

UTRECHT UNIVERSITY

MASTER'S THESIS

Defining IT Sourcing Strategies in Large-Scale Agile Organisations: A Configuration-based Approach

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Abstract

There is a plethora of IT Sourcing (ITS) strategy prescriptions for non-agile organisations available in the extant literature. Agile practices at enterprise scale have widespread impacts on these prescriptions; yet, the effects of agile frameworks on ITS strategies remain unrevealed and scholars usually neglect this compelling contextual factor. This thesis investigates the impacts of large-scale agile frameworks on the configuration of ITS decisions and the way large organisations should configure their ITS strategies considering these impacts. The research first studies the ITS literature to realise that there is a lack of empirical research on ITS strategies in agile organisations. Then, through a systematic literature review, required constructs are identified. As a result, a map containing ten different dimensions of ITS strategies is generated and used as a scaffold for our multiple-case study at six Netherlands-based large-scale agile organisations. The results of conducted 19 interviews with various managerial roles reveal that four dimensions, namely *sourcing model*, *location of outsourcing*, *pricing model*, and *relational governance* are mostly affected by agile frameworks. Furthermore, even after more than three years of utilising agile frameworks, organisations still have not discovered a proper optimum point for at least the first three dimensions. The results also uncover that organisations are not fully aware of the impacts of agile transformation on the process of ITS decision-making and this process may remain intact for years, resulting in continuous experimentation and trial and error of ITS strategies. We conclude that organisations should recognise the effects of agile frameworks to make ITS decisions accordingly. Additionally, adhering to a more rational and structured decision-making process helps organisations to more efficiently find proper optimum points for the dimensions of ITS strategy.

Keywords: *Agile framework, IT sourcing strategy, IT sourcing decision-making process, IT sourcing dimension, Configuration-based approach*

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List of Abbreviations

AGOSD	Agile Global Outsourced Software Development
ART	Agile Release Train
ASD	Agile Software Development
ASP	Application Service Provisioning
B/IA	Business IT Alignment
BPO	Business Process Outsourcing
CAQDAS	Computer Assisted Qualitative Data Analysis Software
DT	Digital Transformation
ERBV	Extended Resource Based View
IP	Intellectual Property
ITO	Information Technology Outsourcing
ITS	Information Technology Sourcing
LeSS	Large Scale Scrum
ME	Method Engineering
MRQ	Main Research Question
PDD	Process Deliverable Diagram
RO	Research Objective
SAFe	Scaled Agile Framework
SDM	Strategic Decision-Making
SLA	Service Level Agreement
SLR	Systematic Literature Review
SME	Small Medium Enterprise
SoS	Scrum of Scrum
SQ	Sub Question
T&M	Time and Material
TCE	Transaction Cost Economics

Chapter 1

Introduction

IT Outsourcing (ITO) emerged in the mid-60s when hardware and IT services were not affordable to all companies (Lee et al., 2003). ITO has evolved and significantly altered ever since and has undergone several changes over the past decades (Vassiliadis et al., 2006; Lee et al., 2003). During these periods of transition, organisations started to massively rely on outsourcing in order to catch up with the changes in markets (Rust & Kannan, 2003). As a recent example, using cloud computing has changed ITO mindset, enabled organisations to scale their outsourced solutions significantly, increased business flexibility and facilitated globally distributed outsourcing (Pattnaik, Prusty, & Dash, 2016; Dhar, 2012). Nowadays, ITO shapes on average around 20% of all IT expenditures of large organisations (Hall, Futela, & Gupta, 2017). As a result, the ITO market which was worth around 330 billion US dollars in 2017 is now projected to reach to 409 billion dollars by 2022 (TechNavio, 2018).

ITO is not a simple ad-hoc solution in a mismanaged IT department anymore (Lee et al., 2003). After all these changes, ITO is now beyond merely performing a function at lower cost (Leimeister, 2010). The IT market turbulence has made ITO a strategic decision for larger organisations during the past decades (Mann et al., 2015; Fjermestad & Saitta, 2005; Smith & McKeen, 2004; Kern & Willcocks, 2000). ITO now falls under the more general term of IT Sourcing (ITS). ITS implies that there is a degree which indicates the extension of outsourcing in comparison to insourcing in an organisation (De Looft, 1998). Many managers now consider ITS as a strategy to concentrate more on core competencies to achieve competitive edge (Hodosi & Rusu, 2019). Therefore, nowadays, the role of an effective ITS strategy on the success of outsourcing in highly volatile and competitive business environments is more crucial than before (Sohel & Quader, 2017).

Apart from these disruptions, rapidly changing markets have also forced businesses to adopt agile practices (Gerster & Dremel, 2019). This adoption has widespread implications on different aspects of organisations, including ITS strategies (Gerster, Dremel, & Kelker, 2018). Therefore, businesses should always be well equipped to be able to adjust their business, IT and sourcing strategies to these new practices.

1.1 Problem Statement

ITS has been a major concern to many organisations during the past decades. Although around 94% of companies have tried outsourcing at least once in their lifetime (Hall, Futela, & Gupta, 2017), around 25% to 50% of the outsourced IT projects fail (Hodosi & Rusu, 2019). These failures are mostly caused by contingent decision-making and being slow to develop a comprehensive ITS strategy (Gottfredson, Puryear, & Phillips, 2005). To help organisations avoid failures, a significant number of papers have been published. As an indication for the extent of overload, the term "*sourcing strategy*" returns 15,500 results in Google scholar. However, this volume of research is not always useful for practitioners as it seems that the term *outsourcing* tends to evoke polarised views (Dutta, Gwebu, & Wang, 2017) and it is sometimes very difficult to draw a conclusion from various and often conflicting findings in papers (Schoeman et al., 2008; Cullen, Seddon, & Willcocks, 2005b). For instance, diversified prescribed sourcing strategies can be found in literature ranging from short-term selective to long-term total outsourcing (Leimeister, 2010).

These contradictory views and diversity in practice are possibly due to the fact that some researchers and decision-makers treat all ITS arrangements as instances of the same phenomenon (Cullen, Seddon, & Willcocks, 2005b). Sourcing involves different contextual factors, dimensions and determinants that result in completely different types of arrangements (Dibbern et al., 2004; Marcolin & McLellan, 1998). The variety of possible arrangements of sourcing strategies has led to the advent of a relatively new set of approaches to designing sourcing strategies under the term of *configuration-based approaches* (Cullen & Seddon, 2004). One of these contextual factors that has significant effects on ITS strategy is agile transformation (Gerster & Dremel, 2019; Vries & Verkijk, 2017). As an example, it is believed by some scholars that transforming into agile encourages decision-makers to shorten contractual terms and to follow more flexible approaches towards outsourcing (Demirbas, Gewald, & Moos, 2018).

In order to remain competitive, organisations are going through a process of continuously utilising new digital technologies to optimise their structures (Demirbas, Gewald, & Moos, 2018). This trend, which is called Digital Transformation (DT) has inspired organisations to strive to become more agile (Fuchs & Hess, 2018). Currently, larger organisations are widely adopting agile frameworks not only in their IT departments, but also in their business units (Gerster & Dremel, 2019). 69% of organisations have been undergoing agile transformation for less than three years (Business Agility Institute, 2019) and 43% of large organisations in the Netherlands are willing to practice agile at enterprise scale (KPMG, 2019). However, ITS arrangements are not properly classified and are scarcely studied considering this new wave of DT. This scarcity becomes evident when we realise that according to the Web

of Knowledge¹, in 2019, the number of published papers around the subject of *IT (out)sourcing* or *(out)sourcing strategy* was close to 60 in total but only three papers were published which considered both *(out)sourcing* and *agile* terms. Moreover, in those few remaining papers, the effects of agile practices on ITS have been mostly studied only at the operational level when teams fail to communicate and collaborate well. In general, the relevant literature is sparse when it comes to the *how's* of making ITS decisions and the configuration of these decisions (Westphal & Sohal, 2016; Dibbern et al., 2004). This problem becomes even more apparent when we try to portray the situation in agile organisations. Another issue is that previous research has studied ITS as an event and not a process (Damanpour, Magelssen, & Walker, 2019; Pratap, 2014). This event-based perception of ITS and the lack of model-driven approaches limit the process of continuous learning, change and improvement of ITS strategy which is, in essence, important to agile organisations.

All in all, the aforementioned reasons explain why there is a need for a comprehensive study on arrangements of ITS decisions, the impacts of agile frameworks on these arrangements and the state-of-the-practice of ITS decision-making in large-scale agile organisations. Considering the moderate success rate of previous prescriptions, this study should not focus on prescribing a certain type of ITS arrangement; rather, it should facilitate the process of ITS decision-making by providing constructs and guidance.

The goal of this research is to first, define the dimensions of ITS strategy arrangements by collecting evidence from literature. Then by conducting a Systematic Literature Review (SLR), an exhaustive list of these dimensions will be compiled into the map of ITS dimensions. After that, with the help of a multiple-case study, the impacts of large-scale agile frameworks on the arrangement of these dimensions will be studied. Consequently, via this multiple-case study, the as-is state and the common approach to designing ITS strategies at large-scale agile organisations will be identified. In the end, a series of suggestions and artefacts including a revised model of the decision-making process is presented to enable agile organisations to more structurally design their ITS strategies considering their agile framework.

1.2 Research Questions

As previously mentioned, the goal of this research is to look at ITS strategy from a configuration-based point of view to facilitate ITS decision-making within large-scale agile organisations. To achieve this goal, we aim to go beyond the common debates of *whether to outsource or not* and focus on defining a structure to realise *what and how to (out)source*. Therefore, first, we need to identify dimensions of an ITS strategy and study the impacts of agile practices on these arrangements. Then, we

¹<http://webofknowledge.com>

need to study the current status of sourcing in large-scale agile organisations to point out inconsistencies between ITS decisions and agile practices.

Research Objective (RO) To facilitate (re-)configuration of ITS strategies within large-scale agile organisations by providing the structures required for ITS decision making.

