



Turun yliopisto  
University of Turku

# **DEVELOPING SOLUTION BUSINESS**

## **Effectual Service-Dominant Logic Approach**

Master's Thesis  
in International Business

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5.5.2017  
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# 1 INTRODUCTION

This thesis examines solution business development from the perspective of service-dominant (S-D) logic and effectuation theory. The case company, a European multinational enterprise (MNE) in maritime transportation industry shared an interesting story about how they had closed a 100 million euro contract only half a year after starting to experiment with solution business approach. As the data served as a starting point, a modular abductive methodology was adopted to investigate the development of the company's solution business over the years – from past to present and all the way to the future. Hence, ex-post and ex-ante event-based analysis of the case company is utilized in conjunction with theoretical literature review to develop a conceptual model of effectual solution business development. The thesis was written as a part of REBUS (Towards Relational Business Practices) project financed by FIMECC (Finnish Metals and Engineering Competence Cluster).

## 1.1 Solution business, S-D logic, and effectuation in the context of maritime transportation industry

The maritime transportation industry is strategically and economically extremely important in today's interdependent and globalized world. As 80 percent of the world's merchandise trade by volume is carried by sea, the effectiveness of the shipping services and port networks is crucial for maintaining economic and ecological sustainability (United Nations 2013, xi). Over the first half of last century, Europe dominated shipbuilding by producing 80 percent of the world's ships, but has now ceded the top position to Far East and contributes mere 15 percent of the shipbuilding industry's annual production (Keltaniemi et al. 2013). Within European Union shipbuilding industry remains an important employer with 120,000 people directly employed at shipyards and countless others working in related industries (Keltaniemi et al. 2013). Over the years, the maritime transportation industry has gone through various structural changes with the latest occurring due to the subprime crisis in 2008 and the following global recession. In the years leading to 2008, large orders for ships were placed due to positive economic expectations. However, this led to building of overcapacity as the global recession reduced the demand for shipping services. Consequently, the supply side of shipping continues to outpace the growth in short-term demand and fleet utilization remains challenging (Maritime Knowledge Center 2012, 8). Thus, European companies operating in the maritime transportation industry continue to experience a great deal of market pressure to develop their businesses – integrated solution offerings being one viable option.

Tertiary sector, services, has emerged as the largest sector in Western economies. Besides offering strictly products or services, companies have become to provide integrated solution offerings, i.e. combinations of products and services. In fact, solution business has emerged as a distinct business model, instead of being just a product category (Storbacka & Pennanen 2014, ix). Over a decade industrial firms have been urged to abandon products and move to services and solutions (Foote, Galbraith, Hope & Miller 2001; Oliva & Kallenberg 2003; Phillips, Ochs & Schrock 1999; Wise & Baumgartner 1999). Similar steps have been taken in other sectors of the economy. For example, software industry has largely moved to software as a service (SaaS) model, in which software is provided over the internet as a service (Mäkilä, Järvi, Rönkkö & Nissilä 2010). The benefits of SaaS include lower cost, scalability and integration.

Industrial companies are also looking for new competitive edges and ways to combat price erosion (Kohtamäki & Helo 2015, 171). The solution business model is seen appealing as it provides an opportunity to move forward in the value chain, increase wallet-share growth at existing customers and generate more stable cash flows (Storbacka & Pennanen 2014, 1). However, developing solution business model presents multiple challenges and can lead to unnecessary divergence in the company's operations (Storbacka & Pennanen 2014, 11-12). Thus, executing a successful transition to solution business model is an involved process and presents multiple challenges at individual- and organizational-level in order for the company to maintain coherence in its activities. Furthermore, divergence from the old ways of doing business might require company to enact ecosystem-level change in order to design and reconfigure markets for their solution offering.

The movement to service economy has created a need for new industrial practices and logic. Over the last decade, a new management concept, S-D logic, has emerged as a lens, a mindset, to understand social and economic exchange in a multi-actor ecosystem (Lusch & Vargo 2006b, 2014, Vargo & Lusch 2004a, 2007). S-D logic provides an alternative perspective from the traditional "goods-dominant logic" (G-D logic) where goods have intrinsic value and accompanying vocabulary to examine economic activity from service perspective. By placing service as the fundamental basis of exchange, S-D logic emphasizes that customers are looking for "solutions and experiences, not products" (Lusch & Vargo 2014, 6). Furthermore, customers are seen as cocreators of value and thus the value from the solution offering arises from the use of the offering in a particular context (Lusch & Vargo 2014, 78). Therefore, S-D logic provides a valuable lens through which we can examine company's transition towards service offerings or, as in this study, maritime transportation company's development towards solution business.

Lusch and Vargo (2014, 196) also noted that effectual and abductive thinking is echoed throughout their writing and that it aids firms formulating S-D logic strategy orientation. The effectuation processes were introduced by Sarasvathy (2001, 259) "as the fundamental decision units in explanations of how economic artefacts such as firms, markets, and economies come to be". Effectuation world view is based on the assumption that by controlling the future, there is no need to predict it. This runs against causal thinking, in which prediction enables the control of the future. Read, Sarasvathy, Dew, Wiltbank and Ohlsson (2010) presented starting with your means, setting affordable loss, leveraging contingencies and forming partnerships as the key principles behind effectuation. The principles allow examining solutions business development from the standpoint of using evolving means to achieve new and different goals. Thus, a combination of S-D logic and effectuation views holds the potential to provide a contingency approach for companies to transform from product business to solutions business.

## 1.2 Purpose and contribution

This study proposes a conceptual model for effectual solution business development with practical managerial insights to the process from maritime transportation industry perspective. S-D logic, effectuation theory and an event-based case study in the context of maritime transportation industry are utilized to construct the conceptual model. To work towards a conceptual model, the following sub-objectives are employed to examine events perceived critical to the solution business development:

- Examine critical events in the past as well as potential critical events in the future



- Examine challenges specific to the maritime transportation industry in the past and in the future

The main research objective is concretized and informed through the examination of the sub-objectives. The first sub-objective is important in order to understand the solution business development in terms of the perceived critical internal and external events over time. This provides individual-level insights of the solution business development process and informs about the mindsets. The second sub-objective facilitates the discovery of particular roadblocks in the maritime transportation industry for solution business development and thus provides more practical suggestions for the industry. Furthermore, it allows for examination of whether the constructed conceptual model can provide practical guidance for the maritime transportation industry.

The research purpose is aimed to provide theoretical and practical contribution. Although a plethora of literature on solution offerings has emerged over the past decade, it remains rather normative and lacks “explicit links to theoretical perspectives at a higher level of abstraction” (Nordin & Kowalkowski 2010, 442). Storbacka and Pennanen (2014) categorize the key capabilities that firms require for transforming from product business to solution business, but their guidance is targeted to management in the traditional causal thinking and does not provide higher level abstraction.

Vargo and Lusch (2017, 46) have highlighted the need to develop more “more mid-range theoretical frameworks and concepts of service exchange, resource integration, value cocreation, value determination, and institutions/ecosystems” in order to support the advancement of S-D logic towards a general theory of the market. Whalen and Akaka (2015, 2) highlight how “S-D logic suffers from the marketing related phenomenon of over-positioning. The original placement of the seminal 2004 article in the *Journal of Marketing* and its title, ‘ . . . a new dominant logic for marketing,’ has, effectively served to constrain the growth of the perspective outside the field of marketing and has been largely overlooked by other business research fields, including entrepreneurship”.

In effectuation literature Dew, Sarasvathy, Read and Wiltbank (2008) discuss the need to construct effectual processes in large corporations. However, very limited research has been done in the area (Johansson & McKelvie 2012). Although, Read et al. (2010) made effectuation very approachable to the general public in the realm of entrepreneurship, this does not directly translate to developing solution business in already established companies. Whalen and Akaka (2015, 12) have highlighted as a research opportunity to “retrospectively solicit a sample of critical incidents that led to the co-creation of an opportunity”. Lastly, Reuber, Fischer and Coviello (2016) have highlighted the need for the effectuation theory to develop and evolve.

Thus, this study hopes to contribute to the challenges and needs highlighted by the previous literature. Starting from the solution business development, this study aims to suggest a higher-level abstraction of solution business development as a process viewed through S-D logic and effectuation. Solution business development involves many of the same challenges found in introducing services in mature product markets in manufacturing industries. Thus, the development efforts require “continuous modifications, adaptability, the seizing of ad hoc innovation, a continuous recalibration of opportunities, and the management of intertwining goals” (Kowalkowski, Kindström, Alejandro, Brege & Biggemann 2012, 765). Effectuation theory provides critical perspective in this aspect so that a more appropriate contingency approach can be developed so that the S-D logic insights can be made actionable. As Whalen and Akaka (2015,1) discuss, entrepreneurship literature can benefit from S-D logic’s insights on co-creation of opportunities. Furthermore, this study analyzes critical events that led to solution business development at the case company. Thus, the focus is not the same as what Whalen and Akaka (2015, 12)

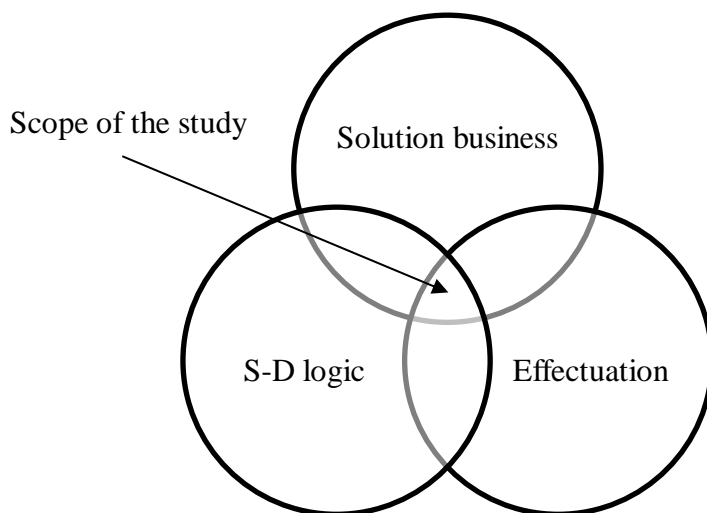
suggested about examining retrospectively a critical incident that led to cocreation of opportunity. However, the opportunity here is the platform development that enables the company to address all opportunities in the future. This study will contribute more specifically to the effectuation theory's view of opportunity identification when it comes to solution business development and how entrepreneurship literature could benefit from examining the solution business development at established companies. Furthermore, the study hopes to develop insights from the effectuation theory that are pertinent to solution business development. In summary, the theoretical contributions are not limited to weaving together solution business development, S-D logic and effectuation theory to reveal new nuances on each of the fields, but it is also done with the hope that this study will be able to contribute to each fields development.

In addition, this study provides practical value in the form of examining the proposed conceptual solution business model in the context of maritime transportation industry. The detailed insights and model's potential applicability could assist the industry in its current challenges. Furthermore, the need for solution business development is present in other industries as well and thus the proposed model and the study's findings can provide valuable cross-industry insights for companies in other industries.

### 1.3 Limitations

The scope of the study is limited to bridging theory related to solution business development, S-D logic, and effectuation theory. The examination of takes place in the context of maritime transportation industry.

**Figure 1: Scope of the study**



Thus, the study combines a wide range of perspectives and literature streams that that have not been viewed together often. Whalen and Akaka (2015) note how marketing and entrepreneurship fields have been interconnected through entrepreneurial marketing literature, but the overlap has been limited. "In general, entrepreneurship has focused on the role of entrepreneurs in opportunity development and marketing has focused on the role of firms in value creation" (Whalen & Akaka 2015, 2). Similarly, in this study the borders between the fields and other potentially important fields that could contribute to this study are not always clear. Thus, there is risk that each of the fields are not addressed with the

depth that they would deserve or that other relevant streams of literature are not included in the scope although they should be.

The focal point is case company's development from internal perspective. Thus, this study does not for example evaluate the solution business development process from multiple actors' perspectives or from broad dynamic network perspective as done by Biggemann, Kowalkowski, Maley and Brege (2013). Furthermore, as the data was collected as part of a wider research project, the primary data source (the shortened Delphi study) was not solely focused on collecting information regarding the solutions unit. Instead the Delphi study focused on gathering data on the company as a whole. However, this was remediated by the fact that the solutions unit perspectives were very clear due to the selection of the participants since they were all closely linked to the solution units' activities. In addition, the data analysis would have greatly benefited from having data from multiple points over time since solution business development is a dynamic process.

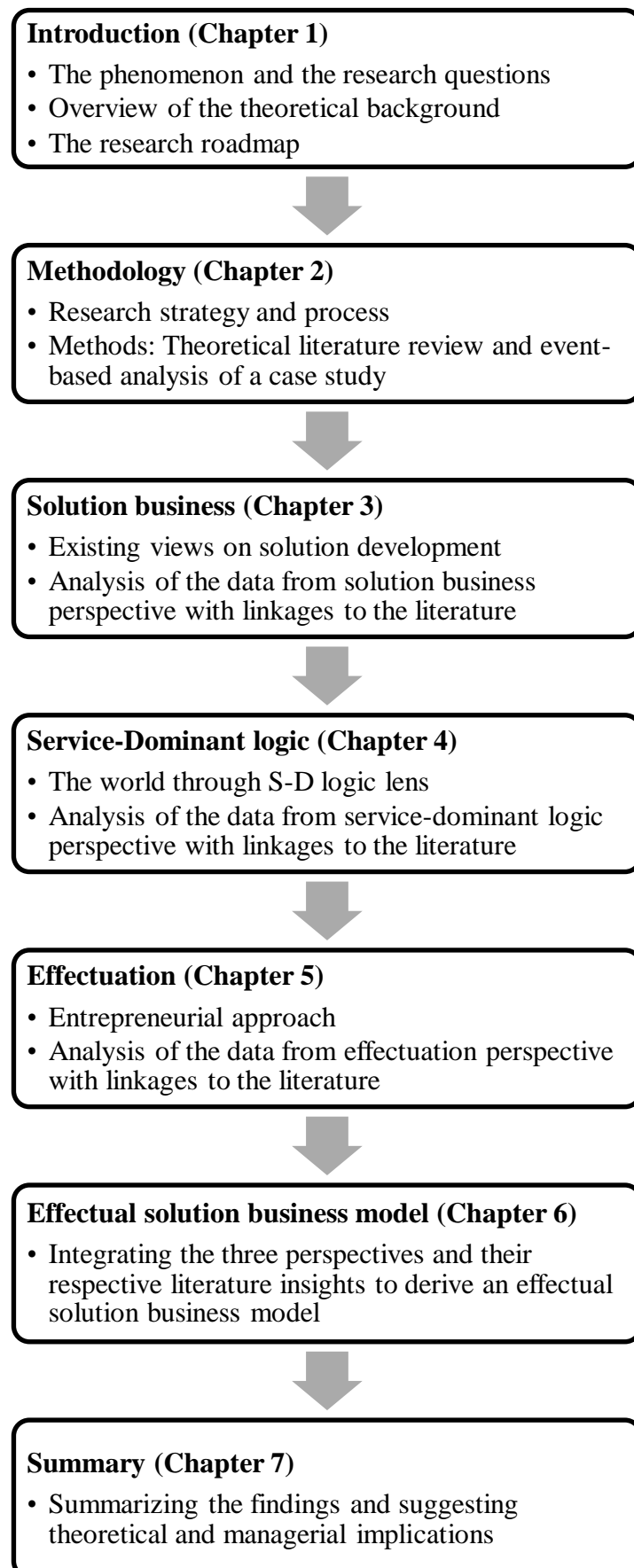
One of the managers could not participate on the future event analysis part of the shortened Delphi study as they had to leave early and hence there was less data sources coded from that manager (refer to appendix 8). English was used as the language of the shortened Delphi study, although none of the managers were native English speakers. Thus, there could have been better engagement from all participants if they had been able to use their native language. Furthermore, two managers contributed much more than the rest of the participants (refer to appendix 8). This was likely due to the fact that one of them was leading the solution business development and thus had more thoughts to share on the topics. The other one was one of the oldest employees at the case company and thus often provided historical perspective. Although, their contributions were discussed with the whole group, their status might have influenced others to be more often in agreement with their statements. Lastly, as the data was collected from a single case company it only tells the story from the company employees' perspective and the context that they have observed it.

## 1.4 The structure of the thesis

*It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.* — Sherlock Holmes in Arthur Conan Doyle's *A Scandal in Bohemia* (1891, 3)

The thesis was driven by the data. Hence, similarly to the Sherlock Holmes quote, the case company and their interesting story about the solution business development led the thesis to focus on solution business, S-D logic and effectuation. As abductive logic was employed in the research, this thesis does not follow the usual structure – starting from theory and then moving onto empirical findings, i.e. deductive structure. Instead a modular abductive structure, similar to one employed in Aarikka-Stenroos' (2011) doctoral thesis is used. Thus, after an introduction to the study, methodology is discussed next. Then the study focuses on each of the modules: solution business, S-D logic, and effectuation. Each of the modules include a theoretical literature and existing theoretical knowledge review, which are compared and contrasted with the empirical data. Hence, empirical data is in primary role in “the search for new descriptions, concepts and conceptual categorizations” while “existing theoretical knowledge is first used to parse and cultivate the data drive findings and secondly through comparisons between data and theoretical knowledge the existing theoretical knowledge is elaborated and adjusted with extensions and corrections” (Aarikka-Stenroos 2011, 30). A benefit of this approach is

that it makes clear the use of abduction in the study's approach and provides more accurate description of how the study was conducted. Furthermore, each field's contribution is clearer due to the modular structure.

**Figure 2: The structure of the thesis**

## 2 METHODOLOGY

The methodology section outlines the research approach taken, the manner of data collection and analysis as well as the overall appropriateness of the aforementioned. In this study, the purpose is to develop a conceptual model for effectual solution business development. To achieve this, insights from the data as well as from solution business, S-D logic and effectuation literature are employed in the construction of the conceptual model. The existing literature has not linked these issues together in depth yet. Thus, because of the exploratory nature of the research, ex-post and ex-ante event-based, qualitative case study in the context of maritime transportation industry is utilized. Lastly, an abductive formulation of the solution business model is carried out with the aid of findings from the case study.

### 2.1 Research approach: modular abductive methodology

Research approach is grounded on the researcher's views on ontology, epistemology and methodology. Ontology is related to the ways we construct reality, epistemology is related to the different forms of knowledge of that reality, and lastly methodology discusses the ways to acquire knowledge about the reality. For example, Peters et al. (2014) drew attention to the importance of epistemological and ontological assumptions in theorizing in relation to resource integration in S-D logic.

**Table 1: Comparing the streams of ISMS (Löbler 2011, 54)**

Metatheoretical assumptions about	Object-oriented/ objective	Subject-oriented/ subjective (cognitive construction)	Intersubjective orientation/ intersubjective (communicative construction/critical discourse)	Sign/signifier orientation
Ontology	There is a reality independent of the researcher	Reality is inseparable from researcher's life experience	Reality is construed via objectivational discourses	'Everything' is a sign/signifier
Epistemology	Theories explain and describe objective reality	Researcher interprets his/her experience of reality	Researchers establish common understandings	Signifiers are related to other signifiers
Research object	Ontic reality	Perceptions and/or constructions	Relations of common understanding/common understanding and intersubjective meanings and practices, objects as a result of objectivation	The relation of signifiers
Method	Modeling and empirical investigation (proof)	Subjective interpretation and/or construction	Discourse and interaction which can take place using various methods, quantitative as well as qualitative	Deconstruction
Legitimization	Proof/justification	Internal viability of subjective interpretation, no legitimization between researchers	Agreement, criticizability	There is no language outside language, signifiers refer to other signifiers
Self-applicable	No	Yes	Yes	Yes
Representatives	Realism, positivism, early critical rationalism, empiricism, structuralism	Constructivism, interpretivism	Social constructionism, conventionalism, pancritical rationalism	Post-structuralism, Postmodernism

In Löbler's (2011, 51) view, S-D logic is "mainly underpinned by an intersubjective orientation and has a huge potential for further development both in and for marketing if seen from a sign-orientated, post-structural perspective and linked to the theory of practices". However, this study adopts a realistic approach, one that is "quite close to the critical realism, which aims to move closer to understanding one true but not so accurate reality" (Aarikka-Stenroos 2011, 50). "Critical realism contends that the job of science is to use its method to improve perceptual processes, separate illusion from reality, and

thereby generate the most accurate possible description and understanding of the world” (Aarikka-Stenroos 2011, 50). This research follows critical realism for example by gathering data from multiple perspectives by first collecting individuals answers and then discussing them with the whole group in the shortened Delphi study. Thus, conflicting views or explanations are brought up and can be examined as a group in order to unearth better explanations.

