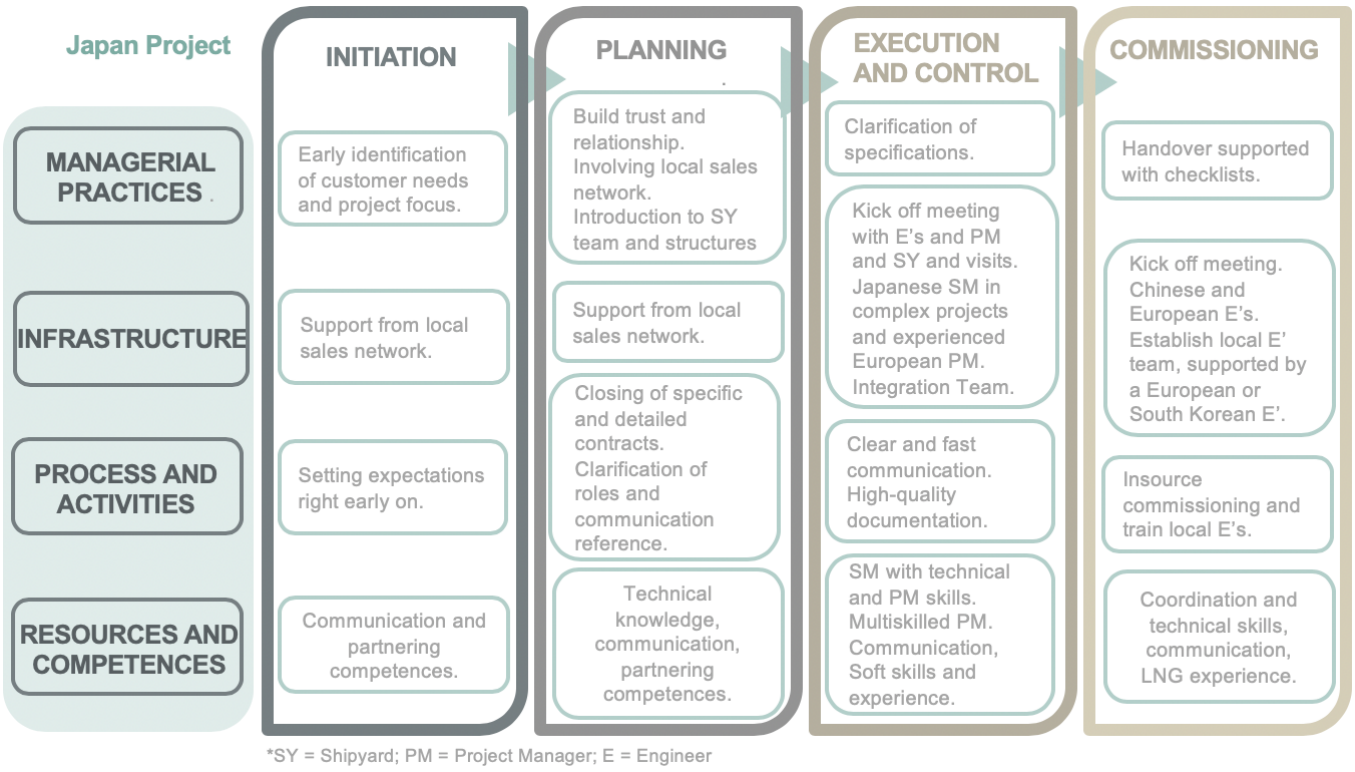


Figure 18. Practices and areas of improvement in Japan.

4.2.3. South Korea Project

The South Korea project was the first project of a series. The shipyard is an experienced shipyard that is familiar with LNG and has had completed previous projects with Wärtsilä. The FGSS team was from Finland, Poland and Italy, with the Project Manager and the lead Engineers located in Finland. The project was completed with the support of a Site Manager.

Initiation

The team that supported the project during its earliest stages was congruent in the concern that the customers' needs are not identified early and clearly enough. Although this is connected to the owner, it heavily affects the collaboration with the shipyard.

> *"So what we could be better on focusing on, is to solve everything, to get the customer understand, what the customer needs, already in the design phase of the project."* (Interviewee 2)

Early understanding of the customers' needs should therefore take place during the sales phases to avoid misunderstandings, uncertainty, errors, or change at a later stage and hence reduce costs and delays. Also, technical specifications related to supplier requirements must be clarified early on as slightest changes can have a large impact over the remaining phases.. Wärtsilä was also stated by several interviewees as being too open for changes from the customer side. Contracts should be more specific and final.

> *"We are very much too open to give the customer opportunities to change."* (Interviewee 2)

> *"You have to agree when the, changes are done or not. At least not free of charge, which aren't possible."* (Interviewee 8)

In this project, a well working collaboration for one part of the system has been reported. This intense collaboration was achieved strong guidance of the lead project manager by a period of planning in many face-to-face, as well as virtual meetings and other communication channels such as mail and phone. It led to a clear focus, reduced pollution and fuel-savings, involved the complete team and high appreciation from the customers side. At the same time, role clarification for contact reference should be clearly defined and communicated.

The challenge to understand what the customer wants can be related to a deeper issue that is disconnected from any country and will thus be addresses in more detail in the cross-case analysis: the challenge of defining the value proposition.