Consequently, the following research questions will be answered in this thesis according to the aforementioned objective:

Main Research Question (MRQ) How can large-scale agile organisations align their ITS strategies with their agile frameworks?

To address this MRQ, we also consider several Sub Questions (SQ) which will be answered separately in this thesis.

SQ1 *What are the available approaches to define ITS strategies?*

Different approaches and techniques are involved when organisations define strategies. In order to find available approaches to define ITS strategies, further investigation is required. The answer to this SQ identifies and compares different perspectives and approaches of ITS strategies.

SQ2 *What are the dimensions of an ITS strategy configuration?*

When defining an ITS strategy, different elements are involved and different dimensions must be configured. These dimensions determine the decisions that should be made when defining ITS strategies. To have a common discourse when conducting the multiple-case study, it is important to identify all of these dimensions.

SQ3 *What is the state-of-the-practice of configuring ITS strategies in large-scale agile organisations?*

Scholars mainly cover the application of ITS strategies at the operational level. The execution of an ITS strategy design in an agile or distributed format is relatively well explained at least in grey literature. However, the state-of-the-practice of ITS strategy configuration and ITS decision-making is still scarce. The answer to this question clarifies the current state of ITS strategies in agile organisations and will pave the path to answer *how's* and *why's* of choices.

SQ4 *What are the impacts of large scale agile frameworks on the configuration of ITS strategies?*

Finding an answer to SQ3 partially clears the vagueness of the current situation; however, to find out the role of agile frameworks in shaping the current situation, we still need to investigate more. Answers to SQ4 explain the impacts of establishing large-scale agile frameworks on the choices of organisations regarding ITS strategies. This helps us better justify these choices and point out deficiencies in the process of decision-making.

SQ5 *How do agile organisations configure their ITS strategies considering the impacts of agile frameworks?*

By combining answers to SQ3 and SQ4, we can depict the whole picture when answering to SQ5. This will allow us to realise what mechanisms are put in place to better adapt ITS strategies to agile frameworks in large-scale agile organisations and what is still missing in that regard.

1.3 Contributions of This Study

This scientific research project has theoretical as well as empirical contributions. Through an SLR, a map containing dimensions and elements of ITS strategy is defined. Based on this map and a multiple-case study, empirical insights into the state-of-the-practice of ITS strategy design in large-scale organisations are gained. Using the suggestions based on the insights, organisations within the context of this research will be able to structurally modify their ITS strategies. This will enable organisations to go through the process of ITS decision-making more efficiently and define their ITS strategies more in alignment with their agile frameworks and avoid experimentation.

1.4 Thesis Structure

This thesis is intended to present the knowledge base gained through literature study as well as the findings of the multiple-case study. In the next chapter, we will describe the research approach and the methods which are used to answer the questions. Justification of choices plus validity concerns are also addressed in the next chapter. Since different contradictory sourcing views and concepts can be found in literature, in chapter three, essential concepts are defined to avoid ambiguity. Then, the major findings regarding ITS strategies are presented in chapter four. In this chapter, we introduce the configuration-based approach to defining ITS strategy and find an answer to SQ1. Then, through an SLR, we represent the dimensions of an

ITS strategy arrangement to answer SQ2. Furthermore, we explain how identifying these dimensions helps us in classifying the impacts of agile frameworks on ITS strategies. In chapter five, the results of the multiple-case study are presented and findings of the cross-case analysis are discussed. By consolidating the results, the state-of-the-practice of configuring ITS strategies in case organisations is portrayed and the final three questions will be answered. In the discussion chapter, our synthesised findings are interpreted and the relevance of the findings to the problem statement is explained. Finally, the last chapter concludes the thesis and provides suggestions for further research.

Chapter 2

Research Approach

Research is an activity that contributes to the understanding of a phenomenon (Lakatos, 1976). A phenomenon can be a set of behaviours or entities which are found interesting in the eyes of a researcher and understanding is a set of knowledge that helps to predict these behaviours or to define them (Hevner & Chatterjee, 2010). Normally, to gain this knowledge, a set of questions are asked in research and by following a process through which these questions are systematically answered and the knowledge is accumulated, the questions will be answered. This process is called *research methodology or approach* (Hevner & Chatterjee, 2010). Different types of research exist in the world of scientific study. However, if questions to a problem are answered via the creation of some artefacts, the research is called the *design science research* and follows a particular research approach based on a specific framework (Wieringa, 2014; Hevner & Chatterjee, 2010). The research methodology to answer the SQs of this research consists of two major phases: since the first two SQs will ultimately be answered through a designed map which can be used as a scaffold to answer the rest of the SQs, the first part of the methodology lies within the definition of the design science research. The design science research usually follows the approaches of a framework called *the design cycle* and within this framework, multiple research methods are used to address the SQs. The second phase is a multiple case study which seeks to find answers to the remaining SQs based on the qualitative research outline of Bell, Bryman, & Harley, 2018. Table 2.1 relates the research methods of this thesis to the SQs.

Research method	SQ1	SQ2	SQ3	SQ4	SQ5
Literature research	✓				✓
Systematic review		✓			
Multiple-case study			✓	✓	✓

TABLE 2.1: Research methods used to answer the SQs

2.1 The Design Cycle

A design science project iterates over the activities of designing and investigating (Wieringa, 2014). This iteration is the foundation of a particular research approach model with a set of tasks. This model is called *the design cycle* model and consists of three main tasks, namely problem investigation, treatment design, and treatment validation (Wieringa, 2014). The design cycle is a part of a bigger cycle called *the engineering cycle* which also includes the implementation of the treatment in the real world and the evaluation of the implementation. However, the engineering cycle is usually applicable to research projects with a bigger lifespan than this research. Therefore, in this research project, we will mainly follow the design cycle approach. All descriptions of this section are based on Wieringa, 2014.

2.1.1 Terminologies of the Design Cycle

When speaking of the design cycle and applying it to a research project, some terms are repeatedly used which may cause ambiguity if not defined beforehand. These terms and their relationships with this research are explained in this section.

Context

Scientific studies have either a knowledge goal or an improvement goal. If the study is not merely a curiosity-driven research and is designing or implementing something, the goal of the study is considered an improvement goal. The context of this research is the improvement of the process of the current ITS decision-making status within large scale agile organisations. These organisations must utilise information systems intensively and actively outsource some parts of their IT services or projects to be placed within the context of this research.

Artefact

An artefact is something created by a researcher for some practical purpose. In this research, the artefact will be the map of ITS dimensions. This map is generated when the second SQ is answered and will be used as a scaffold to structurally make ITS decisions by assigning values to each dimension. In the second phase of this study, the map also provides the interviewees and the interviewers with a common discourse when performing the interviews.

Treatment

The treatment is the interaction between the artefact and the problem context. In this research, the treatment will be the usage of the map of ITS dimensions to

conduct the second phase of the study (i.e. the multiple-case study). The map will also be used as a structure for the configuration of ITS strategies in large scale agile organisations.

2.1.2 The Design Cycle Tasks

Problem Investigation

In problem investigation, we aim to find the causes and effects of the elements involved in ITS, the reasons and motives of having an ITS strategy and the theoretical framework around the subject of ITS strategy. This stage of the design cycle will be mainly covered in the literature review and theoretical framework sections. The answer to the first SQ which is the result of these studies will also clear up most of the fundamental obscurities. Early on validation, especially within the investigation phase is always helpful and will add to the credibility of the findings (Lauesen, 2002). Therefore, the findings of this stage including the list of ITS strategy dimensions will be shared with experts and a preliminary list of dimensions will be generated based on the identified literature and experts' opinions.

Treatment Design

Through an SLR, all available ITS dimensions are collected and an exhaustive map of ITS dimensions is designed. This map entails all possible dimensions of an ITS strategy that should be configured before the execution of ITS strategy. When categorising and classifying dimensions and their values, –which are sparse in different publications, the resulting map should comply with the MECE principle (Grieger & Ludwig, 2019). It means that the map is a Mutually Exclusive and Collectively Exhaustive (MECE) representation of the preliminary results of the literature review. To adhere to MECE principles, following the heuristic techniques of Chia, 2019, we try to classify the identified dimensions and their values in a way that they cover all possible ITS-related decisions. Furthermore, categories should not have any overlaps. To secure the results, this map is also separately shown to ten experts. These experts are asked to find other dimensions that can be added to the list. They are also asked to point out overlaps between the dimensions. Furthermore, a question is added to the interview guideline to collect interviewees' opinions on the completeness of the map as well.

Treatment Validation

The goal of this stage is to validate the generated map to justify that it would contribute to the process of configuring ITS strategy when used in the real world. The simplest way to validate it is by expert opinion. Experts are used as instruments

to observe by imagining, a validation model of the map. Although this type of validation is the simplest, if executed properly, can be one of the most credible ways of validation (Wieringa, 2014).

In this research, we hold different sessions of validation at this stage to share the findings with experts and ask about their opinions. Based on Wieringa, 2014, in these individual meetings, experts will be properly briefed before the meetings in order to be able to imagine the real context and make reliable predictions about the effects of the artefact in the context. All experts have already been involved at least in one outsourced project and have experience in agile ways of working; therefore they can imagine using the artefact (i.e. the map of ITS dimensions) in that context and assess the artefact. They are also asked to comment on the level of completeness, clearness and applicability of the map.

The expert opinion technique is preferred over the focus group technique in this research since the number and the length of sessions can be higher and experts can focus more and discuss the matters with the researchers directly and face to face. Moreover, this technique complies better with the limitations of this research, especially the ones imposed by COVID-19 regarding the number of participants and the quality of sessions, if held online. A detailed list of such limitations is presented in section 6.2. An overview of the steps of the design cycle is also depicted in Figure 2.1.