Ghauri and Grønhaug (2010, 38) describe research methodology as “a system of rules and procedures”. The rules and procedures ensure that the study can be replicated by other researchers. The research purpose, developing a conceptual model for solution business development, guided the research towards qualitative research approaches as the desire was to learn more about case company’s story within the wider context, across multiple years. Furthermore, qualitative research approach was supported by the fact that interactions with the case company formed the starting point for the research, i.e. provided the ‘why’ question driving the research. Data was not collected afterwards once an interesting theoretical question was discovered, instead it was the interactions with the case company that led to the research objectives. Qualitative research is often utilized to gain understanding and construct a theory that can provide an explanation for the observations, hence providing a good approach for this study. Similarly, the subjective ‘insider view’, closeness to the data and process orientation of the work contributed to the suitability of qualitative methodology (Ghauri & Grønhaug 2005, 110).

The choice of the research method for this case study presented various challenges. Due to the nature of the research work, with ongoing interactions with the company participants, new perspectives on the reality constantly emerged. Mixed research methods would have been a viable approach, “since no single approach can capture reality in all its aspects” (Dubois & Gadde 2014, 1282). But as Hurmerinta-Peltomäki and Nummela (2006, 452) point out, “a mixed method strategy is not necessarily the best choice: the starting point should always be the research problem and the best methodological fit”. Thus, case study approach seemed a natural fit as the research project was collaborating with the case company and thus provided great access to qualitative data. Piekkari, Welch and Paavilainen (2009) examined four IB journals published over a 10-year period and found that case studies were the most popular qualitative research strategy. Maybe part of it is explained how according to Ragin and Becker (1992) case study is an analysis that is specific to “time and place” and in that sense all research embodies the case study approach. A typology of theorising methods developed by Welch, Piekkari, Plakoyianaki and Paavilainen-Mäntymäki (2011) divide case studies into four categories: inductive theory building, natural experiment, interpretative sensemaking and contextualised explanation.

**Table 2: Comparing four methods of theorizing from case studies (Welch et al. 2011, 6)**

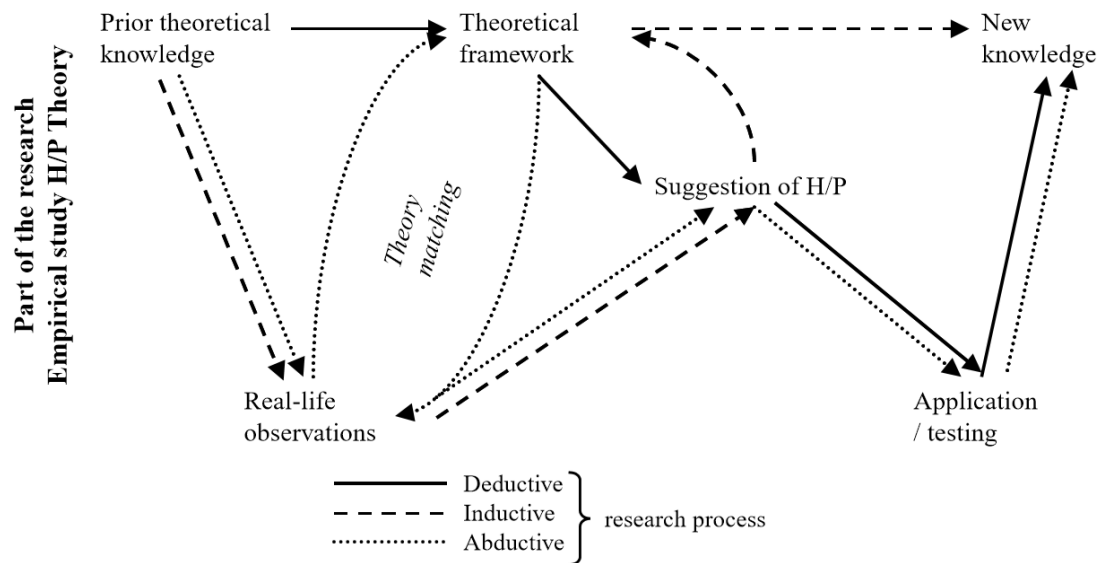
<i>Dimension</i>	<i>Inductive theory building</i>	<i>Natural experiment</i>	<i>Interpretive sensemaking</i>	<i>Contextualised explanation</i>
Philosophical orientation	Positivist (empiricist)	Positivist (falsificationist)	Interpretive/ constructionist	Critical realist
Nature of research process	Objective search for generalities	Objective search for causes	Subjective search for meaning	Subjective search for causes
Case study outcome	Explanation in the form of testable propositions	Explanation in the form of cause–effect linkages	Understanding of actors’ subjective experiences	Explanation in the form of causal mechanisms
Strength of case study	Induction	Internal validity	Thick description	Causes-of-effects explanations
Attitude to generalisation	Generalisation to population	Generalisation to theory (analytic generalisation)	“Particularisation” not generalisation	Contingent and limited generalisations
Nature of causality	Regularity model: proposing associations between events (weak form of causality)	Specifying cause–effect relationships (strong form of causality)	Too simplistic and deterministic a concept	Specifying causal mechanisms and the contextual conditions under which they work (strong form of causality)
Role of context	Contextual description a first step only	Causal relationships are isolated from the context of the case	Contextual description necessary for understanding	Context integrated into explanation
Main advocate	Eisenhardt	Yin	Stake	Ragin/Bhaskar

Eisenhardt (1989, 532) described that the research approach in case study research is “highly iterative and tightly linked to data”. Although in some areas very similar to hypothesis-testing research, other features such as within-case analysis and replication logic are in Eisenhardt's (1989, 532) eyes “very unique to the inductive, case-oriented process”. As Yin (1981a, 97) discussed, case studies can be used for “either descriptive or explanatory purposes... or to test explanations for why specific events have occurred”.

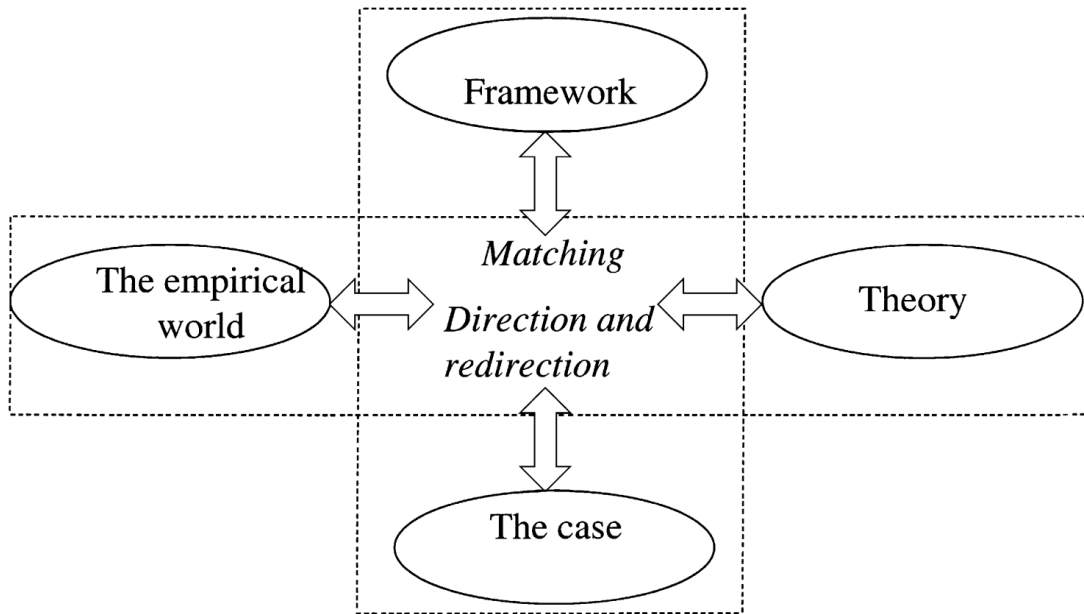
Furthermore, case studies “can be done using either qualitative or quantitative data” (Yin 1981b, 58). Stake similarly agrees with the notion, but emphasizes that a case study is “a choice of what is to be studied” (Denzin & Lincoln 2005, 443). More specifically it is “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (Stake 1995, xi). In this view, the context is seen as important part of the process of understanding, whereas for example in Rihoux and Ragin's (2009) view, the context needs to be part of the explanation. Out of the various approaches, this study aligns itself closest to the contextualised explanation and critical realist orientation. The use of abduction, i.e. inference to the best explanation, is also “in accordance with a critical realist view of empirical observation” (Danermark, Ekstrom, Jakobsen & Karlsson 2001, 95).



**Figure 3: The three different research approaches (Dubois & Gadde 2002, 376)**

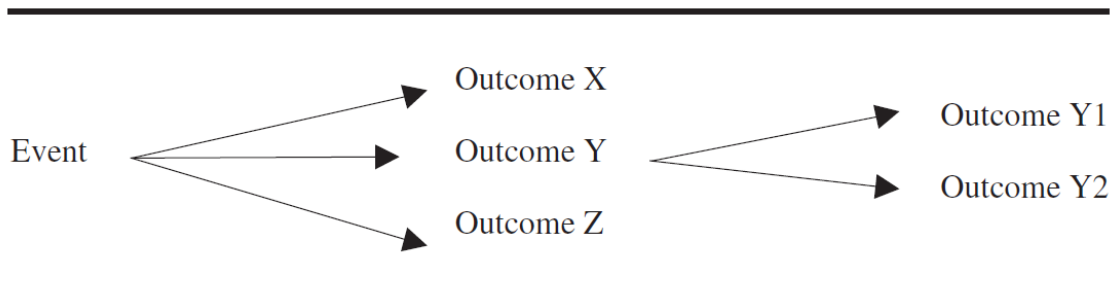


In deductive reasoning, one identifies premises to reach conclusions that are logically certain. In contrast, in inductive reasoning one tries to infer a conclusion from premises that provide strong evidence. However, this is not necessarily a logical conclusion. In abductive reasoning the premises do not guarantee the conclusion. This is as abductive reasoning goes from observation to theory in order to find the most likely explanation. The use of abduction in this study follows the approach utilized by Aarikka-Stenroos (2011, 38), meaning that the research uses iteration by moving between “theoretical concepts and field observations to enhance understanding of both theory and data”. This iterative approach has been known as abduction, iterative grounded theory, systematic combining, and the in vivo and ex ante approach (Aarikka-Stenroos 2011, 38). This study aligns itself closest to the systematic combining, which stresses “theory development, rather than theory generation” (Dubois & Gadde 2002, 559).

**Figure 4: Systematic combining (Dubois & Gadde 2002, 555)**

In systematic combining the theoretical model is “successively modified, partly as a result of unanticipated empirical findings, but also of theoretical insights gained during the process. This approach creates fruitful cross-fertilization where new combinations are developed through a mixture of established theoretical models and new concepts derived from the confrontation with reality” (Dubois & Gadde 2002, 559). Hence, this study operationalises the development of a conceptual model of effectual solution business development by dividing the analysis to three modules: analysis through the solution business lens, S-D logic lens and effectuation lens.

Furthermore, to gather additional insights this study also supplements the approach by utilizing event-driven explanations, i.e. incorporating events in time into the approach. Nikolai Kondratieff (1925) was among the first to discuss the insufficiency of static view of phenomena. Dynamic perspective acknowledges that phenomenon are in constant state of flux. Researchers have adopted over time methods that are more suited to capture the complex reality observed.

**Figure 5: Event-driven explanations (Aldrich 2001, 119)**

Thus, this study uses events as the points for analysis. By examining the events perceived critical for solution business development and the company through a group sense-making process as part of the shortened Delphi study, this study gathers rich narrative data for the conceptual model development. The examination is not only limited into events in the past, but expanded to the future as well in to gather insights related to what

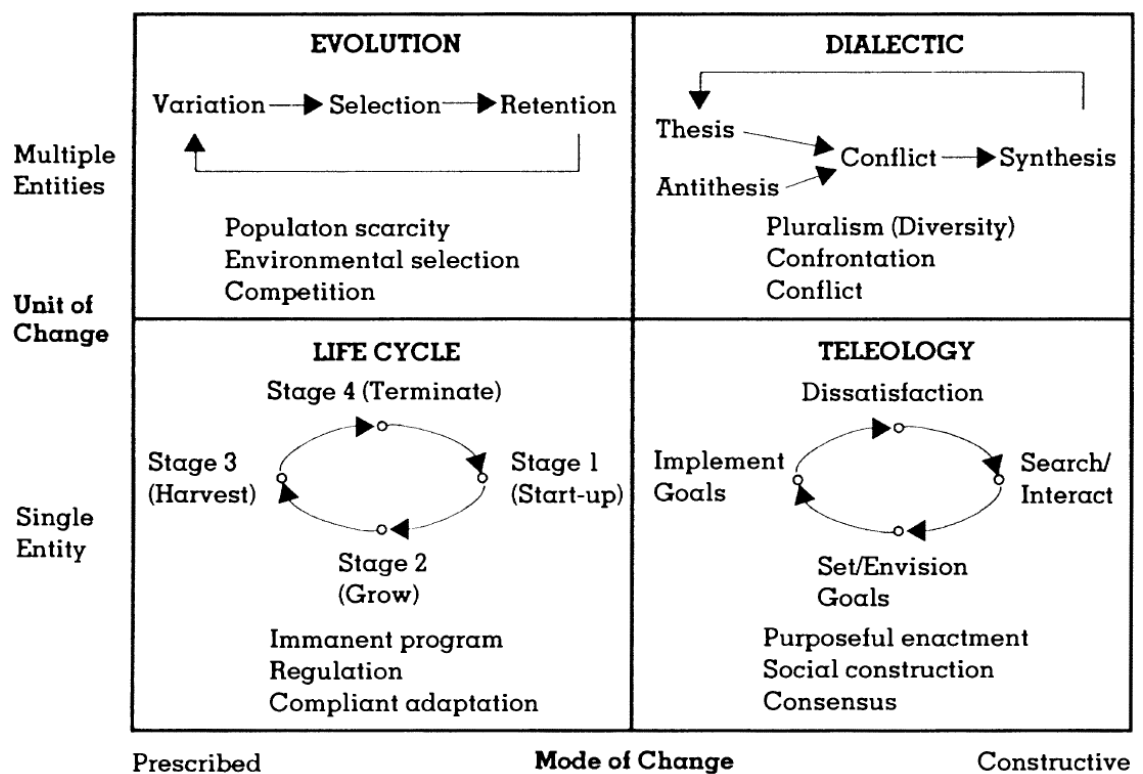
the individuals perceive that the company still needs to do on their journey to solution business. This allows not only to examine what events led to the outcome – the formation of the solution business unit - but also provides viewpoints to what is perceived critical going onwards in order to ensure the success of the company and the solution business unit. These insights, can be hopefully be integrated to other companies’ solutions business development activities straight from the beginning.

In summary, this study is aligned with critical realism in its approach. Furthermore, the approach is data-driven, and thus the research process could be described as heuristic. Abductive reasoning is used to combine the insights from the empirical data with the theoretical literature. Incorporating time with event based analysis of the case study forms the foundation for the study operationalization to achieve the study’s objective – develop a conceptual model for solution business development by finding new connections between solution business development, S-D logic and effectuation.

## 2.2 Data collection

The primary source of data for this research was gathered from a shortened Delphi study on historical event analysis and future event projection. Secondary sources that informed the research includes the existing literature and conversations with the managers, which both aided in the theorizing. The approach chosen was influenced by Van de Ven and Poole's (1995) description of theories for explaining processes of change in organizations.

**Figure 6: Process theories of organizational development and change (Van de Ven & Poole 1995, 520)**



In the teleological perspective (Van de Ven & Poole 1995, 525):

- An individual or group exists that acts as a singular, discrete entity, which engages in reflexively monitored action to socially construct and cognitively share a common end state or goal.
- The entity may envision its end state of development before or after actions it may take, and the goal may be set explicitly or implicitly. However, the process of social construction or sense making, decision making, and goal setting must be identifiable.
- A set of requirements and constraints exists to attain the goal, and the activities and developmental transitions undertaken by the entity contribute to meeting these requirements and constraints.

The teleological perspective incorporates time as does all process research. In fact, process research “focuses empirically on evolving phenomena, and it draws on theorizing that explicitly incorporates temporal progressions of activities as elements of explanation and understanding” (Langley, Smallman, Tsoukas & Van de Ven 2013, 1). The perspective is utilized in the qualitative data collection as the focal unit is the case company. The viewpoints are collected from individuals who have been involved in the case company’s solution business development. By examining the group consensus on critical events in the past and in the future for solution business development, a sensemaking process or social construction as discussed in teleological approach is used to unearth the path to the common end goal.

Since there was incomplete knowledge and understanding of the problem, Delphi study was determined to be well suited for gathering information. Furthermore, since the goal of the study was to develop a conceptual model of effectual solution business development, which cannot be done with exact analytical techniques, Delphi study was deemed appropriate. (Baines & Shi 2015, 1174). Delphi research consists of creating a panel of experts who answer rounds of questions to gather expert opinions on the topic, which are then shared with all the participants. The number of participants has varied in peer-reviewed studies from as low as 3 to 80 participants (Rowe & Wright 1999). For this study, a group size of 5 was determined after discussions with the case company’s managers. This was done after ensuring that all the participants were involved in the solutions unit’s activities, and had a breadth of experience as well as some authority on the topic. Furthermore, due to participants’ busy schedules, it was decided that the Delphi study would be shortened, only half a day long.

Considering that time and critical events formed a crucial portion of the research approach, the format of the shortened Delphi study included two separate parts. One focused on identifying past events critical to the company’s and solution business development and another asked the participants to project themselves into the future and imagine what would be the critical events there for solution business development. The future part approach utilized both S-D logic and effectuation. The approach was based on how Lusch and Vargo (2014, 196) describe using abductive thinking to design and reconfigure markets by “envisioning some desired future and then constructing a ‘future history’ about how that future would unfold”. In both, the past events and future events parts, the participants first gathered their thoughts individually and only after then a social construction of the events was done as a group. This was done to ensure that the group discussion would not steer individuals thinking and that they would consider all notable events without prejudice. Furthermore, the group discussion at the end provided an opportunity to perform triangulation to determine whether the other participants agreed with the points raised by individual participants.

The questions discussed in the shortened Delphi study on the historical event analysis part focused on the personal views on what were the most critical events and external factors for the company and the solutions unit. The future event analysis focused with the questions more on what are the main trends that the participants see influencing the company going onwards. Considering that backdrop, the participants were asked what kind of characteristics the company should have and what would be the critical events that would need to happen in order for the desirable future to realize. The questions were framed from the perspective of the company to capture influences outside of the solutions unit perspective alone. The future event analysis provided insights into how the people perceive the case company and the solutions unit, in particular in which aspects both still need to develop further. For the questions and instructions that were given to the participants, refer to appendix 2.