Planning

Having understood the customers' demands, planning should involve people from various business units to support the lead team with expertise. Limiting this planning to a small team can result in costly changes later on.

> *"The optimal planning, it would start already in the sales phase. I know in this one there was a lot of planning done before the contract, but (…) only this leading project management team were planning, but not involving all the different Wärtsilä's. - That will not work, 'cause then you miss a lot of… there is nobody that is expert of everything."* (Interviewee 7)

In addition to the above-mentioned early clarifications, feedback turned out as being a crucial element that often does not reach the target audience. Feedback from earlier projects should enable better planning and support the previously identified challenge of early identification of demand and error. This can be connected to how information is shared.

> "*But many times these reports just get stuck in project managers' mailbox or then they're hidden somewhere in M-files, without anyone knowing about them. - We should be better to share this with the project team, that… because it's quite rewarding for anyone, that has been working on a project."* (Interviewee 1)

> *"It's all communication. Of course, a lot of specification, documentation."* (Interviewee 7)

A further aspect anchored within the sales phase was the relationship building. With the sales teams being the first contact, they often establish a lasting relationship to which the customer that is also accessed from the customer in case of challenges. Establishing solid relationships early on is henceforth crucial and should be emphasized on. Moreover, sales was supported by the local Wärtsilä sales force, which allowed to the sales forces and the client to bond organisations.

> *"Local sales networks are crucial.- Especially in certain countries like Korea."* (Interviewee 7)

> *"The major support we had from the start, was from the sales team. - Without our colleagues in sales, we could probably not succeed to catch the projects."* (Interviewee 18)

The sales phase was also declared as cornerstone setting to introduce the rest of the team to the managerial levels, the team, and structures at the shipyard.

> *"The way Korean yards are built-up, the organization is very complex. So to get quick up to speed, you need someone to help you to find out the different levels and the different responsibilities at the yard."* (Interviewee 18)

To bridge the planning to the next phase, people from the sales team were invited for the first meetings. This also helped bringing the right people together and understanding the responsibilities at the Korean shipyard and enhance collaboration.

Execution and Control

To start this phase, a kick off meeting with the design team at the yard was suggested to clarify outstanding issues and sending signals of dedication to the customer. This intends to achieve intense working through the technical specification, if needed over days, has been suggested in order to avoid future costs. By including different experts from the team already in earlier stages, this late changes and visits can be further reduced. Internally, designs should then be finalized and frozen at an early stage. In the same manner the documentation should be accomplished.

> *"So we (Project management and Engineering) would have needed to get involved in more local meetings in the beginning."* (Interviewee 7)

> *"When contract is signed, next it should be our, we should be in the shipyard and make meetings with design team. We are coming around the same problem that design, it should be finalized and discussed with customer on early phase."* (Interviewee 5)

> *"And we are showing that you are important as a customer, that we want to be there and support you."* (Interviewee 1)

Cooperation with the Korean shipyards have found to be challenging. Several interviewees have declared them as extremely detail oriented, creating time and resource consuming request that are of disbalanced proportions. They further are equipped with large resource pools for inspections, site management and other roles. This allows for such detail driven ways of working, meetings with large amount of people as each one takes in a specific field of responsibility, as well as making the structure challenging to understand for Wärtsilä. The Korean shipyard also challenged cooperation by first refusing site managers from Wärtsilä, claiming to have sufficient knowledge and being world professional. This was true for parts of the solution as this department had built up a good relationship with the yard for several years, however it was not valid for the rest of solution. Eventually an experienced European site manager was placed at the yard as it was indeed needed.

> *"They put and point out every single small detail at everything. So this is very, very time consuming."* (Interviewee 2)

Communication with the locals has been highlighted as a major challenge as well as being of great significance. Naturally, the language barrier as well as a cultural barrier has to be overcome. Especially with the resources at the shipyard often being highly technical people, communication between project management and engineering is challenged without a translator. Communication challenges in Korea then also had a negative effect on discussion with technical specifications important for supplier requirements and resulting in quality issues. Being honest and taking ownership was defined as crucial when working with Korean shipyards. Fast, polite and honest response has to be given, even if the answer is currently unknown. This was also heighted by one site manager who experienced this while being located at the receiving side and thus being unable to proceed or perform.

> *"In the design phase, it's really important, that we understand each other."* (Interviewee 1)

Having local site management has been stated as both challenging and as beneficial when managed well. With a Korean site manager communication can be improved drastically. The language barrier hereby presents itself in form of limited English knowledge, culturally related customs and limited access to the manufacturing worker. With the language barrier lowered, unnecessary questions can be filtered by the site manager before sending them to Europe, and resources used more efficiently. At the same time, culturally patterned limitations of information sharing can be reduced. Closely connected, unnecessary travel can be reduced likewise. Hereby the right balance between information sharing and withholding has to be managed, while at the same time a good relationship has to be maintained.

> *"It's really important, that we have people at site who can speak the language the manufacturers' workers are having and then translate this in a good way back to English."* (Interviewee 2)

> *"Especially for like Asian customers, I think it's good, that we have people locally also that can communicate in their own language and that is, I think much appreciated by the customers.- They want to solve issues by themselves also and many times it's difficult to get the information."* (Interviewee 1)

> *"…to find the golden path between information sharing and also to build up a good working relationship with this guy on site."* (Interviewee 2)

> *"Without multidiscipline, professional site manager, this would have been a total disaster."* (Interviewee 18)

A site manager can also add to the alignment of working methods and more efficient planning.