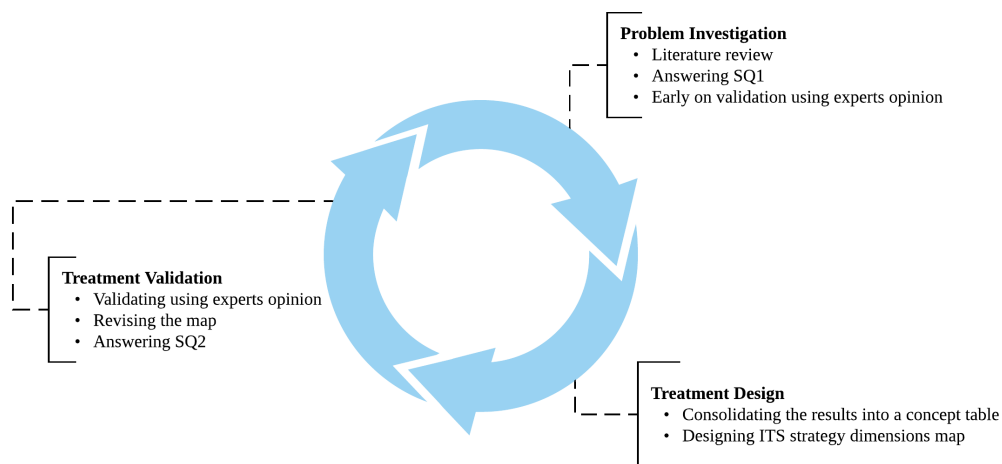


FIGURE 2.1: Adapted design cycle of Wieringa, 2014

2.2 Multiple-Case Study

Case study is a relevant and proper technique if the questions of research seek to explain *how* or *why* some phenomenon happen (Yin, 2017). Case studies can not only help researchers to conduct exploratory research, but they can also be useful

to explain the causes and effects (Yin, 2017). In general, if there is no need to control behavioural events and the focus of the research is on contemporary or ongoing events, a case study would be the best option to answer why's and how's (Yin, 2017; Wohlin et al., 2012). Scholars are also frequently calling for more in-depth and qualitative studies in the domains of sourcing and strategic decision-making (Westphal & Sohal, 2016; Nutt, 2008). In this research, we use the qualitative research outline of Bell, Bryman, & Harley, 2018 alongside the case study approach of Yin, 2017 to structurally conduct the research. These approaches are also applied successfully in Gerster & Dremel, 2019, Poole, 2019 and Nordigården et al., 2014 to perform different multiple-case studies and to be able to better generalise the results of the research and address external validity concerns. All the aforementioned papers are aimed to explore causes and explain why's and how's of different phenomena in the domain of outsourcing and especially ITO. The papers are also very recent and written by credible researchers who are active in academia and industry. The process of our multiple-case study is demonstrated in Figure 2.2. The detailed activities of phases of this process are also available in Appendix A.

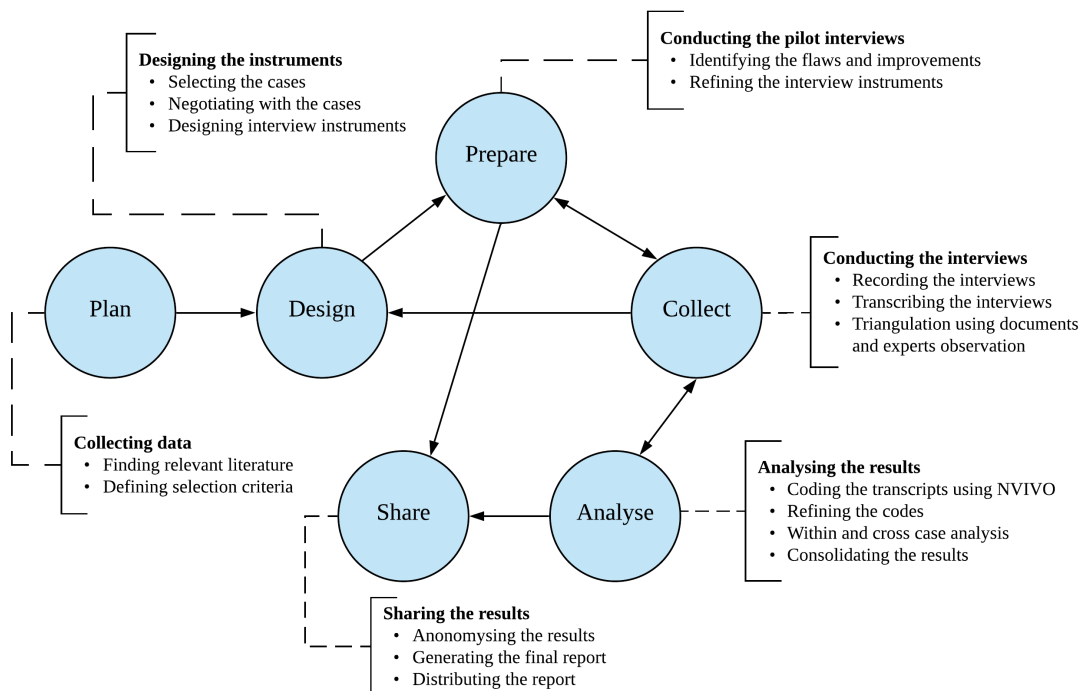


FIGURE 2.2: Adapted case study research approach of Yin, 2017

2.2.1 Planning Semi-Structured Interviews

According to Yin, 2017, case study evidence can come from at least six sources: documents, archival records, interviews, direct observations, participant observation, and physical artefacts. Among these sources, interviews provide us with in-depth insight, a clear image of the perceptions of experts' experience and are one of the most trustworthy and effective sources of data collection (Arsel, 2017). We also make use of the knowledge we gained through answering SQ1 and SQ2 plus the previously designed map of ITS dimensions as an interview instrument to structurally conduct the multiple-case study.

2.2.2 Designing Interviews

We choose a semi-structured interview guideline following the recommendations of Schultze & Avital, 2011 in order to enable interviewees to freely talk about their experience and to improve the effectiveness of theory extraction from interviewee's experience. Open-ended questions of semi-structured interview guidelines help interviewees to share the details of their experience better. The researchers are also able to ask some follow up questions to clarify ambiguities. The interviews are held in English and carried out in face-to-face and individual format. They last around 60 minutes including closing questions and open discussions. Moreover, all interviews are recorded to be transcribed and coded later. The interview protocol is accessible in Appendix C. However, the outbreak of COVID-19 during this research, to some extent impacted the interview guideline. These impacts can be found in Section 2.2.6.

The main validity concerns of interviews are biases due to poorly articulated questions, response bias, inaccuracies due to poor recall and reflexivity due to the influence of the interviewer on the interviewee (Yin, 2017). To mitigate the effects of misaligned questions, the interview protocol and questions are revised by academic experts and reviewed again after a pilot interview. To address the response bias, as Voss, 2010 suggests, follow up meetings are set to increase the validity of the approach in case responses are vague or raise some questions during the process of transcribing or analysis. The poor recall bias will be removed when interviews are recorded and transcribed. However, reflexivity bias mitigation is one of the most difficult tasks during an interview. In order to avoid this bias, questions should be carefully formulated and no leading questions should be found in the interview protocol and the interviewer should also try to be neutral during interviews. These practices are tested and evolved during the pilot interview.

It is necessary to pilot the interviews and have a few test interviews before the actual ones to adjust the questions or settings (especially regarding the length of

interviews and understandability of questions). Pilot interviews are also considered in this research.

Sampling

Purposive sampling is the most common way of selecting the cases of a multiple-case study and also the participants of a set of interviews (Tong, Sainsbury, & Craig, 2007). This involves selecting samples that share particular characteristics and have the potential to provide rich, relevant and diverse data pertinent to the research question. The purposive sampling of this research is done with the help of the experts who already have experience in working with client organisations. Snowballing sampling procedure is also used according to Wieringa, 2014 within a case organisation in order to find more relevant and willing participants.

Case Selection Criteria

Since the focus of this research is on large-scale agile organisations, cases should also be large and agile. Different definitions of large-scale organisations can be found in literature. Dikert, Paasivaara, & Lassenius, 2016 perform an extensive SLR and by collecting all evidence, denote that an agile organisation can be considered large-scale if it is shaped of at least 50 people or six teams (all people do not need to be developers). Besides, since the organisations that follow waterfall or bimodal practices are in nature different from those that are fully agile (Horlach et al., 2017), we only select the organisations that have already utilised and established full-scale agile and preferably the ones that make use of credible large-scale agile frameworks (e.g. SAFe, LeSS, Spotify). Since a full transformation usually takes at least three years to complete (Mersino, 2018), we mainly focus on the organisations that have been practising agile for more than three years. The selected organisations must have experience in outsourcing and must actively be involved in at least one outsourced project. We also filter out the organisations that are not intensively dependent on IT services or projects, so that we can focus solely on the companies to which ITS strategy may be valuable. Furthermore, the cases of the study will be taken based on a convenience sample and the possibility to get access to a proper set of interviewees within each case.

Interviewee Selection Criteria

Su, Levina, & Ross, 2016 point out the main ITS strategy decision-makers of large-scale agile organisations. The key roles are mainly procurement managers and CIOs on higher levels and program or project managers on the mid or lower levels. Plugge & Janssen, 2009 also mention that from the client's perspective, management at the executive level and middle management level that are actively involved in

outsourcing and from the vendor's point of view, people involved in outsourcing arrangements are the key roles. Dibbern et al., 2004 classify all key roles involved in the process of decision-making for sourcing into three groups, namely decision initiators (e.g. IS executives and top managers), decision-makers (e.g. senior executives and IS managers), and decision framers (e.g. IS managers and consultants). Considering the fact that agile practices are commonly bottom-up approaches (Conboy et al., 2010), we can assume that at least two interviews at two different levels within an organisation are required. One of the interviews should be on the intersection of strategic and tactical levels (decision-makers) and the other one can be between the tactical and the operational levels (decision framers and executors). Participants can be senior executives, procurement managers, program or project managers, product owners and team leads. They must be involved in the process of sourcing as well. In addition, if possible, an extra interview with one of the partner vendors of each case is also conducted to better explore the context from a different point of view. From the vendor's side, we select product owners, salespeople, account/client manager, scrum masters and consultants who are involved in sourcing.