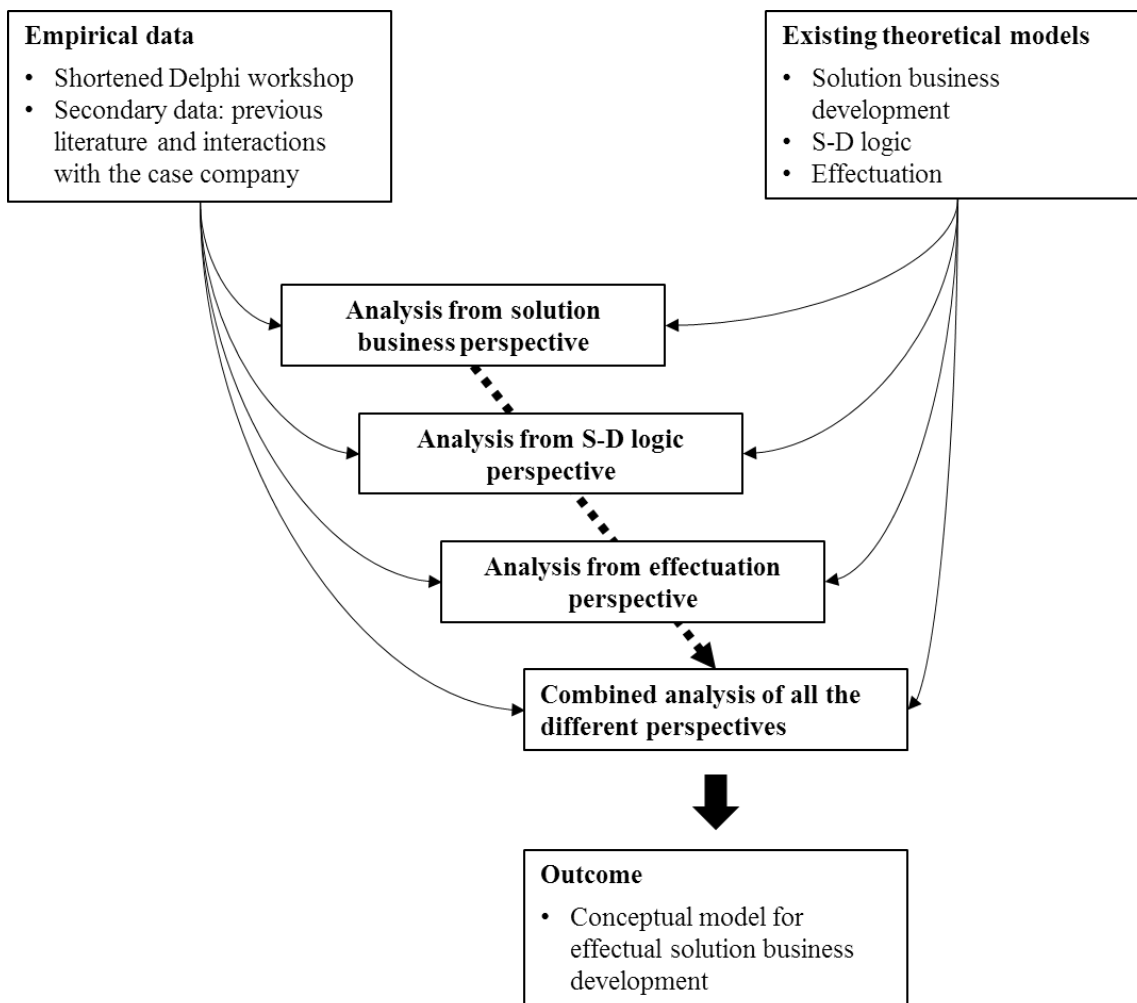
Through the primary and secondary data collection, the participants were managerial level employees at the case company and each one of them were involved in the solution business development. The voice recordings from the shortened Delphi study's historical and future event analysis parts were transcribed word for word and checked by the researcher. Few words that had been spoken in Finnish, were translated to English and indicated so in the data. The timelines and notes that the participants had written down during the Delphi study on the materials were scanned to electronic form.

The approach to the shortened Delphi study was developed together with a research team that utilized the same data in another study (Riihimäki, Kaartemo & Zettinig 2016). However, the analysis for this study was not done in collaboration with the research team, but is instead authors' individual work.

### **2.3 Data analysis**

The data analysis follows the abductive research strategy. Aarikka-Stenroos (2011, 54) describes it as "the dialogue between empirical data and theory guides the analysis, even if the empirical data has the decisive role". Dubois & Gadde (2002, 560) emphasize the importance of learning and how it "takes place in the interplay between search and discovery. Where search is concerned, the current framework is used to guide the research process in a cumulative manner. Discoveries, which cannot be planned in advance, force us to reconsider the prevailing framework". Thus, this research utilizes existing frameworks in solution business, S-D logic and effectuation literature to reflect upon, but also to develop new insights and thus a conceptual model of solution business development.

**Figure 7: The structure of data analysis and the outcome of the analysis**



The data analysis began with checking that the data was organized in a consistent manner and that it was suitable for importation to qualitative data analysis software. This study utilized QSR NVivo 11 software in the analysis process. Similarly to many other studies, the software was used for data management and analysis (Woods, Paulus, Atkins & Macklin 2016). The primary data, transcribed voice recordings of the historical and future event analysis from the shortened Delphi study were uploaded to QSR NVivo 11 software. The data analysis was done systematically with the software: first examining and coding the data from the solution business development perspective, then from the S-D logic perspective and lastly from the effectuation perspective. Each of the analyses were performed together with insights and reflections gathered from the secondary data sources: the existing literature and interactions with the case company. Portions that had been coded and contained relevant quotes that could illustrate the topic, were added to the analysis. Once the three rounds of analyses were completed and this had yielded coding to themes and nodes from the three perspectives, a final round of analysis was performed to identify overall themes across the three perspectives and to consolidate the findings. The consolidation included for example combining items that had been coded as resource integration, firm resources and means on the previous analyses from the 3 perspectives as they contained same passages and dealt with the same overall theme. The

consolidated findings and the previous rounds of analyses, were then utilized to develop a conceptual model for effectual solution business development.

## **2.4 Evaluation of the study**

Studying the solution business development and developing a conceptual model was challenging since the three perspectives – solution business, S-D logic and effectuation - have not been examined together in depth. Although connections between S-D logic and effectuation have been made and the two incorporate similar concepts, it was challenging to combine a S-D logic, which “might provide the foundation for a theory of the market” and effectuation which articulates a dynamic and iterative process for creating new products, firms and markets (Vargo & Lusch 2016, 21). In addition, to clearly evaluate how the two fields could contribute to solution business development, the modular approach was applied in the analysis so that each fields’ insights could be clearly observed.

In the data collection phase, during the shortened Delphi study, it was necessary to have the participants to be open with the group and share their views. The language presented certain challenges since none of the case company managers’ were native English speakers. Hence, providing some individual work time when participants could write down their thoughts before discussing them as a group was conducive to collecting all viewpoints.

The research evaluation criteria focus around objectivity, validity and reliability. Triangulation, which in social research refers to the “observation of the research issue from (at least) two different points”, was used to enhance the accuracy of the study and to lead to deeper understanding of the issue (Flick, Kardoff & Steinke 2004, 178). Triangulation of data occurs for example by combining primary and secondary data, and collecting primary data from multiple people and in multiple stages (individual work and group conversation). Triangulation of theories “means approaching data with multiple perspectives”, which has been done in this research with the analysis taking place from solution business, S-D logic and effectuation perspectives (Denzin 1973, 297).

Reliability was addressed with the documentation of the research as it enables other researchers to follow the study’s steps from the data collection approach all the way to the analysis. This provides the basis for evaluating the research’s process and the result derived. This research provides precise description of how the data was gathered, analyzed and what kind of problems were encountered during the process so that the research approach can be evaluated.

### **3 FROM PRODUCTS AND SERVICES TO INTEGRATED SOLUTIONS**

The module examines the development of integrated solutions over time, the definition of solution offerings, solution process views and frameworks. The case company had existed already decades selling products and services to customers before they begun to experiment with solution business approach in 2013. Interestingly, it took only a half a year for the case company to test the market with the solutions approach until they signed their first 100 million euro contract. The shortened Delphi study data is analysed from the solution business perspective to unearth critical events and themes that highlight the case company's journey towards solution business approach (refer to appendix 3).

#### **3.1 Products and services combined into solutions**

Already in 1960s industrial firms began to adopt systems selling strategies (Davies, Brady & Hobday 2007, 183). Mattsson (1973) discussed the economic consequences in terms of revenues and costs for industrial goods sellers engaging in systems selling. Similarly, Levitt (1976) was among the first to notice the possibilities of the industrialization of service. Manufacturing companies' expenses and revenues included a great deal of pre- and post-purchase servicing. These covered areas such as providing systems planning, installation support, repair, and maintenance services.

However, at the same time service firms began to industrialize their operations. The adding value by adding services concept was termed as servitization by Vandermerwe & Rada (1988). They discussed manufacturing and service companies moving into services by providing bundles to customers. The downstream opportunity was introduced by Wise and Baumgartner (1999) as they encouraged manufacturers to focus on the economic activity throughout the entire product life cycle. This was countered by Davies (2004, 752) as he argued that firms are moving into "integrated solutions provision from different positions up and down the value stream". Thus, the companies were moving towards high-value solutions by being systems integrators.

Baines, Lightfoot, Benedettini & Kay (2009, 555) defined servitization as "the innovation of organisations capabilities and processes to better create mutual value through a shift from selling product to selling product-service systems". While the product-service system (PSS) focuses on increasing company's competitiveness and productivity (Geng, Chu, Xue & Zhang 2010), it also places significant emphasis on environmental aspects such as reducing the consumption of products through alternative scenarios of product use (Beuren, Gomes Ferreira & Cauchick Miguel 2013).



**Table 3: Solution business conceptualization**

<b>Author(s)</b>	<b>Conceptualization</b>
Mattsson (1973)	Systems selling.
Levitt (1976)	The industrialization of service.
Vandermerwe & Rada (1988)	Servitization.
Wise & Baumgartner (1999)	Going downstream in the value chain.
Oliva & Kallenberg (2003)	Transition from products to services.
Tukker (2004)	Product-service systems.
Davies (2004)	Moving towards high-value solutions, integrated solutions and system integration.
Schmenner (2009)	Manufacturing/service integration.
Kowalkowski et al. (2012)	Service infusion in manufacturing.

The case company managers described their company as moving from the traditional transaction business towards the service business.

*“Our team’s mission...[is to] move from the traditional transaction business to long-term relational, relation based solution business model.” (Manager A)*

In addition, the future event analysis revealed that the company perceived opportunities related to improving the industry standardized product even further and secondly considering vertical integration in the value chain. The vertical integration in particular was seen potentially critical as it could synergize well with developing the solution offerings. The main benefits would be related to additional insights gained about how the solutions could be best utilized considering the upstream and downstream influences. However, the importance of vertical and horizontal alliances as well as mergers and acquisitions in the maritime transportation industry had increased as “the competitive struggle is now increasingly unfolding at the level of logistics chains... market players are selected not so much for their stand-alone competitiveness, but on the basis of whether or not they belong to a successful maritime logistics chain” (Van de Voorde and Vanelander 2008, 5).

The case company managers identified the 2008 financial crisis as a critical event for the industry and their company as the years of global trade growth and increasing fleet sizes had reverted overnight. It also presented a turning point for the company’s manufacturing activities.

*“We treat our partners like they are our own capacity... top of this boom we had only eight factories in China. Then the collapse, what to do with this all capacity? Then we focused on three main factories and partners and kicked out those five others. But it must be done somehow nice...” (Manager E)*

The overcapacity developed over the good years was deadweight once the maritime transportation cooled down. However, it also motivated the case company to begin to develop solutions approach to increase sales in a shrinking market. The foundation for the solution business approach was laid out already in the 1980s in the managers view as the case company had participated in multiple mergers and acquisitions. The acquisitions were not only done from the system point of view, but at times the case company wanted to also increase their product, technology or customers’ portfolio. The integration of new

companies was not always fast and not always even necessary when considering it afterwards:

*“[Acquired company] was... a separate unit and measured independently... [and] it was important to develop that.”* (Manager C)

The time that the companies were able to spend on developing their product portfolios was actually seen critical for the later solutions offering development. The participants in the shortened Delphi study highlighted that the combination of products, services, technologies, customers etc. acquired over the years formed a foundation for which it became feasible to build the solution business unit. However, it also required that the organizational structure of the case company changed.

*“All products, all countries had design office and all countries were doing all the products, so we were inventing the wheel five times a year in 10 countries. So it was geographically based sales and all equipment was made in every country.”* (Manager D)

Certain consolidation was required for the production to be better controlled and for the case company actually to realize all the competences that they had gathered over the years from the acquisitions. This relates very much to how Davies (2004) perceives the value stream approach in moving to high-value integrated solutions. In essence, the company must have wide enough view of the customer’s needs to be able to design and integrate products and systems, operate them, and provide related services such as maintenance (Davies 2004, 737). Another critical event identified was gathering better understanding of the customers in the late 1990s after product centers had been established.

*“Guys, I give you 12 months’ time and you have to fill these forms. 10 biggest owners of your [product] type. You have to know the name of the owner, the commercial manager, the technical manager, location office, you have to have picture you have been there.”* (Manager D)

The knowledge and relationships developed during the following years were perceived critical for being able to discuss a solutions approach with customers later. In fact, the case company managers had been surprised how open many of the customers were about their systems and earnings structure so that they could receive the best solution.

Lastly, the mergers and acquisitions and the later establishment of the product centers around the world had enabled the case company to serve multinational customers better by being in all the locations where they had operations. This was seen as an enabler for the solution offerings approach, similar to the way that Mattsson (1973, 118) highlights multinational customers preferring supplier that have similar “geographical dispersion of his sales and service operations”.

### **3.2 Defining solution offerings**

Similar to the solution business conceptualization development, the definition of solution offerings has evolved over time. However, at the core throughout the decades has been the idea of combining products and services to serve customer needs.

**Table 4: Definitions of solution offerings**

<b>Author(s)</b>	<b>Definition(s)</b>
Mattsson (1973, 108)	Systems selling: seller provides, through a combination of products and services, a fulfilment of a more extended customer need than in the case of product selling.
Vandermerwe & Rada (1988, 316)	Bundles: customer-focused combinations of goods, services, support, self-service, and knowledge.
Dunn Jr & Thomas (1994, 34)	Product solution: product plus application and services. Business solution: multiple product solutions linked to address a business problem. Partnership solution: multiple business solutions linked across the corporation.
Stremersch, Wuyts & Frambach (2001, 1)	Full service: comprehensive bundles of products and/or services, that fully satisfy the needs and wants of a customer related to a specific event or problem.
Galbraith (2002, 194)	Solution strategy: bundling of company's products together and adding software and services.
Davies (2004, 727)	Integrated solutions: services combined with products to address customer's business or operational needs.
Davies et al. (2007, 184)	Integrated solutions: provision of tailored combinations of products and services to customer needs.
Tuli, Kohli & Bharadwaj (2007, 5)	Solution: an ongoing, relational process of defining, meeting, and supporting a customer's evolving needs.
Storbacka & Pennanen (2014, 5)	Solutions: longitudinal, relational processes that comprise the joint identification and definition of value creation opportunities, the integration and customization of goods, service, and knowledge elements, the deployment of these elements into the customer's process, and the compensation of the solution provided on the basis of the customer's use-value.

According to Pawar, Beltagui and Riedel (2009, 469), various streams of literature have described servitization phenomena with different terminology. Product service systems has formed the first stream of literature and aimed to convince policy makers of the environmental aspects. Integrated solutions formed the second stream as it focused on the financial sustainability. Lastly, experiential services stream took the perspectives of customers as the central focus. Regardless of the differing motives, they all support the notion of transforming from products to product-service offerings. (Pawar et al. 2009, 470.)

The case company did not seem too preoccupied with what the definition of solution should be in the end. The individual components that form the solution – products, services, software etc. – were not perceived at all as important. Instead the focus should be on examining the model of how solution business is carried out with customers and other relevant stakeholders in the industry.

*“The solution is actually including product, services, software, whatever. So product itself is not such big issue, service is not such big issue. It is what is the model together with a network, together with customers developing the value for them.” (Manager A)*

In the literature, several examples of antecedents to solutions have been discussed. Shepherd & Ahmed (2000, 100) indicated that solutions were provided “to counter the effects of decreasing technology and product life-cycles, tightening margins and increasing commoditisation of product components”. Similarly, Windahl and Lakemond (2006, 806) emphasized the role of declining margins and increasing competition, just like the case company experienced after the 2008 financial crisis. Stremersch et al. (2001, 2) noted that industrial firms were increasingly requesting turnkey solutions to their needs instead of products that would only partially address their needs. Davies (2004, 731) discussed the “economic environment characterized by strong East Asian competition in high-volume manufacturing, stagnating product demand, and a growing installed base of products” as driving forces behind the migration of economic value to downstream from manufacturing to services in the 1990s. However, non-economic factors have been attributed also, such as transcendental motives. Nordin (2009, 1660-1661) describes these as higher-order values, for example more altruistic motives such as environmental sustainability.

These all played their part when the company began to think about the solution approach around 2010 for the first time.

*“We made the first slide in aeroplane because the time, plan. Because the problem for the customer is that he buys a bad [part] and when everything is almost ready, [product] is 70%, 80%, ready... Then it's too late. It started from this timing problem, had this timing problem already earlier, it made us a lot of rework and redesigning already in the 90s”.* (Manager D)

When the final product or solutions consists of parts, services, technologies etc. that are put together by multiple companies for company that assembles the product or solution for a different end customer – the relationships between the entities become complicated. Furthermore, it can easily create a timing issues as noted by the manager D since multiple companies might require time sensitive information that is essential for them in order to provide their products or solutions for constructing the end product. Since the case company had performed acquisitions over the years and thus expanded their product portfolio, this yielded new insight when they decided in 2010 to establish a competence center and collect all the understanding into one place. This enabled to look at the timing problem from a new perspective, with more holistic understanding of the issue.

*“Actually, when we started, we started because we wanted to optimise the design process and decision making in design process. Then we noticed, oh shit, it also has the huge impact on the [product's] earning capability”* (Manager A)

Thus, the question arises then that what does the solution development process look like that leads to the improvement in the customers' earning capability?

### **3.3 Solutions from process and framework perspective**

The views on developing solution offerings have changed over time. However, they have always had a component of identifying the customers' needs, then developing the solution and selling it to the customer and lastly delivering it to the customer with potentially some guarantee of value provided.

The shortened Delphi study revealed an interesting aspect as the case company's manager A noted multiple times the importance of considering whether a company is providing solutions on their customer's revenue or cost side and the implications of this. On one hand, on the cost side you can grow your share of wallet, however the wallet itself will stay static. On the other hand, if your company is providing solutions on the revenue side, then your company is able to potentially increase the size of the wallet as well, thus leading to greater earnings to your customer and greater earnings to your company. Improving customer's earnings over the whole life-cycle of a product or service and thus growing the share of wallet can be much more important than trying to improve customer loyalty by traditional means (Keiningham, Aksoy, Buoye & Cooil 2011).

*“Our idea here is to provide the better earning for our customer with our business model, with our systems. So if this is the industry standard, our idea is that we are able to improve the earnings some percentages, some millions, compared to industry standard.”* (Manager A)

This same point is raised by Brady et al. (2005b) as they note that integrated solutions providers can extend the traditional life-cycle. Brady et al. (2005b, 364) highlight that there “is no definitive business model but that success depends on the ability to be entrepreneurial, experimental and open-minded“ when it comes to solution offerings. Companies should simply focus on learning, changing and renewing their structures continuously while delivering solutions to their customer (Brady et al. 2005b, 365). This was the stage that the case company was at as well. They had not yet standardized their approach on how to provide solutions to their customers, but could already see potential with the approach as the process was described in the following way:

*“First we map the requirements... Then actually we inquire specifications... Then actually we helped the [customer] to choose the [assembly site]. One [assembly site] was chosen and then we continued together with the [assembly site owner] together with the [customer] as a team... We started to utilise the building blocks already here. We combined our building blocks, those were not yet the standardised building blocks... but we had [multiple products]. Those building blocks we actually connected with the... requirements... We actually massaged those together and that's how the inquiry spec was created. Actually already in that project, we steered, we gave the rules. That is, of course in the future, that is helping us if we have a very strong product platform. Now we use the big building blocks in specification in where we specify what systems, what products and systems, services are needed to fulfil these requirements from the market. So if we have a very well defined building blocks here, how we can meet the market requirements and specify those in inquiries spec. Nobody can beat us after that. Because then we have more possibilities to build specifications so that it's easier to get the contract.”* (Manager A)

This comment ties into the first two points - identifying the customer requirements and the value proposition and integrating the systems for value proposition - which are usually present in solution processes.