> *"Because if I go back even further we were not sharing, I mean schedules with our customers also. We had tweaked them down and we had, only showing major milestones and this is not something you can do, if you have a representative from the customer at site. Then you need to share everything."* (Interviewee 2)

The role of the site manager was stated as being the connecting element between the shipyard and the European team by following up schedules, assisting the project manager locally or

adding. more detailed explanations to meetings. Site managers are the local eyes and ears to overlook operations and report their status. Broad technical knowledge as well as project management competences were stated as needed attributes. This role has to be made clear for the shipyard as well as Wärtsilä to keep clear boundaries.

> *"He's the glue in everything."* (Interviewee 18)

> *"...good for us to have some eyes locally to get some inside information and who are seeing what is actually going on."* (Interviewee 7)

> *"It's always good to have our own eyes at the site. - To have also local people that can actually check that okay this is not the actual status."* (Interviewee 1)

> *"Site manager should be something with a knowledge with the service engineer and good background on electrical mechanical disciplines, that he understand projects and when he's involved in the meeting, he can explain and help little bit the shipyard with all these issue."* (Interviewee 5)

Previously mentioned, site managers can also have an influence on customer relationships. In Korea, the site manager established a solid relationship with the yard and the yard itself was very satisfied with the site manager and the related support received, resulting in better collaboration. Local presence eases customer meetings through face to face consultation and in line with the cultural norms. In Korea local presence was stated to be very important as local presence is highly valued by the customer. Therefore, visits of the European team are needed despite the presence of a site manager. Reducing these to the necessary occasions with the help of local site management was requested several times. Another reason why meetings form the European teams were still defined as mandatory was the team noticed that difficult topics were avoided by the shipyard during skype meetings. Adding to that is the Koran shipyards' complex set up with large teams. In local meetings, more topics can be addresses as the responsible people can be send into the meeting consecutively.

> *"When we had meetings there, they, there were people popping up in the room all the time. One or two topics they wanted to discuss and then next one was coming with his own question. So that was, that would have been good to have more in the*

> *beginning. - That also has to be done in the sales phase, since when the contract is signed and the project team starts, then clock is ticking."* (Interviewee 7)

The downside of site managers was also noted. They can be a temptation for the yard to get fast answers from Wärtsilä. A site manager can either manage this well or exclude the European team and cause challenges. Significant to create a benefit, rather than challenges, is therefore the personality and the skills of the site manager.

> *"If you have issues during commissioning phase and you have a bad site, I mean you have bad site management, it will create even more issues."* (Interviewee 2)

> *"But it was way too often a broken line so misunderstanding between the site manager and the yard and then between site manager and us."* (Interviewee 7)

With pro's and con's listed, site manager have been stated to be needed in more complex projects. While standard projects can be managed without, their presence is stated to be a must for new or complex projects.

> *"And I will say without multidiscipline, professional site manager, this would have been a total disaster. - - So it's much better if you sit face-to-face and can make some sketches and you know take the time to explain thoroughly. So in my view it's… it should be mandatory to have professional site manager, if you have solution projects in Korea or China."* (Interviewee 18)

Also mentioned was the need for local project management support for complex projects, either in form of a European team member placed at the yard or through intense training of a local project manager.

> *"…might be a good idea to start to train or to maybe add in someone from Europe for a year or two in the local office."* (Interviewee 18)

Internally, involving the right people in the team in order to solve issues has been found to be crucial. This was also described as mentality to work as one team, and managing the project together. Hence, creating a feeling of team belonging and shared responsibility but also pointing towards capabilities of a project manager.

> *"Make sure that you involve internally the correct people, meaning these that have the expertise needed to assist."* (Interviewee 2)

Another major concern that stretched throughout the phases is the lack and urgent need for a integration team that oversees the integration between the different components. This team should connect products but also business lines in their way of working, enabling the delivery of a fully integrated and installed. solution. Due to the high complexity, a dedicated team of experts is needed.

> *"In this project I would say that the integration Wärtsilä did was poor. Samsung did that for us. They integrated us.- We would need to have a team of experts in integration."* (Interviewee 7)

> *"It was the shipyard, that made the main integration of all the products. It was not Wärtsilä that delivered and said that this how we should connect all the pieces."* (Interviewee 1)

> *"…is a huge challenge to integrate the different business lines, because we are working on different engineering levels and engineering tools and so on. So it has been huge challenge to get this integration smooth running."* (Interviewee 18)

Commissioning

To bridge the transition into this phase, checklists and working procedures were mentioned to facilitate hand over. With many activities ongoing, chances are high that crucial information is not passed in to the commissioning team. This can create challenges that then involve additional resources, although it could be prevented easily.

> *"We should also try to have some… carry over work list or something that we go through with the site people. – When it's most activities on-going, then it's also a lot of information or communication missing."* (Interviewee 1)

As most of the activities of commissioning take place locally, frequent face to face meetings are needed for this phase. This demand is enhanced if issues have remained unsolved or are discovered. The quality of our documentation affected the commissioning phase, leading to

frequent meeting and correspondence. Also, unsuitable site management can potentially affect commissioning negatively.