2.2.3 Data Collection

As mentioned in the interview consent form, all interviews are recorded and transcribed using speech to text tools. Generated transcripts are then manually revised by the researcher to improve quality.

Triangulation of Data

A major advantage of case study is that the researcher can benefit from different sources of evidence at the same time (Yin, 2017). Therefore, based on the suggestions of Creswell & Poth, 2016, some aspects of triangulation are used in this study as well. At this stage, findings from multi-vocal study are also taken into consideration and if possible, data is backed by the evidence found in literature. Furthermore, available details of some outsourced contracts of the case organisations are found on the internet and are compared with interviewees' responses. The anonymised data set is also shared with multiple experts to collect their remarks based on their own observations.

2.2.4 Data Analysis

Many case studies easily become stalled at the data analysis stage due to the lack of an analytic strategy (Yin, 2017). To successfully choose an analytic strategy, first, we need to rigorously connect the transcripts to our interview questions. Moreover, when analysing the collected data, we use the ground-up strategy of Yin, 2017 in order to come up with theories or patterns without any prior assumptions.

To facilitate the analysis of the transcripts, we use NVIVO which is a Computer-Assisted Qualitative Data Analysis Software (CAQDAS). With CAQDAS, researchers can codify and classify a huge amount of data in qualitative studies. We also make use of two different coding classification techniques in NVIVO, namely initial and emergent. Therefore, categories of codes may change as we analyse more interviews which is a common method of analysis (Saldaña, 2015). All transcripts are read three times and coding is done during the second and the third runs. Following the suggestions of Syed & Nelson, 2015 and to increase the reliability of the coding system, codes that are created in the second run are compared to the ones in the third read and differences are pointed out and resolved. However, both codings are done by the same researcher but in at least two weeks time span between each read. The structure of the coding system for interviews is shown in Appendix D, Figure D.2.

Case Analysis

As suggested by Eisenhardt, 1989, the analysis of the results is divided into two major parts: a within-case analysis and a cross-case analysis. After analysing each interview, a complete picture of the state-of-the-practice of ITS strategy is drawn for each case organisation. Then a cross-case analysis allows us to find patterns between the cases and identify a particular common outcome and similarities among cases (Mathison, 2005). Using visual tools (e.g. demonstration of the results per case in tables) allow us to better pinpoint similarities and differences and maintain transparency during this stage (Mathison, 2005).

2.2.5 Sharing the Results

In the end, the final report is generated, and the results are fully anonymised. A special report is also sent out to the participants of the interviews plus the experts who validated the results.

2.2.6 Effects of COVID-19 on the Multiple-Case Study

The initial interview setting was based on one-hour meetings, however, due to the outbreak of COVID-19, some interviews are conducted in around 30 minutes for the interviewees' convenience. During these interviews, only the most important questions are covered. To compensate for this to some extent, questions regarding the background of the organisation and interviewees are answered through an online search and available online documents as previously explained in Section 2.2.3.

Apart from the duration, the place of the interviews also changed and most of the interviews were required to be done in an online setting. All of these interviews are done on MS Teams platform with webcam and mic. An extra pilot interview is also

conducted to become well prepared for the new setting. The new interview guideline, instruments and recording arrangements are also tested in this pilot interview and adjusted to the new time limit and the new platform.

2.3 Literature Review

A literature review must be thorough and fair to hold a scientific value (Kitchenham, 2004). To achieve an acceptable level of thoroughness and fairness, a systematic review should be considered when performing the literature review. The techniques that we use to perform such a systematic review are based on the suggestions of Kitchenham, 2004 and are explained in this section.

2.3.1 The Literature Review Protocol

The methods that are used during the process of literature review and the steps that are taken should be identified before the review. This will reduce researcher bias. The review protocol of this research including the searching strategy, selection criteria and quality assessment is described in this section.

Inclusion and Exclusion Criteria and Databases

Based on the SQs and the focus of the research, we define two main facets of our inclusion decisions. These main facets are *(IT) (out)sourcing strategy* and *agile*. We do not exclude all non-IT research since the main theories of outsourcing apply to both IT and non-IT contexts. Moreover, in some papers, the general term of sourcing strategy is used for sourcing IT services and non-IT services interchangeably. However, papers that are related to procurement as in the process of buying goods, performing non-IT projects, commodity procurement, supply chain or logistics are excluded. When searching for papers around the subject of agile, we only include the papers that are about (out)sourcing, distributed software development and Business-IT Alignment (B/IA). For instance, papers about transformation or how to become agile are excluded. When studying empirical research, we exclude case studies of smaller organisations since they are mostly concentrated on operational and executive challenges. However, some papers include multiple case studies of both small and large-scale organisations which are included as a source.

Different databases are used in order to collect the related literature. Google Scholar covers most of the famous scientific databases (e.g. ScienceDirect, ACM, IEEE) which is used mainly in this research. As displayed in Figure 2.3, sourcing is a multidisciplinary subject; therefore, it is essential to cover different domains of study such as managerial, business and computer science databases at the same time. In addition to Google Scholar, DBLP which is a computer science literature reference

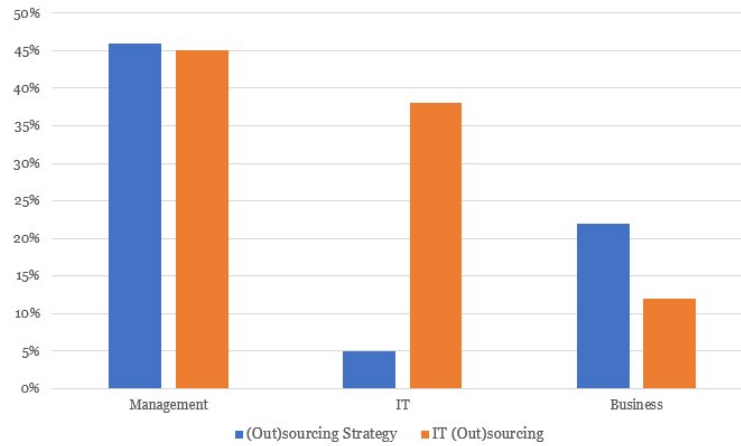


FIGURE 2.3: The distribution of outsourcing related papers based on the scientific domain according to the Web of Knowledge

and the Web of Knowledge (ISI) which provides a comprehensive data citation reference of multiple scientific journals and databases are used as well. DBLP and the Web of Knowledge also provide researchers with practical and analytical tools. The trend of the scientific publications based on the main facets of this study (and their combinations) can be seen in Figures 2.4 and 2.5.

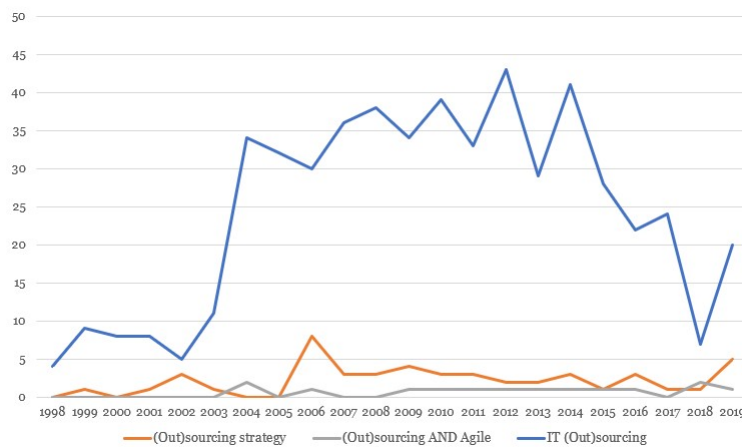


FIGURE 2.4: The trend of publications according to DBLP

Searches

Based on the results of some preliminary searches, we can highlight the main search terms and keywords that are common in the domain of ITS. Moreover, semantic differences can also be realised in the preliminary search. For instance, we find out that in some papers, the term *strategic sourcing* is different from the main target of this research which is *sourcing strategy*. Strategic sourcing entails a wider scope and subjects such as details of contractual settings and relationships with vendors.

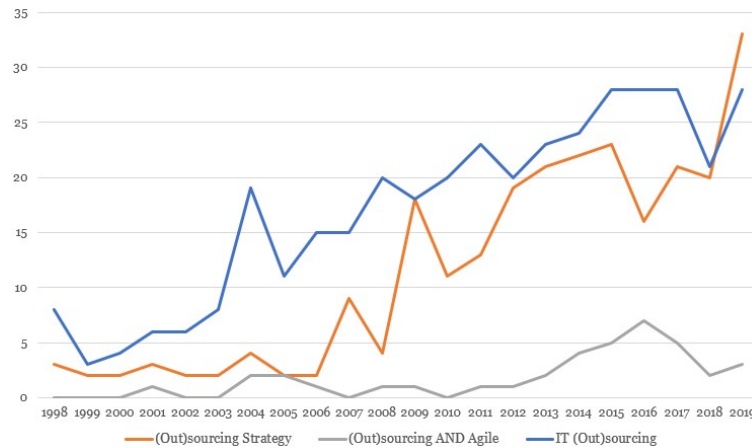


FIGURE 2.5: The trend of publications according to the Web of Knowledge

At this stage, synonyms of the keywords are also detected and tried when searching. The main terms that are used in literature regarding the previously mentioned facets are listed in Table 2.2. We also construct search strings using Boolean's AND's and OR's.