**Table 5: Solution process views**

<b>Author(s)</b>	<b>Process view</b>
Shepherd & Ahmed (2000, 104)	Identifying critical business issues too complex for potential customers to address in-house. Exploit the existing and new competencies to address the issues and deliver tangible business results.
Foote et al. (2001, 86-89)	<ol style="list-style-type: none"> <li>1. Build value propositions for customer outcomes.</li> <li>2. Become intimately linked with other actors (suppliers, distributors, customers and even direct competitors).</li> <li>3. Choose customers.</li> <li>4. Guarantee delivered value.</li> </ol>
Davies (2004, 737)	<ol style="list-style-type: none"> <li>1. Manufacturing.</li> <li>2. Systems integration.</li> <li>3. Operational services.</li> <li>4. Service provision.</li> </ol>
Brady, Davies & Gann (2005a, 572; 2005b, 363)	<p>Delivering integrated solutions to meet customer needs involves specifying, designing, constructing, financing, maintaining, supporting and operating a system/facility throughout its life cycle.</p> <ol style="list-style-type: none"> <li>1. Strategic engagement phase: pre-bid activities.</li> <li>2. Value proposition phase: bid or offer activities.</li> <li>3. Systems integration phase: project execution activities.</li> <li>4. Operational services phase: post-project activities.</li> </ol>
Tuli et al. (2007, 1)	<ol style="list-style-type: none"> <li>1. Requirements definition.</li> <li>2. Customization and integration.</li> <li>3. Deployment.</li> <li>4. Post-deployment support.</li> </ol>
Storbacka & Pennanen (2014, 16)	<ol style="list-style-type: none"> <li>1. Develop solutions.</li> <li>2. Create demand.</li> <li>3. Sell solution.</li> <li>4. Deliver solution.</li> </ol>

The case company had identified critical business issue that tied right to the customers' earnings and was too complex for the customers to manage themselves. This is similar to how Shepherd & Ahmed (2000, 104) view the solution process. The case company was also utilizing their wide product portfolio acquired over the years and the knowledge gathered into the competence center to create the competences required to "address the issue and deliver tangible business results" as Shepherd & Ahmed (2000, 104) describe the process. This process of developing solutions, which Storbacka and Pennanen (2014, 16) describe as "combining customer insights and firm resources", was seen as an iterative process based on continuously improving understanding of the customer requirements.

*"Our idea is that we are following, understanding the requirement better and better and better. It says everything about the process to understand the requirements and putting those together with the actually our service and product portfolio. That's why requirements are changing all the time because we are benchmarking to ourself all the time... We have to understand better the system in use and enable to do that even better or update that in the future."* (Manager A)

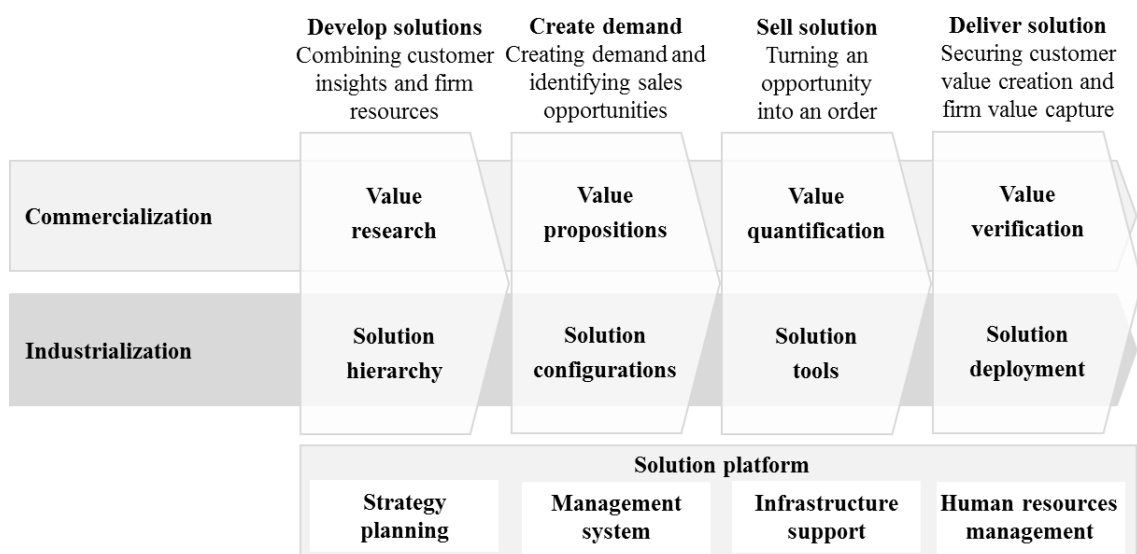
Foote et al. (2001, 87) discuss the importance to “include strange bedfellows” in the solution process, meaning that there is need to become intimately linked with other actors such as suppliers, distributors, customer and even competitors.

*“I told we did this, we call that value research. For example, we did with [customer], the most difficult, the most asshole customer in the world. They normally say that we are telling nothing... We went there, we made a good agenda. We said that we are doing this and this kind of value research. This is the end, we sign it, we don't use this information against you and they told everything. All the figures, how much the revenue we generate, how what is our role there, what are their business challenges, they told everything.”* (Manager A)

This need to “share closely held financial information and design data” was highlighted also by Foote et al. (2001, 87). Furthermore, the authors also highlighted the need to find a delicate touch to maintain strategic relationships, especially with other companies that contribute to your solution as these companies are “tempted to enter the solution business themselves” (Foote et al. 2001, 87).

The other two parts that have been present in the solution processes descriptions have been selling the solution and delivery to the customer. Thus, this completes the solution offering cycle from opportunity identification to delivery. Storbacka and Pennanen (2014) have specified a solution business framework, which captures this process. The framework specifies three sets of capabilities that companies should focus on while transforming into solution offerings: commercialization, industrialization, and solution platforms (Storbacka & Pennanen 2014, 16). Commercialization focuses on the various roles that customer value plays in the solution process. Industrialization emphasizes the repeatability, i.e. firm's ability to standardize and thus making the business scalable. Solution platform encompasses the necessary support capabilities for effective solution business process.

**Figure 8: The solution business framework (Storbacka & Pennanen 2014, 16)**



As discussed earlier, the case company had recently started to develop their solution approach and hence at the time there had not been yet that much focus on industrialization

i.e. scalability. The solution platform had been though mostly from the viewpoint of what do we need to handle the first pilots of solution offerings. When looking at the Storbacka and Pennanen's (2014, 16) framework from the process steps perspective, the case company had through their acquisitions and competence center developed solutions. The second step, "creating demand and identifying sales opportunities" was also in progress and in fact the case company had already closed significant deals. The most surprising thing for the case company had been that it was actually much easier than expected to sell the customer the idea of solution offerings and have them open up about their business and financial details.

*"[Customer], we did them the project, this first solution project, they said that whatever you want to see from our company, where ever you want to be involved, you are welcome. So actually I believe that is bloody easy thing to do. But normally the companies are thinking that who are interested about it... But I'm 100% sure that customers, they are interested and if they see that supplier really has something what they aim to keep and help with the challenges... They benefit."* (Manager A)

The key in getting the customers on board with the solutions approach had been to focus on the benefits to the customer. The case company was able to make it clear that the increased earning potential of the customer's product was a win-win situation for both parties. Thus, once the customer provided the financial details the case company was able to model the business case – quantify the value to customer. Storbacka and Pennanen (2014, 55) discuss how there are two approaches to quantifying the value: product-oriented and customer-oriented. The product-oriented approach examines the value of benefits that customer can gain from the products features whereas the customer-oriented focuses on customers as-is situation and how it will be affected by the solution configuration, and thus what is the value of the impact. The more detailed the business case or the value quantification for the solution offering is, the easier it is to perform the later value verification. Storbacka and Pennanen (2014, 73) describe the value verification as reporting to customer and the provider firm that the planned value has been created and documenting the successful delivery.

The participants in the shortened Delphi workshop acknowledged the importance of verifying the value delivered, however they also admitted that the case company had not yet established a standardized way of doing it.

*"Productivity guarantee is something, basically it's, you can sell it even if you don't have the products... you can then show that they need our equipment"* (Manager D)

The case company managers discussed the guaranteeing and ensuring of value delivered as productivity guarantee. Essentially, that the products, services, and solutions delivered to the customer provide certain percentage increase in productivity, thus improving the earnings of the client.

While the case company managers discussed the successful outcome of solution offering being improved earnings for the customer, the existing literature on solution development has viewed it from multiple perspectives. It has been seen as company delivering superior customer value (Matthyssens & Vandenbempt 1998, 345). Furthermore, it has been perceived as making life easier or better for the client (Miller, Hope, Eisenstat, Foote & Galbraith 2002, 3). The process has been also viewed as solving end-to-end customer problems, which was implicitly expressed during the shortened Delphi study (Sawhney, Wolcott & Arroniz 2006, 78). Lastly, it has also been seen as achieving non-price based customer value addition (Matthyssens & Vandenbempt 2008, 316). These all



are important viewpoints, but the ones that were most prominently present in the shortened Delphi study were superior customer value and non-price based customer value addition. Both were closely embedded in the lifecycle thinking.

In addition, the solution business literature has discussed successful solution process from firm and customer perspectives. "From the firms' point of view, offering a solution means solving a customer's problem; from the customers' point of view, buying an integrated solution represents outsourcing some activity and thereby focusing their own resources on their core business" (Ceci & Prencipe 2008, 278). Storbacka and Pennanen (2014, 17) describe a successful solution process' outcome as securing value creation for customer and value capture for the firm. For the case company, an important aspect of a successful solution process was to be part of the process straight from the beginning. Thus, working with the customer already at the stage when the requirements are created for the other solution providers. So that the case company is holistically helping the customer to solve their problem, then delivering the solution and monitoring that it is providing the envisioned benefits.

## 4 SERVICE-DOMINANT LOGIC VIEW

After the first round of coding from the solution business perspective, a second round of coding of the primary data is carried out from the S-D logic view in this module (refer to appendix 4). This round of analysis focuses on the background and development of S-D logic, the axioms and foundational premises of S-D logic, and lastly S-D logic and strategy. Number of the coded items were already identified during the previous analysis, and thus they are now discussed from the S-D logic perspective in order to uncover new meanings and contributions. As S-D logic provides an alternative lens through which the data is viewed, some completely new themes are identified that were not discussed during the previous round of analysis.

### 4.1 The development of S-D logic

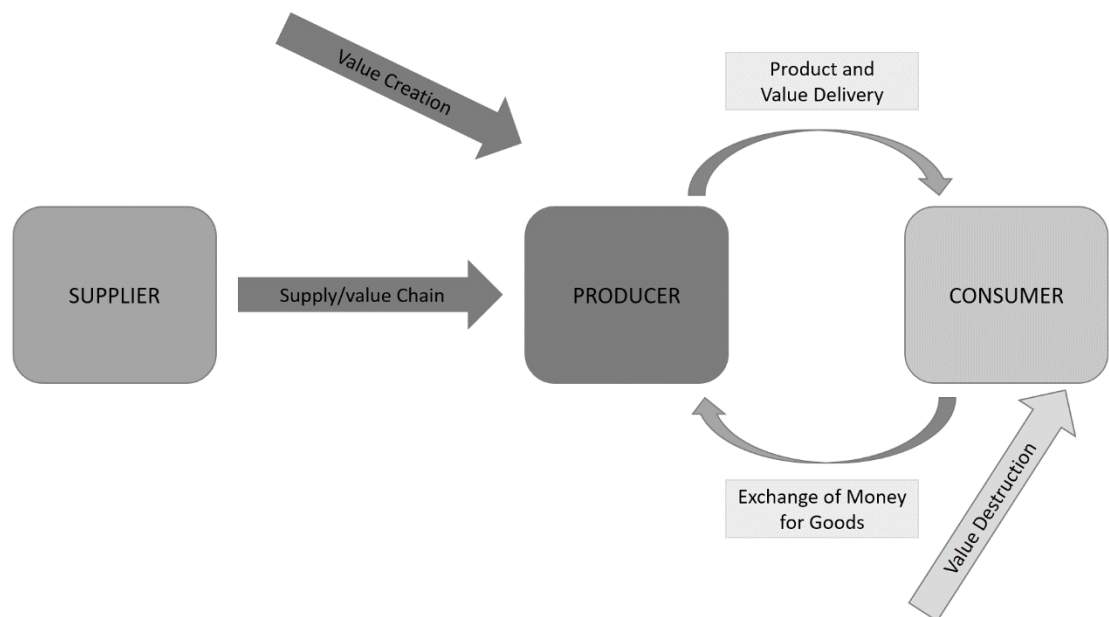
Marketing literature has traditionally focused on establishing clear distinctions between products and services. It has been based on “technical characteristics associated with their production, embodiment or use.” (Araujo & Spring 2006, 797.) For example, Fisk, Brown and Bitner (1993, 68) comment on how intangibility, inseparability, heterogeneity and perishability – the ‘IHIP’ characteristics – “provided the underpinnings for the case that services marketing is distinct from goods marketing.” This central tenet of marketing thought is challenged by Vargo and Lusch (2004a, 2004b) as they pose service as the fundamental unit of exchange instead of goods. The very same point was raised by Levitt (1960, 45) as he argued that companies should focus on the customer instead of products. Railroads are not in the railroad business, but in transportation business, just as Hollywood was not in the movie business, but in the entertainment business (Levitt 1960, 45). The case company’s managers in the shortened Delphi study had internalized this approach as many of them noted how the solution approach begins with customer needs and is based on the customer’s earning curve. Furthermore, as earlier discussed, Manager A mentioned that solutions can be “whatever” kind of a combination. The product and service are not the focal points of interest, instead it is the model of how to work together in a network in which value is created together with customer, for the customers.

Although the case company had placed customers at the center of their focus, it is hard to forget a view that has dominated in the industry for so long. Similarly, in the academic literature, goods-dominant (G-D) logic has dominated the marketing perspectives on economic exchange since the industrial revolution (Vargo & Lusch 2004b, 324). The term, dominant logic, itself has been described as a filter or the level of strategic analysis (Bettis & Prahalad 1995, 5). On a company level, dominant logic relates to the prevailing mindset that drives the focus of systems and routines in the company. “In fact, managers will often consider only information and intelligence that is believed to be relevant to the firm’s prevailing dominant logic.” (Morris, Kuratko & Covin 2007, 191.)

**Table 6: G-D logic and S-D logic perspectives (Lusch & Vargo 2014, 79)**

Alternative Views	G-D Logic	S-D Logic
Basis of Exchange	Goods	Service
Role of Goods	End Products	Appliances (means)
Customer	Operand Resource	Operant Resource
Value	Embedded in Offering (good)	Beneficiary Determined
Firm-Customer Interaction	Transactional	Relational
Economic Growth	Surplus Tangible Resources	Application of Specialized Skills & Knowledge

Furthermore Lusch and Vargo (2014, 9) note how it is difficult to “escape the paradigmatic pull of G-D logic to develop a broad and general view of social and economic exchange”. In their view, one of the first things to do is to refocus from the traditional firm-consumer view.

**Figure 9: G-D lens (Lusch & Vargo 2014, 9)**

In the G-D logic worldview supplier provides raw materials through the supply chain to a producer who in turn creates products that are exchanged for money to the customer who lastly consume the product and thus the value created. Leaving this mindset and shifting towards services and eventually integrated solutions took place over many years and reflected many of the S-D logic perspectives. At the case company the moving from the traditional transaction business to more service business was taking place at the time of the shortened Delphi study. Interestingly case company’s manager described the firm-customer interaction as long-term relational. Thus, the relationship was not seen only as transactional and the consumer as the destroyer of the value created. Furthermore, this implies not placing the focus on the customer just in the present, but also considering how the relational interaction can be sustained in the long term. Interestingly it was noted that not all competitors emphasize the long term relational perspective.

*“I have noticed that 90% of the people who are now going into solutions or are in transition process... The main reason why they are going is that they are uncompetitive with the products and they are trying to define their offering in new way and cheat the customers by telling bullshit.... They are doing that because they are uncompetitive in traditional product business. That's why we have told that we have to be still competitive with traditional product business. We have to survive also in that side, because that is justifying to our customers that we are competitive.” (Manager A)*

The sentiment expressed seem to highlight that solutions cannot be just an empty marketing trick. Uncompetitive products might show use of relational approach in the firm-customer interaction, however it will not foster long-term relational interaction as the customer will be disappointed in the long run with the components of the solution. Furthermore, the comment seems to acknowledge that there are also remnants from G-D logic thinking that are still relevant today. Quality has been an important differentiating factor in the G-D worldview and will continue to be so in the S-D logic perspective.

In addition to adopting actor-to-actor perspective when moving from G-D logic to S-D logic, Lusch and Vargo (2014) argue that service-for-service exchange perspective adoption is required. “The only resource the actors really possess is... their knowledge and skills, rather than the byproducts of their application... Thus, the service (application of competences) focus is more general and transcending, since it applies to exchange situations, involving different types of goods, and also in situations where there are no intermediate product (i.e., direct service provision)” Lusch and Vargo (2014, 11). This focus on skills and developing understanding was also clear in the shortened Delphi study.

*“Today, we are not yet the best in the industry, there are some players like [competitors], who are the best understanding the real requirements of the transportation market... But I'm 100% sure that after two years we know the best in the business that what are the requirements, how the world look like, where the world will develop.” (Manager A)*

Understanding the requirements was perceived to be developed by working together with several customers all over the world and by having the best productivity monitoring system. These factors were seen as critical for developing the best understanding in the future, which is essentially what Lusch and Vargo (2014, 11) describe as competence in the service-for-service exchange view.

The examples of maintaining the high quality and developing the best understanding of productivity highlight the mindset changes on the company level on their dominant logics as the case company has moved towards solution offerings. Similarly, in the academia the marketing literature's examination of the shift from products to services has highlighted the importance of S-D logic (Jacob & Ulaga 2008, 247). Part of the development was introduction of new lexicon (refer to appendix 1) that aided in the shift to S-D logic. For example, in S-D logic ‘services’ is not used to refer to some kind of an intangible product. Instead ‘service’ in singular is used, which indicates the process of doing something for or with somebody. (Lusch & Vargo 2006a, 282.) This reflects the greater role of co-creation in S-D logic as the various actors are collaborators in the service process. Lusch and Vargo (2014, 12-13) describe service as “application of competences (knowledge and skills) for the benefit of another entity or the entity itself” whereas goods “are appliances that act as intermediaries in service delivery”.

Furthermore, to move from G-D logic towards S-D logic, one must have a broadened view of resources. Whereas, G-D logic focuses on operand resources, S-D logic emphasized operant resources. “Operand resources are generally static resources that require

some action to be performed on them before they can provide value” whereas operant resources “are capable of acting on other resources to create value (given appropriate circumstances)” (Lusch & Vargo 2014, 13). Thus, an example of operand resource would be a natural resource like gold, whereas operant resource would be “human competence – knowledge and skills that can be used in value-creating acts, such as the abilities of finding, extracting, refining, forming, and using gold” (Lusch & Vargo 2014, 13). The company managers saw their product portfolio that had developed over the years with multiple acquisitions as one of their key resources. Similarly, the development of the competence center and having an understanding of customers’ requirements were seen as key resources. The future analysis part of the shortened Delphi study uncovered that gamification might be one way to involve customers more in the company’s activities. Gaining a better understanding of the customer requirements and involving them in the logistics planning needs to be exciting. Similar approaches that Wood and Reiners (2012) have discussed about increasing user engagement in the education context, could potentially be applied to the customer context. This way, customers would become important resources for the firm, just as they had been highlighted by the case company managers during the shortened Delphi study.