A significant challenge for this phase is the lack of available service and commissioning engineers. They need a comprehensive understanding of the system, often connected to experience. A local service engineering unit should therefore be established in Korea. Trained by the local as well as European offices at the beginning of a project, these Korean engineers should be able to complete the commissioning, supported by the European engineers when needed. All findings are depicted in Figure 19.

> *"If it's a bundle delivery, LNG pack, that should be in my view handled by the local service team."* (Interviewee 18)

> *"We don't have enough high qualified service engineers, especially on prototype projects."* (Interviewee 5)

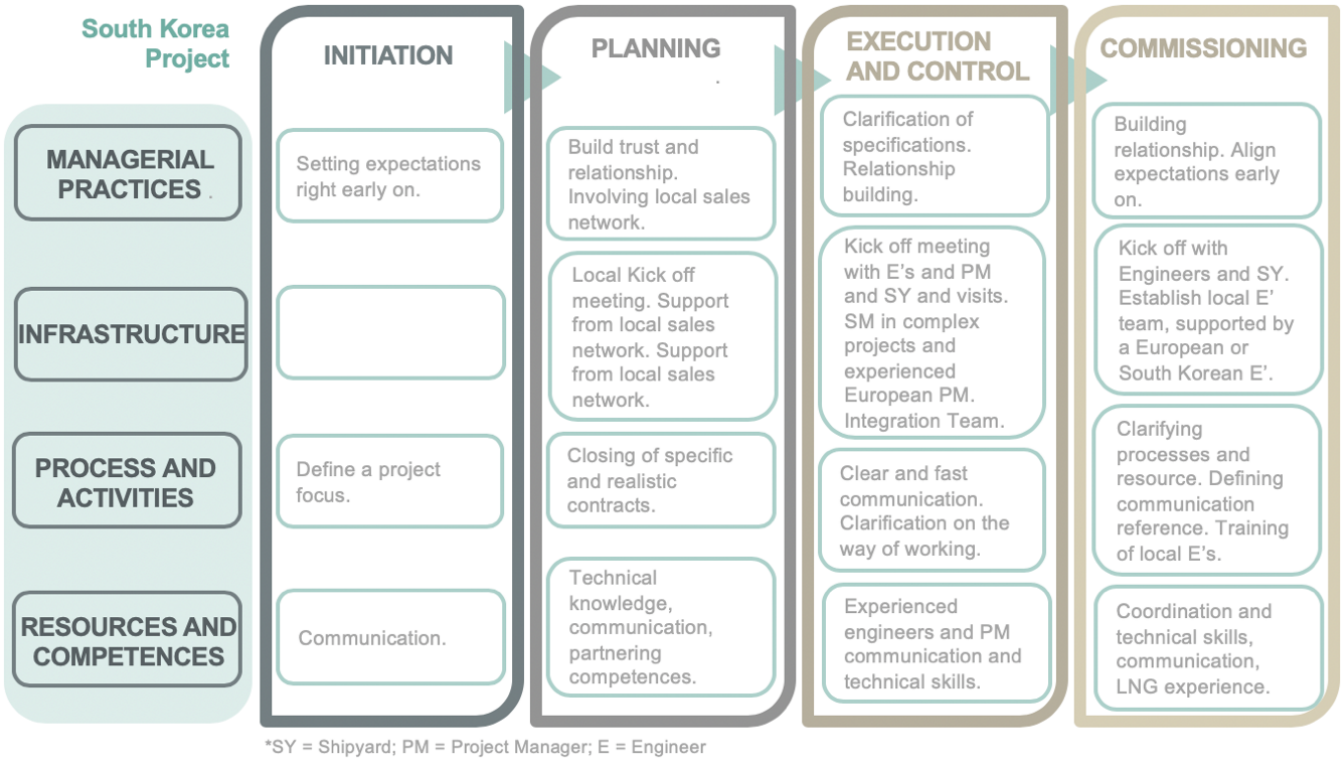


Figure 19. Practices and areas of improvement in South Korea.

4.3. Cross-Case analysis

In this section the learning from the three cases combined are reflected. This allows to address noni country specific matters identified as being important for the presence structure and to give an overview of the aspects relevant to Wärtsilä's future presence infrastructure. Further, the cases are analysed in the light of the previously presented theoretical base. The cross-case analysis is built up in the same manner as thee within case analysis besides one expectation. In this section the Initiation and Planning phase are combined as they are closely interlinked and differentiations between the two phases are challenging to make.

4.3.1. Initiation and Planning

The Initiation phase was patterned by challenges to meet customer demands while at the same time balancing expectations with reality. The roots of such became visible when asking for the definition of the **value proposition.** As suggested in the theoretical base, understanding the value proposition allows actors to collaboratively work towards a shared goal and reinforced relation governance. When asked about the value delivered by Wärtsilä, multiple answers could be gathered. The most common ones being: to deliver what has been promised, a certain quality level, in-time and budget delivery, support during operations and especially with gas related fears, comprehensive scope of supply, a functional solution, integration and installation, and having one address for products and services in bundle. Closely related, the customer demands were identified as: receiving a solution that functions, the integration of the component and the installation of the solutions, and related to that, the overreaching solution project management. With such great variety in value and demand understanding, the next are for improvement is only a logical consequence.