Facets	Keywords
(IT) (out)sourcing strategy	IT sourcing method ; IT sourcing practices ; IT outsourcing methods ; Application development outsourcing strategy ; IT sourcing strategies ; IT procurement strategy ; Long-tail outsourcing strategy ; IT outsourcing configuration ; IT outsourcing best practices
Agile	"Scaled Agile Framework" AND sourcing ; "Large-scale agile" AND "sourcing strategies" ; Agile global outsourced software development ; Outsourcing in agile ; "IT outsourcing configuration" AND "agile" ; Agile outsourcing ; Agile outsourcing practices

TABLE 2.2: Search terms used for different search facets

Study Selection

Apart from the main exclusion criteria which are previously explained, we also filter out some of the included literature. Since none of the studies had their focus directly on the subject of this research, we followed the techniques of Dikert, Paasivaara, & Lassenius, 2016 to exclude irrelevant papers. During the primary study stage, we read abstract sections of the identified papers and if relevant, conclusion sections as well. After that, we assign a score between 1 to 10 to each study. The score goes higher if these sections have a couple of paragraphs about sourcing strategy or

they contain a few sentences about relationships between agile transformation and sourcing strategy or if there is at least one situational factor or ITS dimension mentioned. The selected papers to be further read are mainly among the ones that get a score higher than 5 in the preliminary study. Additionally, we preferably select more recent studies (published after 2000) since the first agile manifesto was published in 2001. However, the published date of some papers on outsourcing theories may go back to the 1980s. Moreover, we try to avoid using grey literature or web journals unless the study is done by credible practitioners, in renowned consulting companies or at prestigious universities. In general, although we try to include all different perspectives in our literature review and keep it as a multi-vocal study, at the same time we pay extra caution to the credibility of the available grey literature. An example of the assessment sheet of the identified literature is demonstrated in Appendix B.

The number of publications in the domain of outsourcing is extremely high. As it is pointed out in the introduction, many contradictory opinions and results can also be found in such elaborated domains. Although it is important for researchers to maintain neutral and study all these different points of views, it is also crucial to give higher weight to the scholars with more publications in the domain, papers with a higher number of citations and studies that are peer-reviewed and published in more credible journals. This approach is followed in this research as well.

Another way of discovering new papers is via using the snowball technique. We include highlighted and frequently cited papers in our preliminary discovered papers. An overview of the study selection process plus the number of publications filtered out in each stage is depicted in Figure 2.6.

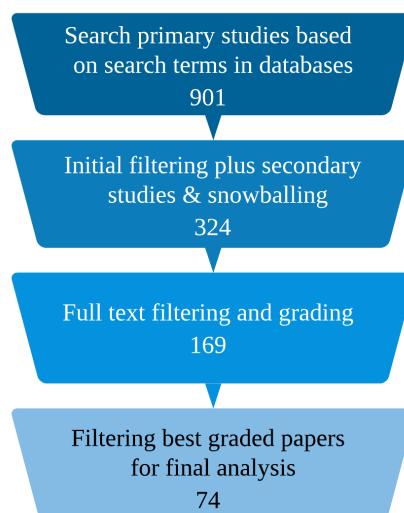


FIGURE 2.6: The study selection process and the number of publications in each stage

Study Analysis

When thoroughly studying the selected literature, we use NVIVO to code phrases just like how we code interview transcripts except at this stage, we use descriptive coding technique alongside simultaneous coding. Descriptive coding summarises the basic topic of a passage of qualitative data in a word or a short phrase (Saldaña, 2015). We also make use of constant comparison analysis suggested by Onwuegbuzie, Leech, & Collins, 2012 to continuously find relationships between newly coded phrases and the older ones and consolidate multiple codes into one theme or category. This approach is extremely helpful when finding factors and dimensions of ITS strategy in a wide range of literature and empirical studies. The coding structure is also presented to experts and some codes (especially the wordings) are revised in order to avoid construct validity issues.

The directed content analysis approach is also used to analyse papers and codes based on the recommendations of Hsieh & Shannon, 2005. This approach is well-aligned with the purpose of our research because we are aiming for extracting knowledge from papers and extend the knowledge and available theories by contributing to it and by defining categories and variables (i.e. ITS dimensions and their elements); therefore we need a structure for analysis. Plus, coding and categorising require continuous refinement as the study goes forward. In the end, synthesising the findings is easier and we only need to follow the patterns of codes and categories and blend them with our rationale. The finalised structure of codes is shown in Appendix D.

2.3.2 Concept Matrix

As previously mentioned, ITS-related publications entail different views and opinions. Hence, terminologies may as well differ from paper to paper which is problematic when coding. Apart from constant comparison analysis and continuously refining all codes, we also take advantage of a special approach called *concept matrix* in order to synthesis the literature review findings (Webster & Watson, 2002). This matrix consists of a set of major papers that are the focus of the literature review and a list of all related concepts that have been found during the literature review process. Then, these concepts will be mapped to some papers in a matrix to find out the gaps in the literature and also to consolidate and refine terminologies.

In this research, a concept matrix is particularly useful when determining the dimensions of ITS strategy. An example of a concept matrix is illustrated in Table 2.3.

Articles	Concepts				
	C1	C2	C3	...	Cn
A1			✓		
A2		✓			✓
...					
Am	✓				

TABLE 2.3: An illustration of a concepts matrix

2.4 Process-Deliverable Diagram

Throughout this study, Process-Deliverable Diagrams (PDDs) are used as a technique to model processes. According to Weerd et al., 2006, a PDD consists of two parts: processes on the left-hand side, which is based on a UML activity diagram, and deliverables on the right-hand side, which is based on a UML class diagram. The activities which are shown in the process-side of the PDD can be either standard activities or complex ones. Complex activities contain sub-activities and can be displayed as open or closed. In closed complex activities which are most of the time used in this research, sub-activities are not fully covered or elaborated upon to maintain the generalisability of the models. In the deliverable-side of the PDD, concepts are shown. Just like the activities, the concepts are also either standard or complex. For the complex concepts, the same rule is applied as the activities. Concepts are connected through association, generalisation, or aggregation relationships. A complete guideline to this notation can be found in Weerd et al., 2006. A visualisation of the PDD elements is also demonstrated in Figure 2.7.

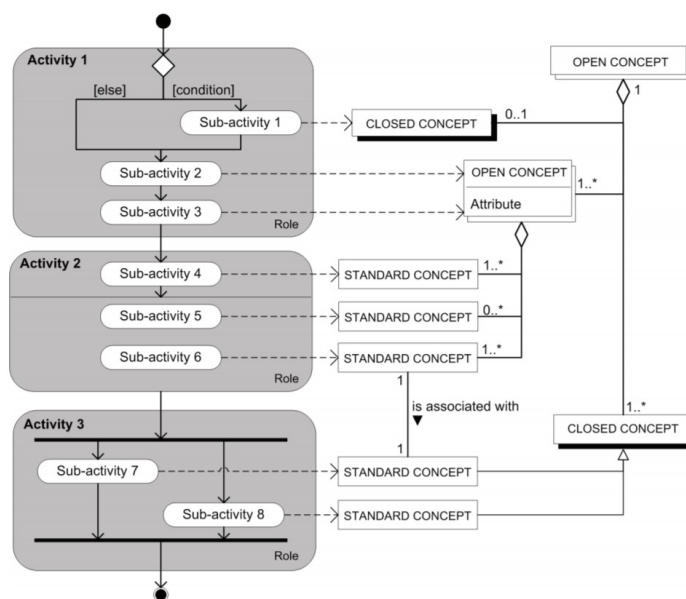


FIGURE 2.7: Key elements of a PDD (Weerd et al., 2006)

Chapter 3

Background Knowledge

This chapter describes the context of sourcing and specifically sourcing of IT services. Definitions of the terms that are used throughout the research are also provided in this chapter. Discussions about the strategic view of ITS and an introduction to large-scale agile frameworks and their widespread impacts on different parts of organisations are also included in this chapter.

3.1 IT Sourcing & IT Outsourcing

In business literature, the term outsourcing refers to the leveraging of resources from outside of an organisation (Ritzer & Lair, 2007). In general terms, outsourcing falls within a class of *make-versus-buy* decisions in an organisation in which managers decide whether to buy a service or to (partially) fulfil it on their own (Loh & Venkatraman, 1992b). Another critical point in outsourcing is that outsourced projects or services should be within the capabilities of company or have been previously carried out within the firm; otherwise, the services are being procured rather than outsourced (Pratap, 2014).

Many different and even sometimes contradicting definitions can be found for ITO in literature (Hodosi & Rusu, 2019). Leimeister, 2010 has merged 25 different definitions of ITO and described ITO as "Handing over to one or more third-party vendors (i.e. legally independent) the provision of some or all of an organisation's IS functions such as, e.g., IT assets, activities, people, processes, or services for a contractually agreed monetary fee and period of time". Loh & Venkatraman, 1992b also refer to ITO as a strategic initiative which must have a *significant* contribution to organisation and third-party vendors should not be a subsidiary company of the main organisation. It is also important to mention again that ITO is more related to transferring rather than procurement (Nordigården et al., 2014; Sousa & Voss, 2007).

Definition 3.1.1 — **IT Outsourcing vs. IT Procurement.** ITO is mainly the transference of an IT activity from internal governance to external control (Nordigården

et al., 2014). Both IT procurement and ITO are about acquiring IT services from a new provider (Hyder, Heston, & Paulk, 2004). However, ITO is more like a conscious choice and strategic decision to contract out the services that *can be* provided in-house, whereas IT procurement is mostly due to *the inability* to internalisation (Gilley & Rasheed, 2000).

Sometimes the term sourcing is used in literature to assert the point that outsourcing can be performed selectively (De Looff, 1998). Meaning that some parts of a particular project or service can be outsourced while the others remain within organisation. In this thesis, we use the term outsourcing and sourcing interchangeably since sourcing in this context is, as described, a consequence of a particular outsourcing decision.

Definition 3.1.2 — IT Sourcing. ITS means choosing an internal or external source to provide IT products or services (De Looff, 1998).

The organisational sourced IT functions are classified into many different categories by different researchers. For instance, Aubert, Rivard, & Patry, 1996 suggest two classifications, namely system operations and software development whereas some other researchers propose a more detailed classification set. Grover, Cheon, & Teng, 1996 divide ITS into application development and maintenance, system operation, networks/telecommunication management, end-user computing support, system planning and management, and purchase of application software. It is also important to differentiate ITO from Business Process Outsourcing (BPO). Although ITO may be required during the process of BPO like when vendors help clients in transitioning from one organisational structure to another one, BPO and ITO are different concepts that may overlap but cannot be used interchangeably (Rouse & Corbitt, 2004). BPO entails a supplier taking over the execution of a client's business processes within functions such as human resource management, finance, and accounting (Lacity, Feeny, & Willcocks, 2003). Nowadays, a lot of outsourced business processes are IT-intensive and that is why the term BPO is sometimes mistakenly used instead of ITO (Rouse & Corbitt, 2004); however, different characteristics of these two lead to different strategic decisions and they should be studied separately.