Lastly, one must have a clear understanding of what value and value proposition means in the S-D logic context. Lusch and Vargo (2014, 57) state that “value is benefit, an increase in the well-being of a particular actor”. They further elaborate that it is specific to the actor and thus every instance of value created is unique. The creation of the value always occurs through a process of cocreation as “resources from multiple sources are always integrated to create value” (Lusch & Vargo 2014, 57). This idea was echoed multiple times in the shortened Delphi study as it was acknowledged that multiple actors are involved in the maritime transportation ecosystem:

*“Shipyard, shipowner, non-operative owner, shipping alliances, design offices, third party suppliers, classification [societies]. It is a huge number of stakeholders...” (Manager A)*

*“Harbours are owned by countries, governments or cities... Well there is... [company], they own harbours.” (Manager D)*

Thus, to create value for customers, the case company cooperates with multiple stakeholders and takes their requirements into consideration in order to ensure that customer receives the maximum value from a solution. The definition of value is also closely related to value proposition. “Since it is always cocreated and phenomenological, value cannot be provided by one actor another; rather it can only be proposed. A value proposition is a representation of how an actor proposes to positively participate in value creation with a beneficial actor.” (Lusch & Vargo 2014, 57). Creating the value proposition and being able to positively propose it to customer, had taken the case company some time. But as discussed earlier, it had actually been quite easy to convince the customers to move from G-D logic thinking to S-D logic perspective and consider the case company’s solution offerings. The main reason had been that the value proposition made a clear case why working together on the solution offering would bring long term benefits over the solution’s lifecycle to the customer.

## 4.2 S-D logic axioms and foundational premises

Lusch and Vargo (2014, 15) observe how many of the assumptions related to G-D logic were being questioned and that an alternative view, one that was service-based, was emerging and to capture the essence of it they identified foundational premises (FPs). The original eight FPs were identified in 2004 (Vargo & Lusch 2004a). These were updated few years later by Vargo and Lusch (2008) with the addition of a two new foundational premises to complete the foundation of S-D logic. Thus, the foundation of S-D logic was consolidated to four core axioms and 6 remaining founding principles which could be derived from the axioms (Lusch & Vargo 2014). This remained as the S-D logic framework up to 2016 when Vargo and Lusch (2016) published the most recent update to the S-D logic. The update answered to the need to define more precisely the foundational premises and axioms of S-D logic. Furthermore, Vargo and Lusch (2016, 5) lamented that the “limitation of the current foundational premises/axioms is the absence of a clearly articulated specification of the mechanisms of (often massive-scale) coordination and cooperation involved in the cocreation of value through markets and, more broadly, in society.” Thus, Vargo and Lusch (2016, 5) “alleviate this limitation and facilitate a better understanding of cooperation (and coordination)” by introducing an eleventh foundational premise (fifth axiom), which focuses “on the role of institutions and institutional arrangements in systems of value cocreation: service ecosystems”.

**Table 7: The development of axioms and foundational premises of S-D logic (Vargo & Lusch 2016, 8)**

Foundational Premise	2004	2008	Update
FP1	The application of specialized skills and knowledge is the fundamental unit of exchange.	Service is the fundamental basis of exchange	No Change AXIOM STATUS
FP2	Indirect exchange masks the fundamental unit of exchange.	Indirect exchange masks the fundamental basis of exchange.	No Change
FP3	Goods are distribution mechanisms for service provision.	No Change	No Change
FP4	Knowledge is the fundamental source of competitive advantage.	Operant resources are the fundamental source of competitive advantage.	Operant resources are the fundamental source of strategic benefit.
FP5	All economies are service economies.	No Change	No Change
FP6	The customer is always the co-producer.	The customer is always a co-creator of value.	Value is cocreated by multiple actors, always including the beneficiary. AXIOM STATUS
FP7	The enterprise can only make value propositions.	The enterprise cannot deliver value, but only offer value propositions.	Actors cannot deliver value but can participate in the creation and offering of value propositions.
FP8	Service-centered view is customer oriented and relational.	A service-centered view is inherently customer oriented and relational.	A service-centered view is inherently beneficiary oriented and relational.
FP9		All social and economic actors are resource integrators.	No change AXIOM STATUS
FP10		Value is always uniquely and phenomenologically determined by the beneficiary.	No change AXIOM STATUS
FP11			New Value cocreation is coordinated through actor-generated institutions and institutional arrangements. AXIOM STATUS

FP1, “service is the fundamental basis of exchange”, was already discussed being at the very center of what the case company’s managers perceived as critical for the company’s success (Vargo & Lusch 2016, 8). In particular, continuously improving the understanding of customers earning curve and the market were identified as key focus areas in order for the company to succeed with solution business approach. The FP1 is the first axiom and thus has four other FPs under it. These are the following: FP2, “indirect exchange masks the fundamental basis of exchange; FP3, “goods are distribution mechanisms for service provision”; FP4, “operant resource are the fundamental source of strategic benefit”; and FP5, “all economies are service economies” (Vargo & Lusch 2016, 8).

The FP2 was present in the workshop as the case company managers discussed how the collaboration with clients did provide benefits beyond the monetary compensation for the solution. The monitoring of the solution’s productivity – the information that the customers shares by utilizing the solutions and its monitoring software – provides the case company a foundation to improve their products, services and solutions. FP3 is maybe even more clear in the solution business context when the solution is composed from goods, services, software and other components. Goods embody knowledge of the people who have designed and manufactured them, and most importantly do not only provide service. Prahalad and Ramaswamy (2004) note how “the product, in fact, is no more than an artifact around which customers have experiences”. Verhoef et al. (2009, 32) describe how customer experience “is holistic in nature and involves the customer’s cognitive, affective, emotional, social and physical responses”. The workshop did not include a detailed discussion about the customer experience, however it was mentioned that the customer trust on the case company had been one of their cornerstones. Essentially, that the customers could rely on the case company’s quality and that they were not more expensive than competitors since the case company’s production facilities had moved to China. This enabled them to be close to the price level of their competitors in South Korea, Japan and China.

FP4 mostly relates to the knowledge and skills that the case company possesses. As mentioned earlier the case company managers emphasized the importance of their understanding of the market and their customers’ business models. Thus, operant resources were in their view also a source of competitive advantage for the case company. The case company managers had internalized in some ways the FP5. This was mostly noticed during discussions related to the various stakeholders. As there are multiple actors that one way or another contribute to the case company customers’ earning capacity, the managers had understood that all the stakeholders are exchanging services between each other.

FP6, “value is cocreated by multiple actors, always including the beneficiary”, is the next axiom (Vargo & Lusch 2016, 8). Under FP6, there are two derivative FPs: FP7, “actors cannot deliver value but can participate in the creation and offering of value propositions”; and FP8, “a service-centered view is inherently beneficiary oriented and relational” (Vargo & Lusch 2016, 8).

*“No matter is it development, sales or marketing, it is starting from the customer end point.” (Manager A)*

*“We are giving the building blocks to [competitor A], [competitor B], to the [competitor C] or the [competitor D].” (Manager A)*

In the workshop, the case company managers discussed how they saw that in the future their role will be much more of coordination – even with their current competitors. The case company’s working together, cocreating with the customers, will enhance their understanding of the requirements. This in turn would provide the foundation for the case

company to set rules by which the other stakeholders in the ecosystem operate. The coordination of the ecosystem would be directed towards providing value to the case company's customers as part of the case company's solution. Furthermore, without the consumers utilizing the solution, there would be no value in the case company's solution. Lusch and Vargo (2014, 69) explain that "accountants might believe that an unsold good has value but this is economic value; value creation from an actor-centric and service-dominant vantage point is only possible when market and other offerings are used – that is, when they contribute to the well-being of some actor in the context of his or her life". Thus, the FP7 derives that the case company could without cocreation with its customer, only offer value propositions – they would not offer any value. "The value proposition is often viewed as a set of promised benefits in relation to expected costs; and these do not necessarily need to be put into economic terms." The case company managers however highlighted as one of the current challenges being that they need to be able to present their solution value propositions in economic terms. Low cost as a factor had dominated the case company's clients purchasing decisions to the extent that it often led to them making worse purchasing decisions as they did not consider the whole lifecycle earning potential – instead only the cost aspect was fully examined. This links very closely to the FP8 as the case company had long term customer oriented view that they utilized when developing the solutions. As discussed earlier, the case company managers saw the cocreation of the solutions with their customer over time improving their understanding of the customers' needs and thus enabling them to provide even better solutions to the customer.

FPs from 9 to 11 are axioms and do not have derivative FPs under them. Vargo and Lusch (2016, 8) define them in the following way: FP9, "all social and economic actors are resource integrators"; FP10, "value is always uniquely and phenomenologically determined by the beneficiary"; and FP11, "value cocreation is coordinated through actor-generated institutions and institutional arrangements" (Lusch & Vargo 2014, 71). S-D logic does not have the producers and consumer from the G-D view, thus it is generic actors that are all beneficiaries "of what they obtain in exchange with another actor" (Lusch & Vargo 2014, 74). In relation to FP9, resource integrators are "actors that create resources by combining other resources. The other resources are market, private, and public resources" (Lusch & Vargo 2014, 75). Thus, each actor integrates resources in their own way and as the FP10 states, receives value that is unique and phenomenologically determined by the beneficiary. One clear way that the case company managers had thought about this was that they had consider upgrade options into their solutions.

*"We have the option how the system can be updated in easily after the investment period is over."* (Manager A)

Thus, already in the beginning when constructing the solution offering to the customer, the case company would build-in later stage upgrade opportunities for easily expanding the solutions capabilities. This would of course be dependent on whether the customer would perceive to receive value from the investment, which would be greatly influenced by the unique context that they would operate in the future.

The FP11, the 5<sup>th</sup> axiom, is the most recent additions to the S-D logic and addresses the value cocreation in service ecosystems. Value cocreation is enabled and constrained by institutions and institutional arrangements. Vargo and Lusch (2016, 18) "use 'institution' to refer to a relatively isolatable, individual 'rule' (e.g., norm, meaning, symbol, law, practice) and 'institutional arrangements' to refer to interrelated sets of institutions that together constitute a relatively coherent assemblage that facilitates coordination of activity in value-cocreating service ecosystems". During the future part of the shortened



Delphi study, the case company's managers highlighted the industry standards, classification societies and other stakeholders as key influencers for their success.

*"I believe, the more... you understand...the conditions better and actually together with the classification societies understand better... do the research together and based on that provide together the better earning capabilities to [customers]"* (Manager A)

*"But it's definitely who are making the rules, classification society"* (Manager A)

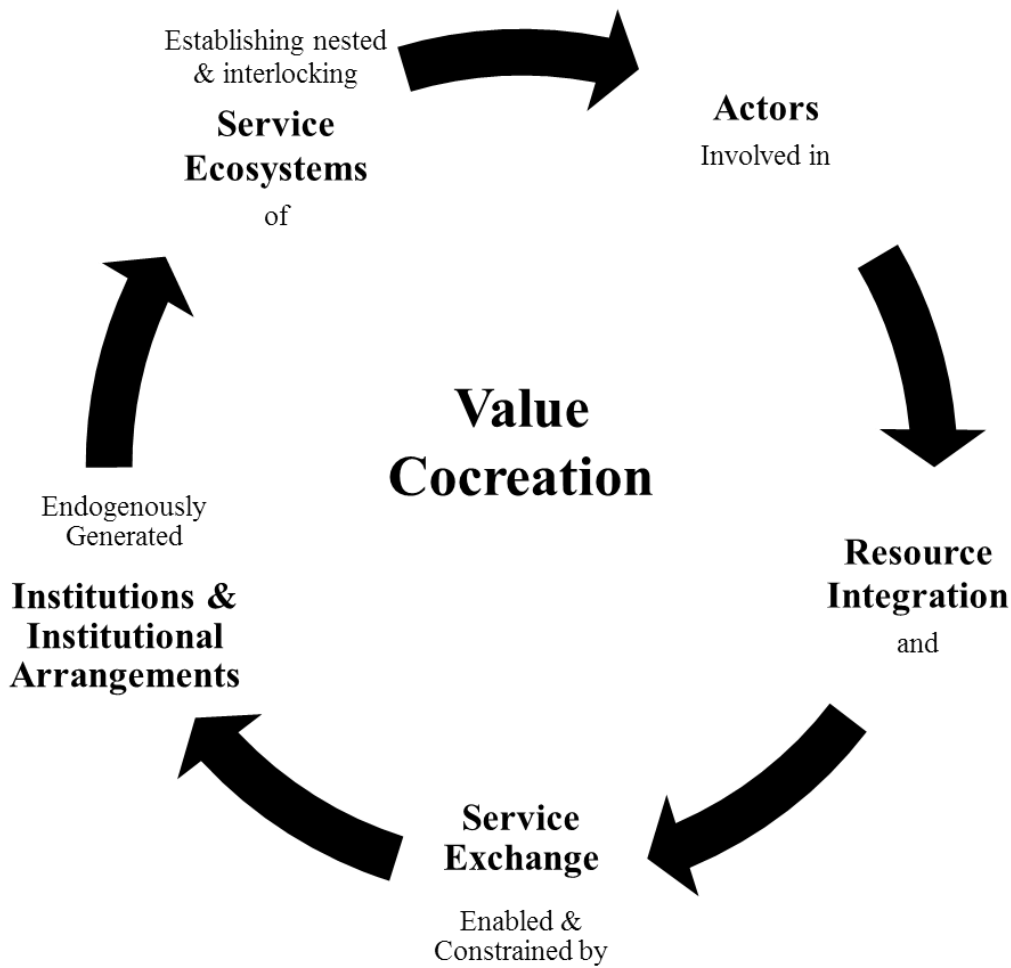
The case company managers highlighted the classification societies as important rule setters in the ecosystem. Hence, they are able to coordinate and influence how the actors in the ecosystem cocreate value. The case company saw it important that they would try to have part of that institutional power by participating in the activities of the classification societies. This would potentially even enable them to set standards that would make their solutions to be the superior choice due to environmental requirements for example.

Vargo and Lusch's efforts to create a transcending view of market have been largely successful. Testament to it is the comprehensiveness of the 11 FPs of which 5 are axioms. The case company's story highlights many of these FPs. However, there are still questions about how does S-D logic look like from process perspective? Furthermore, what are the practical managerial implications from S-D logic when considering it from the strategy perspective?

### **4.3 S-D logic process and strategy**

The S-D logic from process perspective ties together the various FPs. It was because of the emerging narrative and processes of S-D logic, that Vargo and Lusch (2016) were prompted to do the latest update to the FPs and introduce institutions and institutional arrangements as the FP11.

**Figure 10: The narrative and process of S-D logic (Vargo & Lusch 2016, 7)**



The value cocreation process and narrative shows clearly the different pieces of the S-D logic. Vargo and Lusch (2016, 7) describe how over time “the narrative of value cocreation is developing into one of resource-integrating, reciprocal-service-providing actors cocreating value through holistic, meaning-laden experiences in nested and overlapping service ecosystems, governed and evaluated through their institutional arrangements”. From the case company’s perspective, they are an actor involved in integrating resources from the various acquisitions that have grown their product portfolio and knowledge of their customers’ needs over the years. The case company participates in service exchange as they reach out to customers with their value propositions (solutions) that with the customer’s participation turn into solution projects. The solution projects are constrained as well as enabled by the institutions and institutional arrangements. An example of this are the classification societies, which can set specific requirements that the case company must comply with. Multiple other firms offer other products, services and solutions to the case company’s customers, thus forming the service ecosystem where all these actors – including the case company – operate in.

While the S-D logic narrative provides a process perspective, it does not directly provide strategy guidance. How does the S-D logic inform the case company’s strategy? What are the ways that managers can then utilize S-D logic thinking to make more money for their companies? Jacob and Ulaga (2008) were among the first to link S-D logic into the transition process from product-centric to service-centric business. Illustration of ThyssenKrupp was utilized by Jacob and Ulaga (2008) to show how much management

thinking actually reflects S-D logic propositions as company is transforming from products to services. In similar fashion, Ng, Parry, Smith, Maull and Briscoe (2012) discussed the transitioning from G-D logic to S-D logic at Rolls-Royce. Operationalizing some of the key features of S-D logic allowed Ng et al. (2012) to visualize the firms value propositions. Similarly, S-D logic was found by Randall, Wittmann, Nowicki and Pohlen (2014) to be able to inform supply chain management research and practice. As the previous examples, this paper also aims to utilize S-D logic to inform the creation of a model for effectual solution business development.

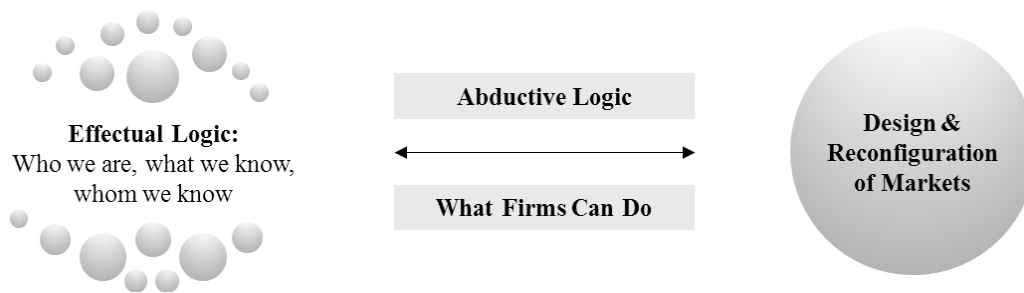
Lusch and Vargo (2014, xvii) note that when “translated into a normative, managerial approach, S-D logic becomes something like:

- Identify or develop core competences, the fundamental knowledge and skills of an economic and social actor that represent potential competitive advantage.
- Identify other actors (potential customer) that could benefit from these competences.
- Cultivate relationships that involve the customers in developing customized, competitively compelling value propositions to meet specific needs.
- Gauge the success of your value proposition by obtaining economic and non-economic feedback and use it to improve your value proposition and your performance.
- Involve customers collaboratively in value creation – that is, cocreate value.”

The case company managers discussed about all the above points in the shortened Delphi study. The case company had amassed over the years a huge product portfolio that was perceived as a potential source of competitive advantage. Similarly, establishing one common competence center in 2008 and the knowledge developed there was seen as a potential competitive advantage. The case company had identified potential customers, cultivated relationships and received economic feedback on their value proposition by signing the 100 million euro contract after half a year. While the case company was working on with their customer to provide the solution, they were fully aware of their competitors being in discussions with the same customer to offer their solutions or even providing similar solutions on the same project. This highlighted how the actors “actively compete for collaborators in the service ecosystem” while cocreating value (Lusch and Vargo 2014, xvii). Thus, the capabilities are also continuously improved in the service ecosystem.

Lusch and Vargo (2014, 195) note that S-D “places emphasis on systems viability, for which of course making money, or generating positive cash flow, is crucial”. Furthermore S-D logic is “broadly applicable to all kinds of organizations – profit and non-profit and private and government organization – for which ‘success’ may be defined differently from making money. Regardless of the type of business, our normative suggestions are intended to help a firm to realize its potential to design and (re)configure future markets, rather than be controlled or restricted by them“ (Lusch & Vargo 2014, 196).

**Figure 11: Toward and S-D logic strategy orientation (Lusch & Vargo 2014, 196)**



Lusch and Vargo (2014, 196) implore companies to examine the four elements of effectuation thinking: who we are, what we know, whom we know and what can we do. This will lead the company on iterative process that will help shape the company's destiny. This links S-D logic directly to effectuation thinking which is explored in much more detail in the next chapter. Furthermore, the case company analysis is carried out from effectuation perspective.