When creating the contract, setting **expectations** right early on, identifying customer needs and project focus, and consequently closing specific contracts have shown to be major areas of improvement. All aiming to avoid scope creep, late changes and unclear expectations resulting in costs and other resources beyond the project budget. Especially in cost-oriented

countries, this can lead to competitive disadvantage for Wärtsilä. In addition to cost-effective planning, focus on the end-customer has been identified as a strength. Collaborating with yard and customer could also reinforce values, rather than cost focus.

Related to such, the sales phase also demonstrated significant importance, if not the greatest importance, in **relationship building**. The sales team was mentioned to be the main contact for the end customer and influencer for the relationship with the yard. Visits are therefore an unavoidable practise. The local network hereby plays a major role. By bridging the cultural gaps, a reference contact can be established that is highly beneficial in case of challenges. The sales team establish trust in the first place and thus build the foundations for successful collaboration. The local sales force is thus a crucial element in strategical development. This is also supported by previous studies. Huikkola et al. (2016: 34 -35) study found that recruitment and training of suitable personnel is crucial, especially within the sales force as they represent the link between technical knowledge and the customer. There was no need for a specific FGSS expert mentioned, yet technological competences in the field were seen as a must. To generate and capture the value generated by relationships, relationship management and sales should thus not be outsourced. Much more, resources with communication and relation-oriented capabilities are needed. Enhancement of technical capabilities could improve contractual details.

4.3.2. Execution and Control

The execution and control phase demonstrated the various challenges of complex projects. The collaboration with the shipyard and the shipowner is patterned by interdependencies and technological complexity and the interactions of teams in all three countries. It also demonstrated the effects from the improvement areas from the sales phase. Therefore, various practices were recommended.

To start, a kick off meeting with the local team and the European engineers and project manager was suggested to further minimize late changes and to clarify technical

specifications not addressed during the sales phase. To ensure technical precision, **experts** from across business lines as well as feedback from previous projects should be included, as complex projects build on interdependencies and interrelatedness. Additionally, the shipyard as well as the customer should be included in these meetings to align expectations and demands and start from a trust base. Moreover, including the representative sales person could help expanding the relationship to the operations project team. This way, governance gaps can be filled during future challenges. Technical **capabilities** as well as soft skills and relationship-oriented competences are in focus to build trust, a shared micro culture and communication. Stretching over all phases, Wärtsilä was described as taking in a Backseat position, rather than being the driver as one might expect form a market leader. This concern was raised in several ways, always leading back to being unable to guide the direction, following the pressure of the customer.

To achieve cooperative norms, alignment of process structures is suggested. Hereby the complex structures of Asian shipyards have been mentioned. However, also **the complex structures of Wärtsilä** were stressed. Wärtsilä's internal complex set up increases the time spend on solving internal issues, further reducing the time available. Wärtsilä was often describes as operating in silos, each line focusing on its own budget and annual goals. Information sharing is challenging as information has to pass many filters, taking time and altering the request. Using different and methods of working and even technical standards, the customer is effectively dealing with more than one Wärtsilä. Before being able to aligning processes with externals, Wärtsilä thus must first align its internal processes. Also, while the local sales team is encouraged to bridge and support in this matter, communication showed to be weak. Challenges in the processes were late communication from Wärtsilä's side and quality concerns within documentation. All crucial elements to improve cooperation.

Successful operations also demand for frequent **visits** of the project team. While these visits are mostly needed towards the beginning and the end of the phase, they also add to the relationship building and send signals of being important to the client. This is especially important in gas unexperienced shipyards. With reasons for alliance failure being lack of

mutual trust, commitment and cultural sensitivity, signal sending is important. This can also be traced back to **working as one team**, and managing the project together and creating a feeling of team belonging and achievement.

To successfully manage projects a **local presence** was however stated as crucial. The demand for a local site manager brought various benefits such as reducing cultural and language barriers, eliminate unnecessary travel by managing communication, as well as being local eyes and ears to follow up on the progress. While the interviewees whether a site manager is always needed, it was clear that for complex or prototype projects a site manager is unavoidable. Adding to this is the importance and demand of improved communication. Site mangers were clearly demanded to have technical skills but also project management skills. As some even recommended a local project manager, coordination capabilities seem of high importance. The more the execution and control phase transitions into commissioning, the less managerial and the more technical skills were requested. Communication skills remain important throughout the phase. Highly important is **Experience**. An experienced European project manager from FGGS with the managerial, technical and interpersonal skills to manage the operations with the support of a site manager is key. Site manager also represent the permanent element that manager a project throughout its creation and thus inherits valuable knowledge that is transferred over the phase. Given the need of a site manager in all three countries, the possibility to take advantage of a more experienced site manager, such as Korea, for less experienced shipyards such as Japan. While these site mangers were not requested to be limited to FGSS, knowledge of Gas technology is fundamental. Building up local organisations focusing on project management currently does not seem necessary. This might however change as demand increases. To start, **training** of local site managers and local engineers could be targeted. Overall, improvement of processes rather than more personal is needed in this phase. By investing in few well-chosen local capabilities, and taking advantage of clusters, this could be achieved.