3.2 ITS Strategy

In order to research on ITS strategies, first, it is required to justify the strategic view of sourcing. During the 1990s and the early 2000s, when ITS was becoming hype, some practitioners tried to bring up some controversial topics and question the strategic view of outsourcing (Mojsilović et al., 2007; Strassmann, 1995; Loh & Venkatraman, 1992a). A famous article by Strassmann, 1995 demonstrated some

statistical analysis to show that *outsourcing is a game for losers*. Strassmann, 1995 claims that the simple reason for outsourcing and in particular ITO is always cost reduction and it only happens in organisations that are on the brink of bankruptcy; therefore ITO does not entail any strategic reasoning. A few years later, Strassmann, 2004 did the same statistical analysis and although he claims that outsourcing is still for loser organisations (however this time with a less significant result), he excludes ITO from common outsourcing and tries to give a strategic point of view to ITO and relates ITO to overall business strategies.

Recent studies show that nowadays, organisations are incentivised to outsource not merely to reduce costs, seek capital inflows, share risks or for other traditional reasons, but also they are outsourcing to gain a competitive edge by focusing more on their core competencies or freeing resources to assign them to main internal tasks (Varajão, Cruz-Cunha, & Glória Fraga, 2017; González, Gascó, & Llopis, 2016; Willcocks, Feeny, & Olson, 2006). The competence-based view of outsourcing and its related views and theories are not something new and have been brought up by previous researchers like Lamb, 1984 and Wernerfelt, 1984. Barney, 1986 believes that firms possess numerous capabilities, but it is the capabilities, that are unique, inimitable, non-substitutable and rare, which are the basis for competitive advantage. However, these sorts of views have just recently become more popular due to a shift in business strategy. Organisations now try to abandon their diversification strategies to focus on core business activities and keep up with their volatile market (Dibbern et al., 2004). As Mahnke, Overby, & Vang, 2005 indicate, companies are also showing interest in having a multi-theoretical perspective and they sometimes merge the capability view with the traditional cost theory. Overall, capability-based views and incentives behind outsourcing as proposed by González, Gascó, & Llopis, 2016 can be called *strategic reasons for outsourcing* and are becoming the main set of drivers for outsourcing. All in all, the decisions related to outsourcing are not merely a procurement anymore and they are considered as strategic decisions (Damanpour, Magelssen, & Walker, 2019; Varajão, Cruz-Cunha, & Glória Fraga, 2017; Simmonds & Gilmour, 2005; Boyne & Walker, 2004). The new age debate is not about whether an ITS is strategic but *how this strategy should be configured* (Gottfredson, Puryear, & Phillips, 2005).

Definition 3.2.1 — Sourcing Strategy. Sourcing strategy can be defined as "the set of scenarios, plans, directives and decisions that dynamically defines and integrates the internal and external resources and services required to continuously fulfil an enterprise's business objectives" (Da Rold, Grigg, & Berg, 2002). In general, when making a choice on how resources are sourced a sourcing strategy is formed (Šmite et al., 2014).

Older empirical studies have focused mainly on sourcing as a transaction, measured it as a two-dimensional choice (make versus buy), and have examined financial attributes, sourcing risks, and contract design (type, complexity, and duration) as the determinants of sourcing while neglecting the organisational behavioural perspective and the internal dimensions of sourcing strategy (Damanpour, Magelssen, & Walker, 2019). Nevertheless, sourcing strategy reflects both internal and external aspects of an organisation (Boyne & Walker, 2004). As described in the previous sections, neglecting the decision-making dimensions and their elements leads to failure and forces organisations to change their sourcing strategy and apply a reverse strategy (Damanpour, Magelssen, & Walker, 2019) in a process which Veltri, Saunders, & Kavan, 2008 refer to as back-sourcing. Back-sourcing itself is not merely another strategic decision but also a costly one which only a few large organisations can afford and the others decide to continue with current practices even though quite dissatisfied with the results (Rouse & Corbitt, 2004).

Example 3.2.1 — Case of Kodak. ITS strategy history is divided into the pre-Kodak and the post-Kodak eras (Loh & Venkatraman, 1992a). The wave of mass outsourcing was initiated by Kodak as an outsourcing leader when it decided to transfer most of its IT-related initiatives to IBM including its 300 IT staff. The same examples by outsourcing pioneers such as Cisco and Sony can also be found in literature (De Quinn, 2000).

Other ITS leaders during dot-com booming era are Xerox, J.P. Morgan, Swiss Bank, and Delta Airlines that shed light on the importance of realising the strategic intent of ITS (Lacity, Khan, & Willcocks, 2009; DiRomauldo & Gurbaxani, 1998).

ITS is becoming a crucial strategic decision as larger companies try to catch up with flexible and fast-forward markets. Studies have shown the significant effects of ITS decisions on the business strategies of large organisations (Lacity, Khan, & Willcocks, 2009). ITS decisions can even affect the stock prices of such companies and markets can react to changes in the organisation's ITS strategy (Oh, Gallivan, & Kim, 2006; Agrawal, Kishore, & Rao, 2006). In addition, since there are more variables involved in decision making, ITS is more complicated than any other types of sourcing (Patil & Wongsurawat, 2015). Strategising ITS and spending enough time and effort on the architecture of the sourcing process and decision-making dimensions before executing ITS enable organisations to heavily cut the cost and effort of sourcing and reduce the chance of failure significantly (Cullen, Seddon, & Willcocks, 2005a).

So far, we discussed the importance of ITS as a strategic decision in organisations. The new wave of agile transformation at enterprise scale has various effects on different levels of decision-making including ITS decision-making (Gerster & Dremel, 2019). Therefore, in the following section, a short explanation of agile features and large-scale agile frameworks will be provided. This will pave the way for further

analysis of relationships between agile frameworks and ITS in the next chapter.

3.3 Agile Software Development

In the last few decades, three progressive major bodies of knowledge in software development have been provided. These concepts are agile development, systems thinking, and lean product development (Knaster & Leffingwell, 2018). Agility, or the ability to rapidly adapt to volatile requirements, is a cornerstone of Agile Software Development (ASD). The concept of agility is in strong contrast with the traditional plan-driven approach of software development (Hoda et al., 2017).

Traditional software development projects were accomplished through application of 47 processes which were then categorised into five phases (i.e., initiating, planning, executing, monitoring, controlling, and closing) (Rose, 2013). This methodology is based on a process-oriented approach whereas the agile approach is based on values and principles (Canty, 2015). Market pressures over the past twenty years have forced companies into a faster, nimbler software release mindset. It used to be the norm that companies delivered software after a year of development and tested only to find out that what was delivered was not what customers wanted, or needed. This procedure is not acceptable in today's world (Daitan, 2015). Today, multiple software releases even within one day are not something unusual. Therefore, new practices need to be put in place. ASD is the gathering of iterative and incremental software development methodologies where requirements and solutions develop through cooperation between self-managing cross-working groups (Shrivastava et al., 2010; Fowler, 2000).

Definition 3.3.1 — Agile Software Development. The agile way of software development encourages an iterative approach which focuses heavily on managing human interactions rather than processes and tools (Alliance, 2017).

Agile has a few major characteristics (i.e. responsiveness, flexibility, speed, leanness, and learning) and follows only four major values and is based on 12 principles; therefore it is faster and more responsive to changes than traditional process-driven approaches (Rose, 2013). The relationship between these features can be seen in Figure 3.1.

Definition 3.3.2 — Agile characteristics and modern ITS. Flexibility and speed are two important characteristics of ASD which have instant effects on different phases of ITS, especially on contracting (Gerster & Dremel, 2019). In modern ITS contracting, it is common to insist that the first fully functional increment of the product must be delivered in around four weeks (Gerster & Dremel, 2019).

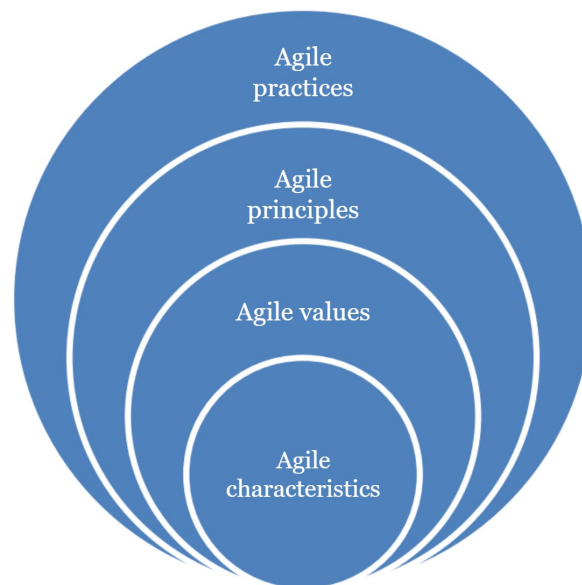


FIGURE 3.1: Conceptual relationship between agile features (Rosing, Scheel, & Gill, 2015)

3.3.1 Agile Practices

Agile practices or as some scholars say, agile methods are prescribed approaches which adhere to the previously explained features of ASD (i.e. agile characteristics, values, and principles) (Rosing, Scheel, & Gill, 2015). These prescribed approaches are constantly tailored to suit the situation at hand and satisfy team needs; therefore, inevitably, different deviations of such practices have emerged during the past decades (Wang, Conboy, & Pikkarainen, 2012). Currently, the most popular agile practices are Scrum (Schwaber & Beedle, 2002) and XP (Beck, 2000). Since all agile practices follow the same principles, their scope is only slightly different from each other (Rosing, Scheel, & Gill, 2015).