So how to make this S-D logic strategy orientation more actionable? Lusch and Vargo (2014) propose conducting an S-D logic strategy appraisal.

**Figure 12: The S-D logic strategy appraisal (Lusch & Vargo 2014, 197)**

Focal Areas & Actors	Customer-focused	Firm-focused
Service Provision	What customer-specific problems (jobs) might firm-accessible resource be applied (services provided)?	What firm-specific resources are necessary to provide service customer-defined problems (jobs)?
Value Cocreation	What broader, desired experiences are these specific solutions a part of? Do customers have necessary resources top participate in the solutions/creation experience?	What additional resources would the firm need to access/provide to propose service?
Resource Integration	What additional resources are required by the customer? Are customers likely to have these resources	What firm-centered ecosystems can be accessed/created to provdie new firm-specific, service facilitating resources? Can the firm facilitate creation of necessary customer-specific service ecosystems?
Value Determination	What standards are customers likely to use to evaluate value?	How can the firm influence standards/value perceptions?
Institutions	What institutions are required for solution to be successful? Are these in place? What institutions must be deinstitutionalized?	How can the firm facilitate creation of necessary institutionalization, deinstitutionalization?

The S-D logic strategy appraisal “is presented as a matrix, with focal areas as rows and focal actors as columns” (Lusch & Vargo 2014, 197). The questions guide through a strategic appraisal from customer-focused and firm-focused perspectives. Both processes are iterative just as Lusch and Vargo (2014, 196) describe S-D logic strategy orientation in general. The case company managers had considered many of the questions from both customer-focused and firm-focused perspectives as discussed earlier.

From service provision perspective, the case company managers were interested in improving the customer earnings by providing them greater efficiency with their solutions. The managers saw this clearly being provided by the case company's extensive product portfolio and understanding of the business. In terms of the value cocreation, one of the current pain points was that the case company had to be able to present the business case to the customers for improved earning that would be earned over multiple years in the future. However, the initial investment might be a bit higher and involve taking the case company to interact with other partners that the customer would have dealt directly with in the past. Thus, this was identified as requiring the case company to carefully to construct the optimal customer experience so that the transition to the new way of operating would be as smooth as possible. This customer experience was highlighted especially with the resource integration point of view.

*"This configuration is coming from the customer requirements... this is our design platform. Here are coming to our technical libraries and we should connect these customer requirements with our product portfolio."* (Manager A)

The comment emphasizes the importance of design platform, or any generic platform that will service facilitating resources. Customers' need to see their requirements connected directly to the case company's technical libraries and product portfolio. Similarly, the case company managers identified that the value determination was currently done often with nominal transportation capacity.

*"The gap between the nominal capacity and the real capacity has been growing all the time and it's still growing, because [competitors] promise something they can't guarantee"* (Manager D)

Thus, it was emphasized that in order for the case firm to change the value perceptions and make their solutions more appealing, they would have to influence the customers' measurement of value – changing the evaluation of value to be based on actual capacity instead of nominal capacity. One way that the case company managers identified this to be possible was the future history part of the shortened Delphi study in which they mentioned that classification societies might be benchmarking in the future to the actual transportation capacity instead of the nominal. Part of the answer was thought to be the case firm being much more active in the institutionalization of the ecosystem, and actively guiding the ecosystem towards the company's desired future state.

## 5 EFFECTUATION IN ACTION

The third round of coding is carried out from the effectuation perspective in this module (refer to appendix 5). This round of analysis focuses on the development of effectuation as well as on the effectuation process and framework. As in the previous round, several of the coded items were already identified during the earlier rounds, and thus are now discussed from the effectuation perspective. This is done to unearth new meanings and contributions. Effectuation provides a new perspective from which the data is examined and thus reveals some completely new themes that were not discussed during the previous rounds of analyses.

### 5.1 The development of effectuation

The entrepreneurship literature has mostly utilized rational decision making models (Perry, Chandler & Markova 2012, 837). In this line of thought, for example Drucker (1985, 72) highlighted the importance of purposeful search process for discovering opportunities and Cooper, Gimeno-Gascon and Woo (1994, 392) drew attention to competitive advantage arising from competencies related to finding and exploiting opportunities. However, it was Sarasvathy (2001) who introduced effectuation in contrast to the causal thinking and argued that individuals utilize also effectual processes. “An explanation for the creation of such artefacts [firms/organizations and markets] requires the notion of effectuation” (Sarasvathy 2001, 243). Entrepreneurs begin with questions such as “Who I am”, “What I know”, and “Who I know” i.e. using existing means to achieve a goal. This same approach was highlighted in the previous chapter as a starting point to S-D logic strategy orientation (Lusch & Vargo 2014, 196). “Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.” (Sarasvathy 2001, 245). This makes effectuation logic particularly suitable for situations with greater levels of uncertainty, for example the act of starting a new business. Similarly, this makes effectuation also very suitable for starting new endeavours at established companies, such as was the undertaking that the case company had taken when establishing the solution business unit.

Sarasvathy was interested in entrepreneurs from the beginning. The first article referring to effectuation examined how entrepreneurs perceive and manage risk in contrast to bankers (Sarasvathy, Simon & Lave 1998). The study used similar approach to what Sarasvathy (1998) utilized in her doctoral dissertation – using think-aloud protocols in which the study participants continually talked aloud and explained what they were thinking when considering the problems presented to them. As Perry et al. (2012, 839) explain it, by observing the participants thinking aloud and the decisions that they took, Sarasvathy could differentiate between causal and effectual behaviours:

1. Beginning with a given goal or a set of given means
2. Focusing on expected returns or affordable loss
3. Emphasizing competitive analysis or strategic alliances and precommitments
4. Exploiting pre-existing knowledge or leveraging environmental contingencies
5. Trying to predict a risky future or seeking to control an unpredictable future

Thus, “when an individual uses causal logic, he or she will begin with a given goal, focus on expected returns, emphasize competitive analyses, exploit preexisting

knowledge, and try to predict an uncertain future”, in contrast to “when an individual uses effectual logic, he or she will begin with a given set of means, focus on affordable loss, emphasize strategic alliances, exploit contingencies, and seek to control an unpredictable future” (Perry et al. 2012, 839). The case company had begun with the goal of establishing solution business unit and providing solution offerings to customers. As discussed in the solution business and S-D logic chapters, the case company had quickly identified their understanding of the market and their portfolio as the most important given means. Whether the case company had seen the development of the solutions business approach in terms of expected returns or affordable loss was not clear from the shortened Delphi study. However, there had been clear focus on strategic alliances and precommitments. This was highlighted with the case company’s approach to their customers – the long term relational view. The company had clearly based their approach to developing solution business on their pre-existing knowledge. However, they also acknowledged that they were interested in leveraging the environmental contingencies. This was largely due to the 2008 financial crisis as the maritime transportation actors were still weary and very focused on purchasing solutions that would be able to provide most productivity in the long run. In addition, the customers were looking for solutions that would be able to scale up the productivity of the solution in case the market would improve over time again. Lastly, the managers acknowledged that the future was uncertain. For example, there had been significant consolidation in the maritime transportation industry over time, especially in the form of alliances. New technologies such as 3-D printing and improved data analysis capabilities were also noted as potentially significant influencers of the market in the future. Thus, the managers felt that it might be hard to predict where the market was going, but they would like to find ways to control the unpredictable future. Hence overall, the case company’s managers demonstrated both causal as well as effectual thinking.

Effectuation literature took a while before it fully took off. Pfeffer (1993) notes that paradigm shifts can take longer in fields with lesser degree of technical certainty or consensus. Thus, it is no surprise that during the first 10 years most of the major contributions to effectuation came from quite a small set of researchers. In particular, Sarasvathy, Dew, Read and Wiltbank (2006; 2008; 2009) contributed relatively frequently.



**Table 8: Summary of the conceptual effectuation literature (Perry et al. 2012, 842-843)**

Article	Research question	Theoretical contribution	Research state
Sarasvathy (2001)	How are firms created?	Effectuation is presented and contrasted to causation	Nascent
Dew and Sarasvathy (2002)	What is effectuation?	Effectuation is distinguished from causation. A list of "nine things that effectuation is not" is offered and how effectuation integrates with other management theories is discussed.	Nascent
Sarasvathy, Dew, Velamuri, and Venkataraman (2003)	How do entrepreneurial opportunities come into being?	There are three explanations of how entrepreneurial opportunities come into being. They are " <i>recognized</i> through deductive processes," they are " <i>discovered</i> through inductive processes," and they are " <i>created</i> through abductive processes." According to the creative explanation, entrepreneurs manage the uncertainty that is associated with an opportunity through the use of effectuation principles.	Nascent
Read and Sarasvathy (2005)	Is there a relationship between entrepreneurial expertise and the use of effectual logics? Also, is there a relationship between the use of effectual logics and new venture performance?	Five testable propositions are offered that relate entrepreneurial expertise, the use of effectual action, and new venture performance.	Nascent
Goel and Karri (2006)	Why do entrepreneurs over-trust?	It is proposed that the use of effectual logic by entrepreneurs, coupled with entrepreneurial personality characteristics make entrepreneurs susceptible to over-trust.	Nascent
Wiltbank, Dew, Read, and Sarasvathy (2006)	How do firms decide what to do when faced with an uncertain situation?	Effectuation is discussed as a transformative approach to strategic decision making and deciding what to do next when faced with an uncertain situation. In contrast to most previous effectuation literature, this article discusses effectuation as appropriate not only for new ventures but for established firms as well.	Nascent
Chiles, Bluedorn, and Gupta (2007)	Do creative destruction and entrepreneurial discovery fully explain how entrepreneurs create opportunities?	A component of Lachmannian entrepreneurship differs from creative destruction and entrepreneurial discovery. The authors state that creative imagination is "congenial" with effectuation.	Nascent
Chiles, Gupta, and Bluedorn (2008)	What are the similarities and differences between Lachmannian entrepreneurship and effectuation?	The authors respond to criticisms by Sarasvathy and Dew about their differing interpretations of effectuation. They attempt to clarify the possible distinctions and common ground that exist between Lachmannian entrepreneurship and effectuation.	Nascent
Dew, Read, Sarasvathy, and Wiltbank (2008)	How do firms that are not yet established behave?	It is proposed that new ventures engage in more effectual behavior than established firms.	Nascent
Dew, Sarasvathy, Read, and Wiltbank (2008)	How do entrepreneurs successfully create new firms and markets?	The authors suggest that existing firms can avoid the "innovator's dilemma" and continue to be entrepreneurial.	Nascent
Karri and Goel (2008)	Is trust irrelevant or necessary for effectuators?	In response to Sarasvathy and Dew, the authors argue that all human action requires trust and that effectuators "over-trust deliberately, and then make the risk of trusting irrelevant by following effectual logic."	Intermediate concepts
Sarasvathy (2008)	Given who I am, what I know, and whom I know, what kinds of entrepreneurial activities could I pursue and what kind of enterprises could I create?	A book that clearly and sequentially describes the development of the concept of effectuation.	Nascent

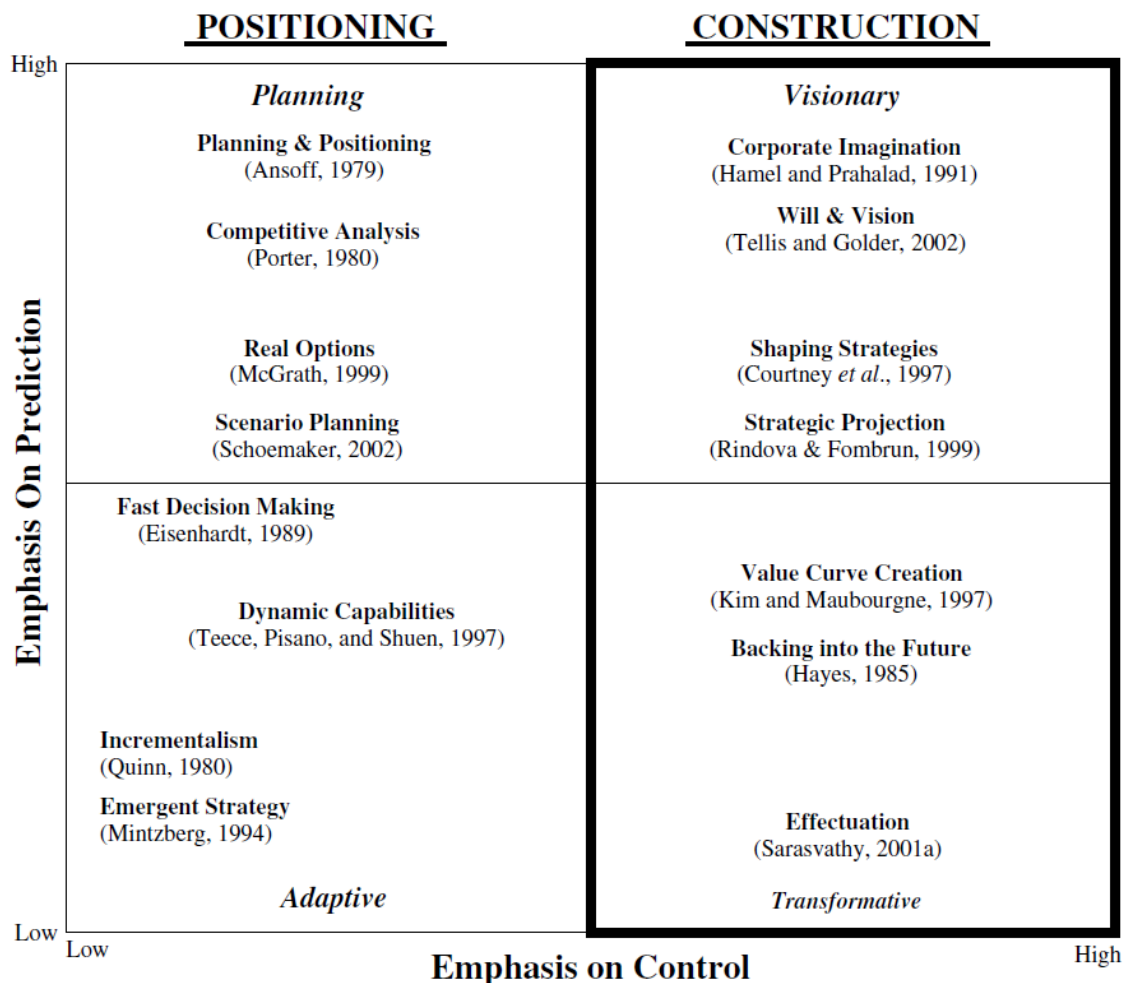
Sarasvathy and Dew (2008a)	Does using effectual logic necessitate trust?	In response to Goel and Karri, the authors argue that "effectual logic neither predicts nor assumes trust."	Intermediate concepts
Sarasvathy and Dew (2008b)	Response to Chiles, Gupta, and Blueborn	The authors respond to the comments and criticisms of Chiles, Gupta, and Blueborn. They argue that effectuation and Lachmannian entrepreneurship differ with regard to the "problems of knowledge, resources, and institutions."	Nascent
Sarasvathy, Dew, Read, and Wiltbank (2008)	How do effectuators design organizations and environments?	Organizational design is important because effectuators using transformational approaches not only design organizations but concurrently end up designing the environments we live in.	Nascent
Dew, Sarasvathy, Read, Wiltbank (2009)	How do individuals decide what they can afford to lose and what they are willing to lose to plunge into entrepreneurship?	Using the entrepreneur's new venture plunge decision, this article combines insights from behavioral economics to develop a detailed analysis of the affordable loss heuristic. The article also discusses the implications of affordable loss for the economics of strategic entrepreneurship.	Nascent

Deduction, induction, and abduction were discussed in relation to identification of entrepreneurial opportunities by Sarasvathy, Dew, Velamuri and Venkataraman (2003). The authors divided the ways to identify entrepreneurial opportunities to three categories: deductive – opportunity recognition (opportunity to bring supply and demand together has been recognized), inductive – opportunity discovery (if only supply or demand exists, then the non-existent side needs to be discovered in order to match demand and supply), and lastly abductive – opportunity creation (if neither supply nor demand exist, then both need to be created in order for them to match) (Sarasvathy et al. 2003, 145). The case company had been abductive and developed the solution approach and entered the market with it successfully. However, during the shortened Delphi study, it was revealed that now the case company was looking forward to have competitors to discover the same opportunity. Although, the case company had been successful with the solution business approach, the case company managers believed for the approach to really take off, it would require multiple competitors to join and provide solutions to the customer also.

*“It is also very important to find how fast we can find a competitor. Because actually I believe that competitors in this context, they would help us. Because now the challenge is that we are there alone, we have very nice value proposition, but the problem is to really change the industry alone.”* (Manager A)

Wiltbank, Dew, Read and Sarasvathy (2006) argued for the independence of prediction and control. Furthermore, they presented effectuation as an opportunity also for established companies, like the case company in this study, to pursue successful outcomes through control-oriented approaches that are non-predictive.

**Figure 13: Literature on the approaches to situational control (Wiltbank et al. 2006, 984)**



Effectuation was placed by Wiltbank et al. (2006, 983) in the situational control framework to the “Transformative” corner. The corner included approaches that have a focus on transforming “current means into co-created goals with others who commit to building a possible future”. In other words, “transformative strategies generate new goals and new environments from current realities” (Wiltbank et al. 2006, 993). The authors acknowledged that non-predictive strategy is very much unpredictable and thus the occurring failures must be managed too – mainly by keeping them small and quick (Wiltbank et al. 2006, 994).

Dew, Read, Sarasvathy and Wiltbank (2008) discuss how entrepreneurial firms focus on transforming their environment more so than already established firms, which focus on acting in the existing environment. The same authors also highlighted that the established companies do not need to suffer from the innovator’s dilemma – “listening to current customers leading firms often lose their markets to upstart newcomers as a result” – but should instead continue to focus on building new markets (Dew et al. 2008, 313). Dew et al. (2008, 37) perceived this happening through three key concepts:

1. Accumulating stakeholder commitments under goal ambiguity (in line with a political conception of goals)
2. Achieving control (as opposed to managing expectations) through non-predictive strategies

### 3. Predominately exaptive (rather than adaptive) orientation

The case company's aim to develop solution business was an ambiguous goal, similarly to the way that Dew et al. (2008, 45) explain that "while goals at the highest levels might be clear, their operationalization at lower levels may be highly ambiguous". Thus, although the solution business unit's leader might have been given clear sales targets, the manner to reach that goal would have been extremely ambiguous as the company had never offered solutions to customers before. The second point related to achieving control through non-predictive strategies was very much the focus of the second half of the shortened Delphi study. The case company managers discussed during the future part of the shortened Delphi study that, in their view, the company should be an innovation center, a service provider and a knowledge provider in the future.

*"One thing what is a bit missing there is that there will, the companies and networks, they will trade actual capacity instead of nominal" (Manager A)*

Although, the managers cannot know what the market will look like exactly, they felt that if the company had organized its activities around those three pillars and were able to move the ecosystem to trade with actual capacity, they would be still well positioned to create value to customers. Thus, the company would focus on influencing their capabilities, which they have control over, instead of worrying what the external environment might turn into.