Unavoidable seems the creation of an independent **integration team** that manages the communication between system components and eventually its integration. The integration

was stated to be a core element of Wärtsilä's value and sales package, that was however often undertaken by the customer. Being technically challenging, the need for an integration team has been highlighted throughout the interviews. This was criticised also by the commissioning team as the consequences are often resulting in costly challenges for a team that is already too small and further takes a long time to be enhanced.

4.3.3. Commissioning

The commissioning phase was patterned by a **lack of resources** as well as demand for process improvements. The phase was also started with an intense kick off session with the engineers and a shipyard. These meetings served to clarify expectation, processes and resources. Trust and relationship seemed to be of high renown as social event were included and stated as being important. The handover to the commissioning phase internally should be supported by checklists as information is often only partially transmitted. To avoid loss of information further, keeping the same team members was recommended. As site manager can hereby be another bridging element.

For the commissioning itself the quality of the resources was praised yet at the same time the lack of resources became obvious. Again, precise planning in an early stage and minimization of changes and error is critical as additional commissioning resources are rare and thus costly and damageable for strategic development. Given its importance towards quality and branding, as well as the interconnectivity towards various internal departments, outsourcing of commissioning should be avoided. Instead, training of a **local commissioning team** should be aspired. Local Trainee engineers should be placed and trained by European commissioning engineers so that in the future commissioning is done by local commissioner engineers, supported by experienced European Engineers. In complex projects the placement of a European commissioning engineer might still be needed.

Overall, FGSS would benefit more from reallocating existing resources and taking advantage of internal clusters, rather than hiring many new resources. While hiring key resources is

unavoidable and learning must be accounted for, the overall direction for growth is improving and unifying internal structures. Suggestions for additional resources can be found in chapter 5. Further, the utilization of resources and unclear role descriptions were criticized. With limited and highly specialised people, resources should be handled wisely. Additionally, the communication of strategy should be improved as only then implementation can be successful. The findings from the cross-analysis are summarized in Figure 20

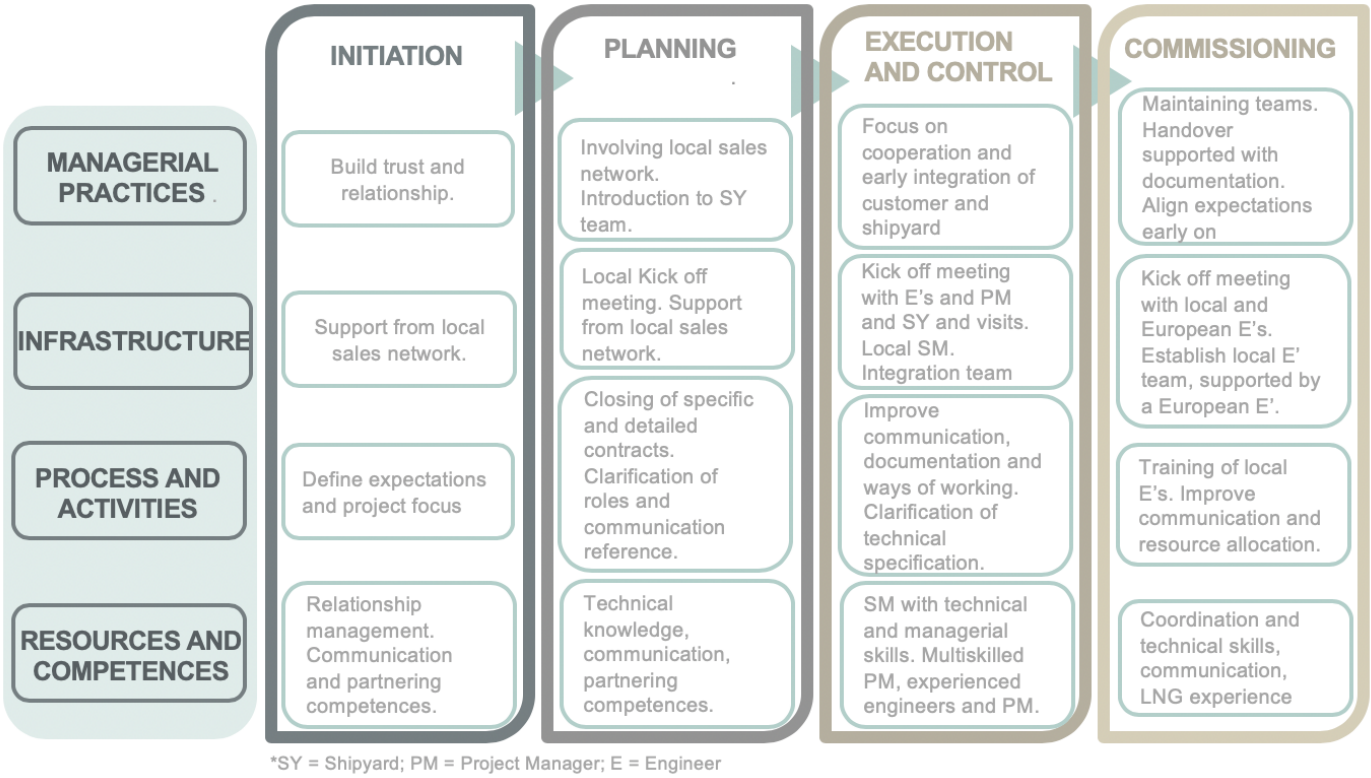


Figure 20. Practices to improve the presence structure for FGSS.