3.3.2 Large-scale Agile Frameworks

Traditional agile practices are designed for a single or a few development teams and are not meant to become scalable (Boehm & Turner, 2005). These methods are mostly applicable to smaller and co-located teams (Paasivaara, 2017). Nowadays, all enterprises must learn how to adapt swiftly to changes using agile concepts, even for the ones that are not necessarily IT or software companies (Rosing, Scheel, & Gill, 2015). However, utilising ASD methods in large organisations is complex and challenging and requires a special form of coordination (Dyba & Dingsoyr, 2009). These challenges have led to the emergence of multiple extended derivations of traditional agile methods such as Scrum of Scrums (SoS), Scaled Agile Framework

(SAFe), Large-Scale Scrum (LeSS), Spotify, etc. under the term of large-scale agile frameworks (Kalenda, Hyna, & Rossi, 2018). These frameworks are more complicated than simple agile methods and target larger organisations. They also differ in the level of complexity, the agile methods that they use and the type of organisations they support. Among all these frameworks, SAFe is arguably the predominant one and supports larger groups of teams (50-120 people in each release train) (Putta, Paasivaara, & Lassenius, 2018; Kalenda, Hyna, & Rossi, 2018).

Definition 3.3.3 — Large-Scale. When scaling up, the interpretation of large-scale becomes important; however, this definition varies from paper to paper. The reported minimum number of staff ranges from 50 (Elshamy & Elssamadisy, 2006; Fowler, Highsmith, et al., 2001) to 300 (Moore & Spens, 2008). Based on a comprehensive SLR by Dikert, Paasivaara, & Lassenius, 2016, an agile organisation is considered large if it has more than 50 people or six agile teams.

Launching large-scale agile frameworks requires various changes in an organisation and publications usually explain the basics and less guidance can be found on how to handle particular situations (Conboy & Carroll, 2019). Agile transformation at enterprise scale is a strategic decision and affects other organisational strategies as well (Heikkilä et al., 2017). Sourcing strategies within these frameworks are no exception. For instance, the main reference of SAFe explicitly bewares practitioners of extreme challenges of sourcing (Knaster & Leffingwell, 2018).

Definition 3.3.4 — SAFe. SAFe is a framework and a collection of best practices of ASD (Kalenda, Hyna, & Rossi, 2018). Significantly large organisations such as Intel, HP and Cisco have successfully adopted SAFe during the past few years (Larman, 2010). An outstanding feature of SAFe is its ability to be applied in organisations with less than 100 staff as well as larger organisations with thousands of people. SAFe achieves this flexibility by suggesting different extensions and layers on top of its core functionalities.

As Gerster & Dremel, 2019 point out, it is important to have a common understanding of agile methodologies when studying relationships between agility and ITS; however, this understanding is not the largest hurdle. In the next chapter, we delve into these relationships and explore the impacts of agile frameworks on ITS strategies.

3.4 Takeaways

This chapter started by explaining the main definitions which are used frequently in this research, including *IT Sourcing*, *IT Outsourcing*, *IT Procurement*, and *Sourcing Strategy*. Different perspectives were also brought up to justify that contemporary sourcing decisions are strategic decisions that follow the principles of strategic decision-making. Therefore, decisions regarding sourcing are not merely limited to find an answer to the question *whether a service should be outsourced or not*, rather these decisions also seek to find an answer to *how to effectively source a service*. As sourcing decisions get more complex and strategic, it is required to determine and classify these decisions and the dimensions to these decisions to enable decision-makers to structurally define complicated sourcing strategies.

The dimensions of ITS decisions and the way organisations make these decisions change through time due to disruptions. Agile transformation at enterprise scale is one of these disruptions that leaves significant impacts on different strategic decisions of an organisation.

In the following chapter, after introducing the configuration-based approach to ITS decision-making, we try to classify all of the dimensions that are involved in the process of configuring ITS strategy. Then we try to portray a holistic view of the process of this configuration and decision-making.

Chapter 4

Configuring IT Sourcing Strategies

Different theories have been proposed by researchers in order to justify sourcing decisions. These theories can be classified into three major categories, namely economic theories, strategic theories and social theories (Rajaeian, Cater-Steel, & Lane, 2017). Although most companies use a multi-theoretical approach to make ITS related decisions, many recent scholars believe that contemporary ITS decisions mainly follow a strategic path (Damanpour, Magelssen, & Walker, 2019; Varajão, Cruz-Cunha, & Glória Fraga, 2017; Simmonds & Gilmour, 2005; Boyne & Walker, 2004). This strategic viewpoint is mostly based on the idea of gaining competitive advantage by focusing more on core competencies which are critical for the business and outsourcing the rest of IT services (Varajão, Cruz-Cunha, & Glória Fraga, 2017; González, Gascó, & Llopis, 2016; Willcocks, Feeny, & Olson, 2006). Although research shows that combining multiple ITS theories may lead to a better result (Nordigården et al., 2014), the focus of this study will be mainly on strategic theories since this theory is less elaborate in literature.

In competency-based theories such as Extended Resource-Based View (ERBV) theory, the criticality of the project or the service determines the degree of outsourcing. As an example, higher criticality motivates organisations to avoid total outsourcing and encourages them to use selective outsourcing or total insourcing. The relationship between business criticality of services and the degree of outsourcing is shown in Figure 4.1.



FIGURE 4.1: Strategic sourcing spectrum in competency-based theories.

Definition 4.0.1 — Core Competency. Core competency is a means which provides organisations with potential access to different markets. A core competency should significantly contribute to users'/customers' experience and satisfaction and should be difficult to imitate by competitors (Prahalad & Hamel, 1997).

The degree of outsourcing is not the only dimension of an IT sourcing strategy. In theory, sourcing is often portrayed merely as a make versus buy decision; however, in reality, a variety of sourcing dimensions exists which needs to be configured properly in order to shape the ultimate IT sourcing strategy (Lacity & Hirschheim, 1995).

4.1 Configuration-based and Contingency Perspectives

When designing a plan or strategy, especially in IT-related projects, many different situational factors and uncertainties are involved which should be realised to mitigate the risks of failure (Clarke & O'Connor, 2012). However, in literature, it is observed that ITS is not homogeneous and may lead to completely different results even when all situational factors (e.g. organisational size, agility level, industry) are the same in different cases (Cullen & Seddon, 2004). Different contradictory reasons can be found to justify the failures of ITS projects in literature. The reason can be either the difference in measuring *success* (Lee, Miranda, & Kim, 2004; Dibbern et al., 2004) or a mistake to treat all ITS dimensions the same (Cullen, Seddon, & Willcocks, 2005b). Apart from ITS situational factors, ITS also consists of a variety of choices which result in a wide diversity of ITS strategies in different organisations (Cullen, Seddon, & Willcocks, 2005b; Dibbern et al., 2004; Marcolin & McLellan, 1998). This multi-dimensional nature of ITS can be seen in other strategic decisions as well (e.g. business strategy). Depending on the extent of emphasis on situational factors or on dimensions when defining an ITS strategy, two different approaches have been proposed by scholars, namely contingency and configuration-based approaches.

Definition 4.1.1 — Contingency Perspective. The contingency perspective aims to study relationships among structural, technological, and environmental variables in order to understand organisational functioning and adaptation (Khandwalla, 1972).

In the contingency approach, decisions are made based on situational factors (Meyer, Tsui, & Hinings, 1993). In the context of ITS, the typical situational factors that are mentioned frequently in many publications are *the firm*, *the industry* and *the market characteristics* (Lacity, Khan, & Willcocks, 2009; Lee, Miranda, & Kim, 2004). These factors can be classified into two major categories, namely internal factors and

external factors. The goal of contingency is to limit the multi-dimensionality of environment by reducing the variety of these situational factors (Meyer, Tsui, & Hinings, 1993). Therefore, in the contingency approach, the strategic view is narrowed down to a specific organisation and the focus is more on the situational factors involved in that particular case. For instance, Dutta, Gwebu, & Wang, 2017 focus more on the effects of digital maturity and the size of organisations on the scope and the location of sourced projects. Nie & Hammouda, 2017 and Sobol & Apte, 1995 study the impacts of the size of IT departments on the scope of sourced projects. Schoeman et al., 2008 and Fjermestad & Saitta, 2005 have collected a set of various internal or external situational factors that may have impacts on ITS strategy design. Other similar research can also be found in literature which advocates the contingency perspective.

On the other hand, researchers like Miller, 1981 assume that the traditional contingency approach promotes the notion of oversimplifying things by removing the dimensions of decision-making and focusing on a few situational factors. In the configuration-based approach, it is tried to concentrate more on the multi-dimensional nature of phenomena instead of solely focusing on the situational factors (Meyer, Tsui, & Hinings, 1993). In general, while the contingency approach focuses mainly on the relationship between the context and the organisation, the configuration-based approach focuses more on the dimensions of the decision and tries to find a fit between all of the dimensions that are involved in decision-making (Khandwalla, 1972). Configuring and sorting things into homogeneous groups allow decision-makers to systematically interpret the reality and reduce complexity (Leimeister, 2010; Kluge, 2000). Various disparate and mixed up dimensions of ITS strategy can be found in literature. The dimensions that are related to the duration of ITS contracts (Lacity, Khan, & Willcocks, 2009), the ones that are related to the location of sourced projects (Gerbl et al., 2015) and the extent to which IT functions are outsourced (Hodosi & Rusu, 2019) are a few examples of these scattered dimensions. The configuration-based approach facilitates clustering and arranging these numerous dimensions to enable researchers and decision-makers to systematically study them (Meyer, Tsui, & Hinings, 1993).

Definition 4.1.2 — Configuration-based Perspective. The configuration-based perspective views organisational strategy as coherent clusters of characteristics and behaviours (Mintzberg, Lampel, et al., 1999). Therefore, the dimensions of strategic decisions from this perspective should be coherent or congruent. This congruence or *fit* results in the overall efficiency of the strategy (Lee et al., 2003).