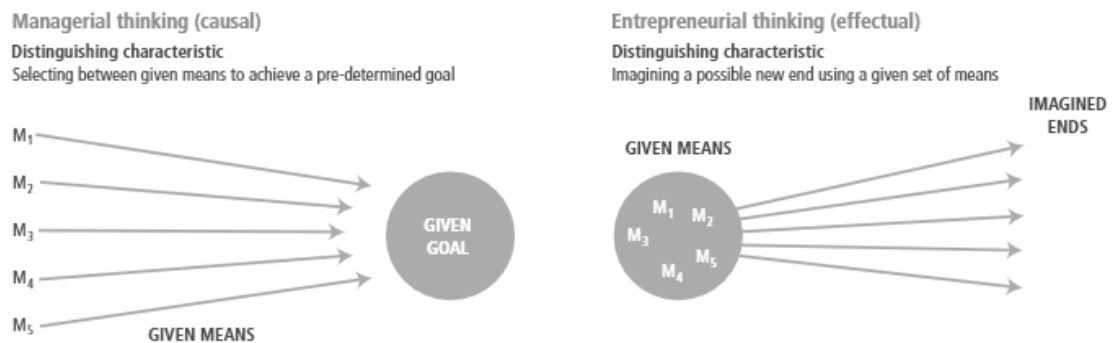
The predominately exaptive orientation rather than adaptive stems from the two major differences between established and entrepreneurial firm. "Established firms have established demarcation points between the firm and its environment" and have "rules of engagement" (Dew et al. 2008, 53). Entrepreneurial firms instead do not have such clear separation between the firm and the environment. Furthermore, entrepreneurial firms do not have established informal or formal mechanisms. Thus, entrepreneurial firms face "a design problem rather than an adaptation problem" (Dew et al. 2008, 53). The case company was in between the two states. Although the case company was in already established industry, which had its customs, norms, and routines, the solution business unit was defining a new way for how the resources should be combined and value generated for the customer. Thus, the case company was means-driven and examining what they could do with their product portfolio and industry knowledge. "It is never resources themselves that are the 'inputs' in the production process, but only the services that the resources can render. The services yielded by resources are a function of the way in which they are used – exactly the same resource when used for different purposes or in different ways and in combination with different types or amounts of other resources provides a different service or set of services" (Penrose 1959, 25). The ways that means can be combined, as Penrose long ago pointed, is very close to the way that S-D logic perceives the service exchange. Dew et al. (2008, 53) state that the "because the services yielded by resources are a function of the ways in which they are used, entrepreneurial behavior transforms resources by converting them from established uses to new uses." Hence, the important question in effectuation perspective is what else can we do with what we have?

The case firm had taken to heart the question "what else?" and discovered that their resources and capabilities would enable them to develop a solution business approach. Thus, they had reached the same conclusion as Dew et al. (2008, 313), that the focus should not be on building "immortal firms in mortal markets", but instead managers should focus on building new markets. So how do successes and failures in new market creation arise and what does the overall effectuation process look like?

## 5.2 Effectuation process and framework

Sarasvathy and Dew (2005) discuss the new market creation through transformation, a process that involves a new network of stakeholders. This transformation is based on five principles. To examine the effectuation process, it is important to remember the basis for effectuation, this being mainly how effectual reasoning differs from causal reasoning.

**Figure 14: Causal versus effectual reasoning (Read et al. 2010, 74)**



The effectuation principles are built upon on the notion a possible new end is imagined with the given set of means. Furthermore, the given means can lead to multiple new imagined ends, from which the actor must choose the most desirable one. In addition, there are other major differences between causation and effectuation process.

**Table 9: Contrasting causation and effectuation (Sarasvathy 2001, 251)**

Categories of Differentiation	Causation Processes	Effectuation Processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect Selection criteria based on expected return Effect dependent: Choice of means is driven by characteristics of the effect the decision maker wants to create and his or her knowledge of possible means	Help choose between possible effects that can be created with given means Selection criteria based on affordable loss or acceptable risk Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature More useful in static, linear, and independent environments	More ubiquitous in human action Explicit <i>assumption</i> of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

The effectuation processes that are contrasted against causation processes have been also distilled into effectuation principles. These principles were already discussed from the case company's historical perspective and with few trends that the managers felt were going to be significant in the future. However, the examination was more theoretical, instead of being future and entrepreneur oriented. Thus, the effectuation principles and the process are examined below from individuals – or as in this case a solutions unit – perspective with additional guidance from Read et al. (2010, ix-x):

1. Start with your means. Don't wait for the perfect opportunity. Start taking action, based on what you have readily available: who you are, what you know, and who you know.
2. Set affordable loss. Evaluate opportunities based on whether the downside is acceptable, rather than on the attractiveness of the predicted upside.
3. Leverage contingencies. Embrace surprises that arise from uncertain situations, remaining flexible rather than tethered to existing goals.
4. Form partnerships. Form partnerships with people and organizations willing to make a real commitment to jointly creating the future – product, firm, market – with you. Don't worry so much about the competitive analyses and strategic planning.
5. Create opportunities. When you can make the future happen by working with things within your control and people who want to help co-create it, you don't need to worry about predicting the future, determining the perfect timing, or finding the optimal opportunity.

The case company had identified their means as multiple times discussed earlier. However, whether they had been waiting for the perfect opportunity before starting the solutions approach development was not completely clear. The shortened Delphi study unearthed that much of the pressure to start the solutions unit had been created by the 2008 financial crisis and its aftermath. The case company was looking for new ways to increase their revenue in a market that was not booming anymore. However, they had decided to take action and already closed contracts before having finalized their solution offering platform. This showed willingness to adopt an iterative process in which they would work together with their customer to define the solution offering. The second point whether the case company had defined their affordable loss was not discussed during the shortened Delphi study and thus it is unclear of what sort of investment analysis or net present value predictions the case company had done. However, the managers did share details about how they were discussing with their customers, whether the customer were happy with the losses in potential revenue that they were incurring at the time.

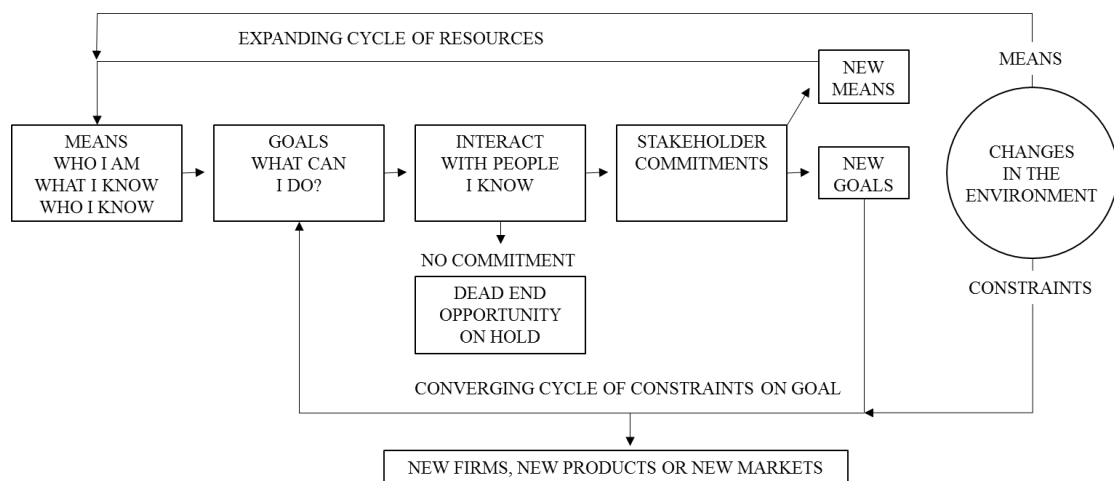
*“Because [competitor] can try to save some part like 10,000 dollars causing 1 million loss for the [customer]. Because they are just looking the production.”* (Manager D)

Hence, the case company's managers approach to sales often included highlighting to customers the question whether they were at the moment comfortable with losing the potential revenue that they could be earning with the solution approach with the case company. The third principle, leverage contingencies, had been prevalent with the establishing of the solutions unit. The case company had recognized that their goals, could at least not be achieved with the traditional methods, and thus a new business unit would be required to achieve different goals. The fourth principle – form partnerships – was very much a topic in the shortened Delphi study, as the case company managers acknowledged that they would happily welcome competitors to the market and are looking to work more

closely with customers. In addition, the managers highlighted the importance of working with the multiple stakeholders in the ecosystem to establish new industry standards. Especially classification societies were perceived as key influencers that could aid in moving the industry from trading with nominal transportation capacity to actual capacity. However, at the time these stakeholders outside of the company had not yet gotten fully onboard with helping to transform the industry, Hence, the fifth principle – create opportunities – had been started by the case company working with their means, however the full realization was still awaiting. Read et al. (2010, 122) note how “effectuation emphasizes pre-commitments from stakeholders as a way to reduce and/or eliminate uncertainty in the environment and as a way of expanding your means to generate something that may be very different from the starting point” and that “effectual entrepreneurs allow stakeholders who make actual commitments to participate actively in shaping the enterprise.” Thus, in effectuation the markets are co-created through stakeholder commitments that transform what exists into new markets. Furthermore, Read et al. (2010, 122) note that this same view has been adopted in the field of marketing with S-D logic.

So when the five principles are combined into a framework, what does the effectuation process look like?

**Figure 15: Effectuation in action (Read et al. 2010, 116)**



The effectuation cycle begins with an inventory of one’s means, deciding what can be done with them and enlisting others to co-create new goals. This leads to increasing means as a result of increased stakeholder ownership and at the same time also the constraints converge around the goals. Through the growth of the effectual network in the external world, a new market is slowly co-created. (Read et al. 2010, 115.) Example of using an approach similar to the effectuation cycle was the future part of the shortened Delphi study. The case company managers thought about their company and answered what desirable future they saw for the company. Then they mapped some critical events that would be required to take place in order to reach that future. Thus, this followed thought process from considering one’s means, what goals can be achieved and then what critical events would need to happen in order for the new goals to be realized. Interestingly most of the critical events that the managers imagined were related to other stakeholders and their commitments.

*“A major or a selective [customer] have accepted the idea that we provide a lot of additional value and they start using our regular services all the time.” (Manager B)*

*“I put here that one big player, one really big player... they will have... efficiency cooperation agreement with [the case company]. One of the big player, they are actually giving all of their [logistics] related or revenue related, related things over to [the case company] and [the case company] takes the responsibility of developing.” (Manager A)*

*“How to make this [first customer] happy with us... But happy with us that we have fruitful ground for next solution, because at the moment [the customer], not so friendly and this is good to start.” (Manager E)*

In addition to highlighting the importance of commitments from customers, the managers also discussed the importance of the other stakeholders such as classification societies as discussed earlier. In the effectuation cycle this would be the case company working together with the classification societies to move the industry from using nominal transportation capacity to actual capacity. This would provide the company new means when approaching customers as the industry standards would have changed. This also highlights one of the shortcomings of the effectuation cycle as the stakeholder commitments are not linked to changes in the environment, which a change in the industry standards would be. However, overall the case company managers showed with their thought processes that effectual logic was also “combined with more causational, pre-planned strategic behavior” (Evald & Senderovitz 2013, 275). This is in line with what Evald and Senderovitz (2013) found as they examined the internal corporate venturing in SMEs.



## **6 A CONCEPTUAL MODEL FOR EFFECTUAL SOLUTION BUSINESS DEVELOPMENT**

The literature discussed in the previous sections, on solution business, S-D logic, and effectuation, has highlighted how each of the fields have evolved our worldview on the nature of economic activities. This chapter brings together the three different viewpoints to develop a conceptual model of effectual solution business development. The nodes identified in all the previous analyses were combined (refer to appendix 6) and a final round of coding was performed to consolidate a summary version of the analysis (refer to appendix 7). After constructing the conceptual model, the theoretical and practical implications of the model and the insights gained from bringing together the solution business, S-D logic and effectuation analyses are also discussed. Lastly, limitations of the study and future research opportunities are examined.

### **6.1 Combining insights from solution business, S-D logic and effectuation**

The three rounds of analysis highlighted the importance of having a dynamic and iterative model that encompasses abductive logic. Furthermore, a model that would be applicable on multiple levels – individual, solutions unit or firm – would provide guidance to the widest audience. Examining the summarized data analysis (refer to appendix 7) revealed that ‘ecosystem’, ‘solution’, and ‘new business model’ were the most commonly coded themes. Thus, ecosystem at the very heart of the model, with solutions developed into a new business model or solutions platform formed the foundation for the model.

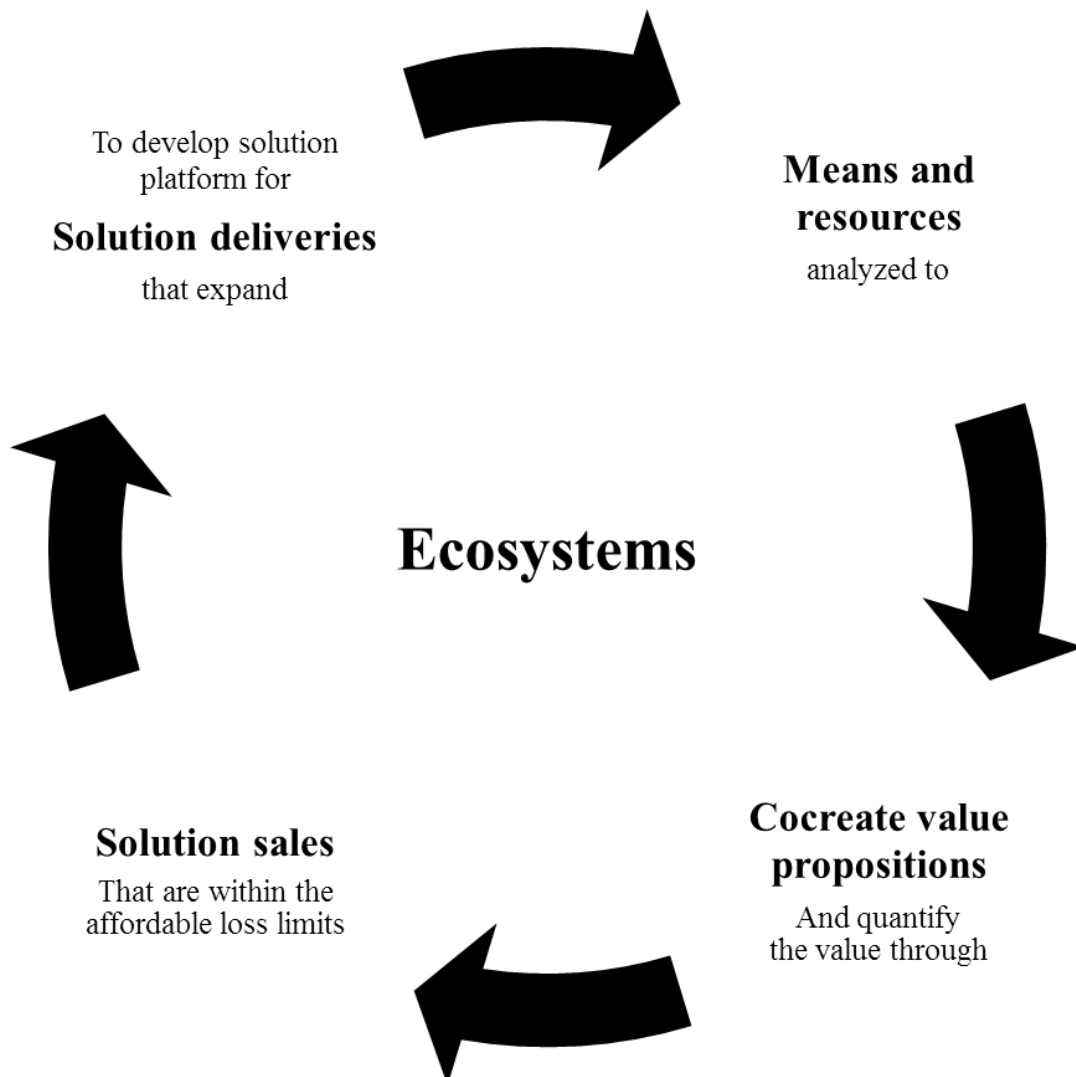
To derive the model, all the coded themes were utilized together with the solution business framework, S-D logic process, and effectuation cycle. Storbacka and Pennanen’s (2014, 16) solution business framework highlights how the challenge is not in selling solutions, but on how to sell them efficiently. Thus, their framework includes commercialization, industrialization and solution platform. The coding included multiple references for customers, new business model, organization, and solution business unit, which all related to the concepts that Storbacka and Pennanen (2014) focused on. In particular, the solution business framework clearly separates selling solutions and delivering solutions, which were both steps that were seen essential for the iterative model.

Vargo and Lusch’s (2016, 7) description of the S-D logic narrative and process provided much inspirations for the effectual solution business development model. The model’s simplicity in contrast to the complex process that it captures was something that the effectual solution business development should replicate. Furthermore, the S-D logic process model places value cocreation at the center, which was also present in the summary version of analysis, although in much smaller role with only 5 coding references. Resource integration and service exchange are also a critical part of solution sales process and thus should be part of the solution business development model. However, the model also highlighted the role of institutions and institutional arrangements as well as service ecosystems. These aspects were not as central in the solution business framework and effectuation cycle, but they were raised by the case company managers during the shortened Delphi study multiple times highlighting their importance. Thus, with ecosystem being the theme with most coded references, it seemed appropriate to give the two concepts appropriate focus in the effectual solution business development model.

Lastly, the contributions from effectuation analysis and the effectual cycle model developed by Read et al. (2010, 116) were incorporated to the solution business development model. Starting with your means resonated with the S-D logic strategy appraisal that Lusch and Vargo (2014, 197) presented. Interactions with stakeholders and affordable loss principle were identified from the effectual cycle as something that would need to be deeply embedded in the effectual solution business development model. Similarly, the effectual cycle emphasized the importance of expanding cycle of resources and the converging cycle of constraints on a goal, which were both important to integrate to the effectual solution business development model. The role of the environment is not as embedded in the effectual cycle and thus it was seen best to incorporate it through the ecosystem view to the effectual solution business development model. This way, it was elevated to the center stage to display that the solution business development takes always place in a particular context that is important to understand.

Thus, when decades worth of literature from solution business development, S-D logic and effectuation are combined with an ex-post and ex-ante event-based analysis of a case company in maritime transportation industry, what does the derived conceptual model for effectual solution business development look like?

**Figure 16: Effectual solution business development model**



The effectual solutions business development begins from understanding one's means and resources. Although operand resources can be important, this model emphasizes operand resources that can be used in value-creating acts. Human competence in the form of knowledge and skills were shown to be important for example through the establishment of the competence center at the case company. This point was emphasized by Lusch and Vargo (2014) as well. In addition, effectuation emphasizes starting with your means which is encapsulated in the questions "who you are", "what you know", and "who you know" (Read et al. 2010, 73). While this can provide a good starting point for a manager, a solutions unit or a firm to examine their means, it is recommended to perform more detailed analysis that incorporates also the customer perspective. A good starting point to analyse means and resources is to utilize Lusch and Vargo's (2014, 197) S-D logic strategy appraisal, which will evaluate what is required for value cocreation in the ecosystem. Furthermore, this will ensure that the solution business development process will examine the current situation from S-D logic perspective and thus yield new insights.

The analysis of means and resources is done to identify areas where a company could cocreate with the other stakeholders in the ecosystem value propositions. As examined during the analysis of the case company from S-D logic and effectuation perspective, this should always include the customer. However, in addition to the customer, other stakeholders can also play critical role. The iterative process of cocreating new value propositions will have multiple dead ends when stakeholder commitments are not acquired. However, this will help converge the value propositions to the ones that are viable. The case company managers had identified other competitors as important players to support the changing business logic in the ecosystem. Similarly, classification societies were identified as important partners to work with so that the maritime transportation industry would move from trading nominal transportation capacity to actual capacity. Effectuation emphasizes the importance of forming partnerships as "whatever each stakeholder commits becomes a patch in a growing quilt whose pattern becomes meaningful only through the continual negotiation and re-negotiation of its appeal to new stakeholders coming on board" (Read et al. 2010, 114). The "meaningfulness" of this patch – solution offering or value proposition – needs to be validated and a what a better way to do it than by turning the propositions into actual solution offering orders and sales.

Storbacka and Pennanen (2014) emphasize the importance of quantifying value with solution configurators. As examples of configuration tools and methods, the authors provide "win-plans" and "value-quantification" methods. The win-plan "maps out how to go from opportunity to order", thus ensuring that "selected opportunities are managed and that the profitability of winning the order is maximized, while taking into account particular risks and cost levels" Storbacka and Pennanen (2014, 53). The value quantification is utilized either with product-oriented or customer-oriented approach "to demonstrate to customers the provider's knowledge of their businesses and its ability to provide solutions that help customer organizations improve their business outcomes and, ultimately, their shareholder value" (Storbacka and Pennanen 2014, 54). These value quantification efforts create the foundation for using value-based pricing for the solution orders, which can provide significantly higher margins from solution orders.