5. CONCLUSION

This thesis focuses on strategy implementation through project management structures and thus brings two research field together that have only very limited been researched before. This paper has therefore addressed a relevant research gap that could be highly valuable within relation-oriented governance as it is often found in system integration. By applying the theoretical framework of RBV and capabilities to the marine industry, the base for future research in highly technical and complex field has been laid.

5.1. Theoretical contributions

This study investigated on how global presence affects strategic growth for integrated solution providers. The first research question to be answered was addressing *the role of global presence in shaping the strategy implementation of an integrated solution providers.* Studies on this have shown that the role of governance in complex projects are more and more relational driven and human aspects such as soft skills take in a key role. Managerial practices are shaped by underlying relationships and practices to enhance such are suggested across literature (Morris 2013; Van Marrewijk 2004). Chakkol et al. (2018: 1000) define trust and commitment as a core element for successful governance. Linking such with the high complexity of technical solutions, people become even more important as they confront challenges and innovation with teamwork and creativity. Combining the tight collaboration solution integrators engage in, it becomes obvious that presence is a defining factor that shapes how relational governance in complex projects is enabled and ultimately how a firm can grow strategically by capturing the benefits of expert collaboration. The empirical findings demonstrated that trust, communication and interactions are the base of such, especially when complexity and challenges increase.

The second research question addressed *how to strategically organize its global presence to strengthen growth.* Recent studies on complex project have defined a clear connection between strategy and projects and consequently their capabilities. This capability set moreover

balance stability and flexibility and shape routines in inter-organisational settings (Zerjav et al. 2016: 454-455, referring to Brady & Davies 2004; Davies, Brady & Hobday 2006; Winch and Leiringer, 2016). By providing both, they allow for innovation and thus routine as well as innovation projects. Other studies discovered that the temporary nature of project teams provides challenges as capabilities and knowledge are shared over limited times and team bonds can be continued, if the same team members are reconnected and learning is addressed (Davies & Brady 2016). Thus, the permanent umbrella organisation can develop the capabilities for managing projects, yet the capabilities for handling upcoming changes are and innovation are rooted in the temporary teams. Controversy, project capabilities, rooted in the operative level, are associated with routine and stability. This stresses the need for further research on different project and dynamic capabilities within temporary projects. The findings of this thesis highlighted the need for capability exchange across teams and thus the need for a framework that enables such. Presence in complex projects must thus take into consideration the temporary nature of teams and avoid working in silos. The next step would be to investigate how project and dynamic capabilities can be exchanged across teams to benefit from their mutually reinforcing benefits.

The thesis further combines aspects from project management, such as governance, with models form strategy, such as the value system. By combining these, the highlighted connection between strategical and project capabilities could be demonstrated. This is value-oriented perspective could bring valuable insight for further research within solution integration and project capabilities.

5.2. Managerial implications

Presence infrastructure has been identified as the foundation for capabilities and their allocation, transfer and development in complex solution integration projects. A demand for change in presence roots in demand for change of certain capabilities. Solution integrators work in tight collaboration with actors up and downstream of the supply chain. Achieving collaboration thus refers to acknowledging demands from both sides and placing the required

capabilities in proximity of both. Capabilities have been identified as the core competences for integrated solution as they are allowing to create technically complex projects and manage these dimensions of complexity by project and network capabilities. Interpersonal capabilities, managerial capabilities, relationship capabilities, management skills and especially technical capabilities and communication capabilities are at the base of complex project success. One of the most important aspect for project success is the experience of the resources. Related to RBV, this cannot easily be enhanced as the build-up of experience needs time, investment such as training, in some cases even traveling. While local presence is crucial for project and strategical practices, increasing resources is not the solution. Rather, the focus should be on transferring capabilities across teams and breaking up internal silos For the presence infrastructure this translates into focusing on the structures and processes these resources are operating in. Internal business lines can hinder strategy and project alignment and create tension, rather than collaboration. Exchange of the already existing capabilities within departments should enables increased efficiency and access to valuable experience and expertise.

Strategy implementation in system integration structures further proved to be extremely challenging as the complexity of the projects seems to overpower strategical focus. Looking at the diverse understanding of value within teams demonstrates the lack of knowledge regarding strategical aims, aspired values and the customers focus, limiting the full benefit of collaborations. Taking a backseat position further limits strategy implementation. This could be linked to a lack of connection between project and strategy capabilities from within a solution integrator. Successful solution proviers therefore need to know their strength while at the same time adjust to customers' needs and their business structure in accordance with the corporate strategy (Brady, Davies, and D. M. Gann 2005b) 362-363. Davies 737). Clear strategy communication to establish a clear understanding of strategic goals and translating the business objectives into the project context could be a first step towards a strategical fit between planning and implementation.

Looking at the tight collaboration optimal resource allocation becomes obvious. If one actor fails in providing a task, another one takes over this task. This challenges the relationship, value perception and expectations or trust. Moreover, different capabilities are needed for limited times in flexible manner. Important capabilities to strengthen are soft skills, collaboration or partnering oriented capabilities, and technical capabilities. Complex solution provider can find themselves in stretch between technical and relational focus. The combination of such could however lead to highly beneficial collaboration and the development of further capabilities. This is also supported by research emphasising on the importance of network capabilities allowing to coordinate the complex relationship network and to access external resources to enhance value creation (Kohtamäki et al. 2013: 1376). In this thesis case, this addresses the internal as well as the external network to manage the global level of operations. The demand for resources has been highlighted in regards to local site managers, stronger local sales teams, integration teams and commissioning resources. Occasionally local project manager and support Engineers were requested. Site manager were requested to be multiskilled and combine technical and managerial knowledge.

The analysis showed another significant factor relevant to capabilities and strategy implementation. Although the firm's activities are structured in clusters, the company's business lines work in silos. This way, the exchange of vital capabilities is limited, even though these capabilities and experience cannot easily be bought-in. This challenge of integrating all internal brands was also found in other Gas servitization organisations (Bandinelli & Gamberi, 2012: 99-100). Before aligning business models and processes within the collaborative network, internal alignment must be addressed to allow for internal transfer of capabilities, rather than further extending the silos. This has also become clear when the interviews stated several times that resources are needed, yet that they do not specifically have to be department specific resources. Rather the internal strucutres to transfer capabilities must be improved. Suggestions to improve the presence structure within the next years are illustrated in Figure 21:

Figure 21. Suggestions for future managerial capabilities development in complex project solution providers.

5.3. Limitations

The case company itself is an international company, operating in various countries in various industries, which are itself highly differentiated, a distinct niche is chosen to reach sufficient depth. The scope is thus limited to specific marine technology projects and therefore providing limited insight into the role of presence in strategy implementation through project management in other industries.

This thesis is limited in strategy implementation description as the complex nature of solution integration projects left little rooms for such. The findings on such are therefore limited to details from the interviewee's ad their understanding regarding the value proposition and practices applied within operations.

Forecasting as well as the cultural customs are moreover challenging. Shipbuilding is a fast-moving industry and with the impact of Covid-19, forecast include a great amount of speculation. Moreover, ships are empowered by fossil fuels. Regulations within this fields

are under strong pressure nowadays and technological progress increases uncertainty. Other changing variables are political changes such as trading agreements which can cause drastic changes within future projects. Cultural aspects are a highly challenging aspect since it is challenging to assess and hardly measurable. Theoretical frameworks may be helpful, yet not always valid. These challenges limit the level of findings. Moreover, only a limited amount of people can be interviewed which limits the scope of experience.

5.4. Suggestions for future research

As this study aims to over a very complex and broad field, various areas for future research can be identified. To consistently reflect aspect of collaboration, future research could focus on the infrastructure demand from the customers perspective. This could bring valuable insights to value perception, project capabilities and governance structures. Eventually, a wholesome perspective of the collaboration and improvement demands could be established. From a theoretical perspective, this would allow seeing the collaboration through the lens of the customer. To further investigate on capabilities, the effects of and requirements of capability exchange across teams should be researched. This could build on Davies and Brady ‘s (2016) findings that the combination of project and dynamic capabilities and their role in temporary project structures needs more research and understanding. Moreover, to fully comprehend the role of solution integrators presence, the effects on resources in innovative as well as routine projects and their impact on coping which such changing conditions could be researched. Furthermore, applying a Strategy in Practice lens to this scenario could bring novel and more practical insight for system integrators on capability transfer and the related managerial implications.

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7. APPENDIX

Interview Outline

Integrated solutions as a context

Achieve a general understanding of the IS operations in the specific country

Q: How does Wärtsilä enable the integration of customer needs into daily operations?
Q: Do these needs change within different phases?
Q: What are the biggest challenges when collaborating with the customer?

Managerial practices

Input: Working methods and innovations to support the client collaboration.

What is happening in daily operations?

Q: To collaborate with the client, what managerial practices (or working methods) are recommended by Wärtsilä?
Q: What managerial practices are used within the different stages of the project?
Q: What practices are needed to enhance successful collaboration?
Q: What types of challenges did you face during the project?
Q: How do project personnel cope (get along or manage) with the challenges? What is important and what types of practices you use when challenges emerge?

Project goals and measure

How to know whether the (client's) goals are met?

Q: What are the main project goals?
Q: How do you measure client feedback?
Q: How do you enable client feedback?
Q: What are the main areas for improvement for the client?

Customer value proposition in the project

What is promised/given to the client?

Q: How would you define the value proposition for the customer?
Q: Is this value proposition delivered?
Q: What could be improved?

Structures / infrastructure

Input: Infrastructure being the set-up of local presence

Q: What is most important in Wärtsilä's infrastructure to enable needs and collaboration better?
Q: What role does local presence (offices, on-site managers) play for customer relationships and communication?
Q: What form of presence (offices, regular visits etc.) is needed to improve the needed practices?
Q: What could be changed in the infrastructure to support customer needs and collaboration better?

Capabilities / Processes / Activities

Which capabilities, processes or activities should be enhanced and what is needed for that enhancement?

Q: What capabilities, processes or activities deliver most value for the client collaboration?
Q: Could they be improved or strengthened?
Q: What form of presence is needed to enhance the needed capabilities, processes or activities?
Q: What is important in managing these kinds of complex projects?

Resources and competences

Resources and competences as basis for successful client collaboration

Q: What resources and competences are most needed in daily operations?
Q: What role does relationship management and communication play?
Q: Are these influenced by the form of local presence?