**Table 10: Basic pricing options (Storbacka & Pennanen 2014, 59)**

<b>Cost-based pricing</b>	<b>Market-based pricing</b>	<b>Value-based pricing</b>
<ul style="list-style-type: none"> <li>• Based on the cost of the produced goods and services, including material, labor, and capital costs.</li> <li>• Price is calculated on the basis of cost + mark-up.</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the balance between demand and supply in the market (substitutes included).</li> <li>• Margins vary according to the market price, as the cost of goods and services produced is not always linked to the market price.</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the value that the provider's solutions create to the customer.</li> <li>• Customer value quantification is the prerequisite for setting value-based prices.</li> <li>• Provides possibilities for significantly higher margins.</li> </ul>

Solution sales are cocreated value propositions that have materialized into contracts. The basis for them has been identified through the value quantification and ideally the contract has value-based pricing. Initially when developing the solution business, a company might not generate profit on their first solution offerings as they do not possess enough understanding to perform value-based pricing accurately or the solution platform to make the business scalable. Thus, the affordable loss principle from effectuation is important to consider as it helps to see “how to get started right now, while still managing your risk” (Read et al. 2010, 104). This, ensures that a company does not overcommit with their resources, reputation or other inputs to a solution offering. The affordable loss analysis should instil to the company's backbone that they should risk little and fail cheap. In addition, Ries' (2011) approach from the lean startup context to fail fast is applicable as well.

When solution sales have been deemed to be within the affordable loss limits (and eventually very profitable with value-based pricing), companies need consider how they plan to deliver the solutions. The case company managers highlighted the importance of verifying the value delivery to customers. However, this needs to be done in efficient manner as Storbacka and Pennanen (2014) emphasize the role of cost-effective delivery in which solution platform plays a big part. In Storbacka and Pennanen's (2014, 89) view “sustainable success in solution business requires investments into solution platform”. The solution platform consists of strategy planning, management systems, infrastructure support, and human resource management. Strategic focus is required although the effectual approach can have these goals evolve and transform into something else completely. Management systems are important as the solution business cannot be managed the same way as traditional product and services business (Storbacka & Pennanen 2014, 89). One approach to management is to examine whether the solution business has traction in the market (Ries 2011). Ries (2011) talks about this as the viability of the company's business model, which can be a good measure for evaluating the solution business. Infrastructure support relates to “customer intelligence capabilities, tendering and contract management, and information and communications technology” (Storbacka & Pennanen 2014, 89). The case company highlighted this for example as they conducted value research with their customers. The information that they collected from interactions with customers about their needs had to be stored in a centralized repository in order to enable analysis of the data. Then the analysis of all the information gathered from the company itself, the ecosystem, customers, competitors and other actors formed the basis for identifying the company's competitive advantage and decision to focus on solution business approach. Lastly, the skill profiles of people working in solution business might need to be more

financially oriented. Storbacka and Pennanen (2014, 90) provide as a practical suggestion that “the firm’s bonus schemes should reward cross-functional teamwork, and HR strategy and competence development should be aligned with the solution business strategy.”

Once a solution is successfully delivered, the effectual solution business development continues to a new cycle as the process is iterative. The delivery of the of the solution and all the processes and steps that have taken the company to that point should have expanded the company’s means and resources for the next solution offering. It might have also had an impact on the ecosystem, which is the context in which the effectual solution business development takes place in. The shortened Delphi study highlighted that there are at least 10 to 15 different stakeholders in the maritime transportation ecosystem. Thus, it is important to consider throughout the effectual solution business development process what are the particularities that affect a company at each step due to the ecosystems that they are a part of. Vargo and Lusch (2016, 7) emphasize how institutions and institutional arrangements enable and constrain value cocreation in nested and interlocking ecosystems. Thus, companies should think carefully how they can “facilitate creation of necessary institutionalization” or deinstitutionalization for their solution to be successful (Lusch & Vargo 2014, 197). This applies especially to industries with multiple stakeholders such as the maritime transportation industry. For example, the case company managers discussed multiple times about the importance of partnering with classification societies in order to move the industry from trading with nominal transportation capacity to actual capacity.

## 6.2 Theoretical implications

In marketing and entrepreneurship literature, S-D logic and effectuation have crossed paths and contain similar elements of abductive thinking (Lusch & Vargo 2014; Read et al. 2010). However, the two have not been extensively examined together in the solution business development context. This neglected aspect was examined in this study with the purpose to develop a conceptual model for solution business development that would draw insights from the solution business, S-D logic, and effectuation literature. This not only allowed to develop insights about the individual streams of literature, but also generated understanding of how the three could relate to each other more than previous has been perceived. In addition, the research approach was novel, ex-post and ex-ante event-based analysis of a case study in the maritime transportation industry was utilized to examine one company’s narrative in developing solution business and to identify practical insights relevant to the industry’s context.

This study contributes to the solution business literature by providing “explicit links to theoretical perspectives at a higher level of abstraction” (Nordin & Kowalkowski 2010, 442). The solution business development model created in this study is based on S-D logic, which in Vargo and Lusch’s (2016, 21) opinion “might provide the foundation for a theory of the market” and thus should readily provide a connection to theoretical perspective at a higher level. Furthermore, the solution business development model proposed here is based on iterative process that utilizes effectuation logic, thus providing new avenues of research for solution business literature as Storbacka and Pennanen’s (2014) framework did not directly show the iterative nature of their model.

Vargo and Lusch (2017, 46) also highlight the need to develop more mid-range theoretical frameworks to support the advancement of S-D logic theory. This study provides a conceptual model for solution business development with strong links to effectuation theory. Thus, this study provides a beginning to explore further what mid-range or context

specific theories can be created from the S-D logic theory. In addition, Whalen and Akaka (2015, 2) highlighted that S-D logic suffers from over-positioning and thus has been neglected in entrepreneurship literature. This study demonstrates the potential in combining S-D logic theory with theories from other fields such as entrepreneurship and hopefully inspires researchers to discover similar connections to other fields in the future. Furthermore, the data analysis from multiple perspectives revealed that both fields can gain new insights and find connections to other theories when examined from different viewpoints.

From effectuation literature perspective, this study contributed by constructing a conceptual model that utilizes effectual processes in large corporations. This had been identified by Dew, Sarasvathy, Read and Wiltbank (2008) as a need in effectuation literature – to branch out the theory to cover also established firms. Thus, this study complements studies such as Johansson and McKelvie's (2012), which explore effectuation in corporations. Although, Read et al. (2010) have made effectuation very approachable to the general public in the realm of entrepreneurship, their book did not address established companies. However, this study contributes to this gap by providing corporations approachable way to utilize effectuation as they are developing their solution offerings or solution unit.

From research methods perspective, this study combined ex-post and ex-ante event-based analysis of a case study from the perspective of three different literature streams in order to construct the solution business development model. Thus, this study contributed to what Whalen and Akaka (2015, 12) have highlighted as a research opportunity to “retrospectively solicit a sample of critical incidents that led to the co-creation of an opportunity”, which in this case was the development of solution business at the case company. Furthermore, the modular abductive approach utilized in this study will hopefully inspire others to use the same approach for theory construction in other fields. In addition, the modular abductive approach was found to be effective way describe the natural progression of the study, bring out the analysis insights from multiple perspectives, and to clearly illustrate that the data was the starting point for the study.

In summary, this study proposes a novel conceptual model for solution business development that is based on the existing literature on solution business, S-D logic and effectuation. In similar manner to the proposed conceptual model for solution business development, the study itself also utilized modular abductive research approach. The modular approach highlighted in this study that the whole is greater than the sum of its parts. In other words, solution business, S-D logic and effectuation fields all received new insights and future research opportunities from this study, which would have not been uncovered if the fields had been examined individually.

### **6.3 Practical implications**

The study's main practical contribution is the conceptual model for solution business development. The model is applicable to individual managers, solutions units, and whole companies. It provides an iterative process that can be utilized to work towards establishing solutions at the core of company's offerings. The model provides a high-level overview and is simple to understand. But each of the steps is also linked to decades of existing literature related to solution business, S-D logic and effectuation. Thus, the model offers plenty of depth to those that want to examine more deeply the building blocks of solution business development. In addition, multiple approaches and tools are highlighted in conjunction with the steps, such as Lusch and Vargo's (2014) S-D logic strategy appraisal,

“win-plans” and “value-quantification” methods from Storbacka and Pennanen (2014), and the affordable loss principle from effectuation (Read et al. 2010).

The analysis of the case company revealed that the events perceived critical for the establishment of the solutions unit took place over decades. Before the 2008 financial crisis, the company had multiple years of acquisitions behind them that had developed their product portfolio after consolidation of the companies had been performed. In addition, they had established a competence center that had gathered much of the firm’s knowledge to a centralized location for the first time. The economic downturn and decrease in maritime transportation following the 2008 financial crisis forced the company to look for alternative ways to increase their sales. Thus, other companies in maritime transportation or in other industries should not wait for a critical external event, but instead experiment with solutions sales already now. The resources that firms might have collected over a period of multiple can potentially form the foundation for their solution business development. Furthermore, entering the process of developing solution business can in itself reveal new resources. For the case company, the solution business development allowed them to discover new combinations from their existing resources acquired over multiple years that the company had not been utilizing to their full potential. Furthermore, the case company highlighted the importance of recognizing whether you are offering solutions for the customer’s revenue or cost related operations. When being on the revenue side, improving customer’s earnings over the whole life-cycle of a product or service and thus growing the share of wallet can be much more important than trying to improve customer loyalty by traditional means (Keiningham et al. 2011).

The maritime transportation industry contains multiple stakeholders. Thus, cocreation, which refers in S-D logic literature to “resources from multiple sources are always integrated to create value”, provides important insight to the players in the industry (Lusch & Vargo 2014, 57). In fact, the case company managers mentioned multiple times the importance to consider the various stakeholders in the ecosystem. For example, the classification societies and even competitors were identified as important partners for creating the value propositions for the case company. Other industries might have similar situations where certain players in the ecosystem are crucial partners for developing solution value propositions. The S-D logic and effectuation tools discussed in this study should be beneficial for determining the critical stakeholders.

The shortened Delphi study utilized in this study presents one viable approach for other companies to approach building solution business within their companies. Ex-post and ex-ante event-based analysis can help discover what is perceived as the company’s means and resources for solution business, but in addition it can also be utilized to project the future and identify critical steps in order to establish a solution business unit at your company. This can also help established companies to avoid the innovator’s dilemma (Dew et al. 2008).

Overall, this study provides a conceptual model for solution business development that can be utilized at individual, solutions unit or company level. Furthermore, the conceptual model is founded on existing literature that provides multiple practical approaches and methods to start implementing the solution business development model. Lastly, a case company narrative provides insights to maritime transportation industry about the critical events and considerations that have influenced the case company on their solution business development journey.

## 6.4 Future research opportunities

Most of the theoretical contributions as well as practical contributions could be further investigated. In particular, further inroads could be made in utilising S-D logic and effectuation in other contexts. Similarly, investigating the role of institutions and institutional arrangements in service ecosystems, would be an interesting topic as highlighted in this study by the role and power that classification societies play in the maritime transportation industry. In effectuation literature, examining corporate effectuation, and especially individuals that exhibit effectuation would be an interesting follow up study.

Moreover, it is beneficial to keep in mind that this study provided only one perspective on how effectual solution business development can take place. Thus, it would be interesting to examine the proposed model and each of the steps in more depth. Ideally this would provide, in addition to further theoretical knowledge, also further practical insights to individuals on how to utilize the model. An example of this would be to examine in more depth the solution business model aspect of solution business development. Ries (2011) discusses this as traction and Chesbrough and Rosenbloom (2002, 533) define business model as “the method of doing business by which a company can sustain itself”. One approach would be to try to map the solution business model as Osterwalder (2004) advocated in his dissertation.

In addition, the solution business development model and the analysis chapters have highlighted that there is room for more research that examines S-D logic and effectuation together from the solution business development viewpoint. Similarly, the study highlighted the need to examine solution business development in more depth as establishing a solution business unit does not follow necessarily causal logic and running solution business requires new management systems due to the underlying logic which differs from traditional business (Storbacka & Pennanen 2014).

Lastly, the modular abductive approach due to the exploratory nature of the research provides an interesting methodology that could be utilized in other similar studies. Combining ex-post and ex-ante event-based, qualitative case studies in the same or different contexts, could yield new insights into solution business development in various industries.



## 7 SUMMARY

This thesis investigated solution business development from the perspective of S-D logic and effectuation theory. The thesis was written as a part of REBUS (Towards Relational Business Practices) project financed by FIMECC (Finnish Metals and Engineering Competence Cluster).

The purpose of the study was to propose a conceptual model for effectual solution business development. In addition, practical managerial insights to the process were identified from maritime transportation industry's perspective. The interest on the topic was created by the case company intriguing story that they had closed a 100 million euro contract only half a year after starting to experiment with a solutions approach. This narrative served as a starting point for the study and thus a modular abductive methodology was chosen for investigating the case company's solution business development over the years. The primary data for the study was gathered from a shortened Delphi study, which included a historical event analysis and a future event projection with the case company's managers. Secondary sources that informed the research included the existing literature on solution business, S-D logic and effectuation as well as conversations with the case company managers. The data was analysed in modular fashion from solution business, S-D logic, and effectuation perspectives with relevant literature reviewed at the same time. Then a final round of analysis was performed to develop a combined analysis that would include all three perspectives. The consolidated findings together with the previous rounds of analyses were then utilized to develop a conceptual model for effectual solution business development.

The proposed conceptual model for solution business development suggests that companies should focus on identifying their means and resources. Once these are analyzed, companies can cocreate value propositions with other stakeholders in the ecosystem. The value propositions' value must be quantified through turning the proposals into sales. An important criteria for accepting the orders and turning them into sales is evaluating them for risk. Companies should perform the sales only when they are within their affordable loss limits. It is important to risk little and fail cheap as well as fast. In order to scale the sales, industrialization must be considered. This can be done by developing solution platform, which supports the solution deliveries. Especially the solution platform helps with verifying the value being delivered and reporting it to the customer. The model is iterative and suitable for individuals, solutions units, and companies. Furthermore, each of the steps in the model are also linked to decades of existing literature related to solution business, S-D logic and effectuation. Thus, the model provides multiple approaches and tools that are highlighted in conjunction with the steps for practitioners to implement on their journey towards solution business.

In addition to the theoretical contributions to solution business, S-D logic and effectuation fields in terms of new insights that were gained from the analysis in this study, also practical implications were discovered. The case company's narrative emphasized the importance of being aware of one's means and resources when formulating solution offerings. This could for example a wide product portfolio acquired from multiple acquisitions over multiple decades. Furthermore, this study highlighted the influence of various stakeholders in the maritime transportation industry – customers, classification societies, and even competitors – who all need to be carefully considered relative to their place and power in the ecosystem when developing solution business.

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## 9 APPENDICES

### APPENDIX 1 The S-D logic lexicon (Lusch & Vargo 2014, 55)



## APPENDIX 2     The shortened Delphi study questions

The shortened Delphi study materials are presented here in an abbreviated format. The original materials were multiple PowerPoint slides printed out to participants so that they could record their thoughts on the printouts. However, to protect the anonymity of the case company and the participants, only the text content has been reproduced here. The slides included also multiple timelines drawn for recording participants' answers. Hence, whenever timeline is mentioned here in italics it signifies that the materials had an illustrated timeline after the question for the participants to record their responses. Furthermore, the participating company's name has been replaced here with 'Company' and the specific business unit's name has been replaced with 'Solutions Unit'.

### HISTORICAL EVENT ANALYSIS

**Purpose:** To understand what made Company to be what it is today.

**Method:** To capture perceived critical events, their sequences and outcomes.

**Approach:** First we go through a number of questions and you try to think about the 'individually' in relation to memorable events. Then we try to map these events on aggregated scale and try to find an agreement within the group concerning the questions:

- What has happened?
- How did change unfold?
- Why does it matter?

1. Make a **star** on the timeline indicating the year YOU started at Company
2. Think of Company: **What are most critical events that shaped what Company is today?** (For instance: Firm strategy, R&D, product and service development, organization, finance, etc.) *Place the event on the timeline and add a date.*
3. Think about **external factors** to Company: What have been the most critical external events shaping Company? (Examples: Customers, markets, competition, legislation, suppliers; the wider corporation and its decisions – Parent Company, etc) *(Put them on the timeline)*
4. Think about the Solutions Unit: What are the most critical events that happened leading up to forming the Customer Solutions Unit and what were the most important events after the unit has been established? Think very widely about this. *(Put them on the timeline)*

### FUTURE EVENT ANALYSIS

#### Individual assignment:

1. Concerning the development until 2025, what are the main trends (positive and negative) influencing the futures of Company?
2. Concerning the trends listed above, what are the desired characteristics of Company in 2025?
3. When you think of Company: What **desirable** future do you see?
4. Based on the ideas you created on the previous slide: Pick **3** most important feature of your DESIRABLE FUTURE for Company and describe them very briefly.
5. Think of the critical events that would need to happen. Mark them on the timeline when they would need to happen.

#### Towards Company future

In the next step we consolidate three factors of all and discuss the emerging picture.

### APPENDIX 3 Coding with solution business perspective

<b>Name</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
Business opportunities	2	14
Challenges	1	7
Competitors	1	5
Customer	3	11
Divestitures	1	1
Firm resources	1	2
Lifecycle	2	7
Market	4	9
Mergers and acquisitions	2	9
New business model	2	17
Organization	3	7
Outsourcing	2	8
Solution	4	19
Solution business unit	2	6
Solution platform	1	1
Stakeholders	4	30
Value verification	2	3

### APPENDIX 4 Coding with S-D logic perspective

<b>Name</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
Co-creation	2	5
Actor	3	12
Ecosystem	4	24
New business model	2	15
Organization	3	7
Power	1	2
Resource integration	2	8
Service exchange	4	23
Value proposition	3	12

**APPENDIX 5      Coding with effectuation perspective**

<b>Name</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
Competitors	1	6
Constraints	1	7
Customer	3	12
Environment	4	30
Means	3	7
New goals	2	11
New market	2	10

**APPENDIX 6 All nodes coded**

<b>Name</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
Actor	3	12
Business opportunities	2	14
Challenges	1	7
Co-creation	2	5
Competitors	1	5
Competitors (2)	1	6
Constraints	1	7
Customer	3	11
Customer (2)	3	12
Customer (3)	3	12
Divestitures	1	1
Ecosystem	4	24
Environment	4	30
Firm resources	1	2
Lifecycle	2	7
Market	4	9
Means	3	7
Mergers and acquisitions	2	9
New business model	2	17
New business model (2)	2	15
New goals	2	11
New market	2	10
Organization	3	7
Organization (2)	3	7
Outsourcing	2	8
Power	1	2
Resource integration	2	8
Service exchange	4	23
Solution	4	19
Solution business unit	2	6
Solution platform	1	1
Stakeholders	4	30
Value proposition	3	12
Value verification	2	3

**APPENDIX 7 Summary of the coding**

<b>Name</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
Business opportunities	2	14
Co-creation	2	5
Competitors	1	6
Constraints	1	7
Customer	3	12
Ecosystem	4	31
Firm resources	1	7
Lifecycle	2	7
Market	4	9
Mergers and acquisitions	2	10
New business model	2	17
Organization	3	7
Outsourcing	2	8
Resource integration	2	8
Solution	4	23
Solution business unit	2	6
Value proposition	4	14

**APPENDIX 8 Sources and references per manager**

<b>Manager</b>	<b>Number of sources coded</b>	<b>Number of coding references</b>
A	4	161
B	4	23
C	2	25
D	4	120
E	4	21