The configuration-based view is like a zoomed-out view of ITS strategy. This implies that in the configuration-based approach, the details of arrangements will not

be the major concern of decision-makers. Therefore, the details of ITS contracts, Service Level Agreements (SLA), governance arrangements, etc will not be included in this high-level view (Cullen & Seddon, 2004). In the configuration-based approach, situational factors are of less importance. Instead, different dimensions that shape an ITS decision must be realised and ITS strategies should be designed by configuring these dimensions.

Definition 4.1.3 — ITS Strategy Configuration. As Cullen, Seddon, & Willcocks, 2005b denote, ITS strategy configuration is "a high-level description of the set of choices the organisation makes in crafting its ITS arrangements". According to Alborz, Seddon, & Scheepers, 2004, sourcing configuration is the way an organisation prepares its sourcing arrangement following other business decisions.

With all that being said, having a configuration-based perspective allows researchers and practitioners to look at the enormous amount of available ITS case studies and find patterns in management systems without emphasising on narrowly drawn sets of organisational properties. Researchers like Lee, Miranda, & Kim, 2004 have also quantitatively pointed out that configuration-based perspectives are more effective when defining fitting ITS strategies than contingency perspectives.

4.2 Key Elements of ITS Strategy Configuration

Different scholars have tried to collect the key elements that play a role in the process of strategic decision-making. Since configuration of ITS strategies is a form of strategic decision-making, it is important to study these elements and their relationship. Rajagopalan et al., 1997 introduce three main elements that are involved when configuring a strategy, namely content, context and the process. Bell, Bromiley, & Bryson, 1997 expand each element and explain the interrelationship between these elements through Strategic Decision-Making (SDM) model. Later, Westphal & Sohal, 2016 map these elements to the domain of sourcing and indicate that the model can be applied to ITS decision-making as well. In this case, the context would be the situational or contextual factors that are involved in ITS decision-making. The content would be the substances of the decision and the choices that should be made in order to reach the outcome (i.e. ITS strategy). Lee et al., 2003 call these choices, the dimensions of ITS strategy. Finally, the process would be a set of activities to properly configure the dimensions, based on the situational factors and define the ITS strategy. In this section, these elements are explained separately. The SDM model and the influence of its elements on each other are also shown in Figure 4.2.

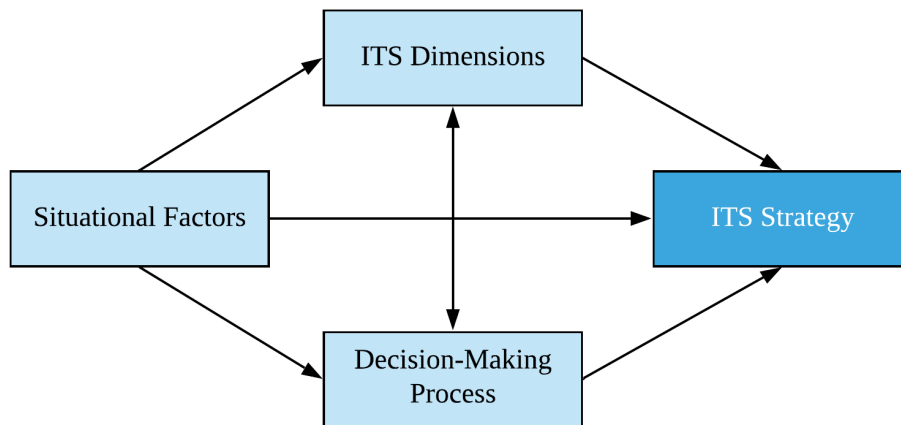


FIGURE 4.2: SDM model of ITS strategies. Inspired by Westphal & Sohal, 2016 and Bell, Bromiley, & Bryson, 1997

4.2.1 Situational Factors of ITS

When designing a plan or a strategy, especially in IT-related projects, many different contextual factors and uncertainties are involved which should be realised to mitigate the risks of failure (Clarke & O'Connor, 2012). Since the context in which an organisation is operating shapes the paradigm of all strategies, an ITS strategy must likewise be well aligned with internal and external environments of the organisation (Schoeman et al., 2008). Understanding the values of each of these variables is important to understand the context and design a strategy accordingly.

Definition 4.2.1 — ITS Strategy Situational Factor. The situational factors are independent variables in the process of ITS strategy decision-making. They clarify the internal and external status of the organisation and the ecosystem in which the organisation operates.

Although in the configuration-based perspective, the focus is mainly on the configuration of the decision, the situational factors must be identified as well in order to select the most effective configuration for the situation at hand. There are various contextual factors involved in ITS decision-making. Nonetheless, for the purpose of this study, we have selected *the size of organisation* and *the maturity of agile transformation* as two situational factors that are similar among cases. Both of these attributes have immense impacts on different strategic decisions including ITS strategies and should be considered when comparing cases (Gerster & Dremel, 2019; Arbogast, Larman, & Vodde, 2012; Lacity, Khan, & Willcocks, 2009).

4.2.2 Dimensions of ITS Strategy

ITS decisions are made based on the ITS situational factors and considering the other strategies of organisation (e.g. business or IT strategies). However, there are also different elements that constitute the ultimate ITS decision. ITS decisions consist of a variety of dimensions which result in a wide diversity of ITS strategies in different organisations (Cullen, Seddon, & Willcocks, 2005b; Dibbern et al., 2004; Marcolin & McLellan, 1998). Failing in realising all dimensions involved in the ITS decision-making process and looking at ITS strategy as a simple make-or-buy decision is a major pain point of ITS (Mahnke, Overby, & Vang, 2005). These dimensions are the aspects that if realised and configured properly, enable organisations to define a fitting ITS strategy which ultimately leads to sourcing success (Lee, Miranda, & Kim, 2004).

Definition 4.2.2 — Dimension of ITS Strategy. ITS strategy dimension, as a term, was first coined by Lee et al., 2003. ITS strategy dimensions are the variables that should be realised and defined to explain *how* high-level ITS strategies should be structured and configured. In other words, if we assume that the situational factors are the independent variables of an ITS decision-making process, the dimensions would be the dependent ones.

The multi-dimensionality of ITS configurations has been mentioned in different research before the advent of the configuration-based ITS. For instance, based on Fitzgerald & Willcocks, 1994, the amount of budget dedicated to external vendors to fulfil IT services can be considered as an ITS indicator. Later, Lacity & Hirschheim, 1995 translated this indicator into a major ITS dimension, namely *the degree of outsourcing* and proposed three terms of *total outsourcing*, *total insourcing* and *selective sourcing* as the attributes to this dimension. In other words, for instance, organisations that spend more than 80% of their IT budget on outsourcing, have in fact chosen a total outsourcing attribute within this particular dimension.

Example 4.2.1 — The importance of properly comprehending ITS dimensions. The strong interrelationship between the situational factors and the ITS dimensions as Quinn & Hilmer, 1994 state, motivates us not to focus solely on a specific factor or element, rather look at ITS strategy as an integrated and comprehensive set of arrangements. Sometimes, scholars refer to a specific arrangement of a particular set of ITS dimensions as a complete ITS strategy. For instance, Ågerfalk & Fitzgerald, 2008, denote ITS strategy as a selection between far-sourcing and near-sourcing. As another example, Lee, Miranda, & Kim, 2004 refer to ITS strategy as a decision

of contractual arrangements and client-vendor relationship. Since some dimensions are more tangible or easier to arrange, practitioners and researchers have tried to assign some common terms such as co-sourcing, value-added sourcing, far-sourcing, etc to these specific ITS strategy arrangements. As another example, in a far-sourcing arrangement, one dimension of ITS is more important than the others and that dimension is *the location of outsourcing* which is in this case, set to "far". However, one must always be cautious about neglecting or downplaying the other dimensions and that is why in the configuration-based approach, we should take the complete set of ITS dimensions into account.

Cullen & Seddon, 2004 try to collect and classify all available ITS dimensions into seven groups, namely *scope, suppliers, financial scale, pricing framework, contract duration, resource ownership* and *commercial relationship*. This classification is later revised by different researchers like Jouanne-Diedrich, 2004, Schoeman et al., 2008, Leimeister, 2010 and Demirbas, Gewald, & Moos, 2018 who follow the same approach. Moreover, a number of publications also exist which are not exactly following the configuration-based approach; however, they bring up new dimensions within their context. Instead of utilising a holistic approach, they focus on one or two particular dimensions and expand their attributes or they mix up different categories of dimensions. For example, Babin & Saunderson, 2016 and Simmonds & Gilmour, 2005 elaborate on the governance of sourcing, Stettina & Hörz, 2015 expand pricing frameworks and Fjermestad & Saitta, 2005 provide an ITS framework which is a blend of ITS dimensions, incentives, situational factors and success measures of sourcing. Another consideration regarding the ITS-related publications is that some of the dimensions defined by researchers may be more relevant to the executive arrangements of ITS rather than the ITS decision-making process. These so-called dimensions should not be confused with ITS dimensions since they are not looking at the big picture of ITS strategy. According to Koo et al., 2019, these ITS executive considerations should be determined after the ITS strategy is configured.

Map of ITS Strategy Dimensions

Previously, scholars like Lacity, Khan, & Willcocks, 2009 have already extracted some of the main ITS dimensions from the extant literature; however, since the focus of our study is on realising how *agile organisations* arrange these dimensions, we require a comprehensive, exhaustive and up-to-date list. During our studies, we figured out that some of the available lists of dimensions are not exhaustive and some have mixed up different categories of dimensions. Moreover, some scholars have delved into one particular dimension and extended the attributes within that dimension but these studies are sometimes neglected when collecting the list of ITS dimensions; hence, we need to come up with a new and up-to-date list. The list

of the available ITS dimensions which is presented in this section is the result of an SLR. This list is then validated by a group of experts and revised based on their practical experience. The list of the papers can be seen in Appendix E. The papers in this list are chosen among the final best-graded papers of this study. These papers either classify ITS strategy dimensions or elaborate on a few particular dimensions and their attributes. Different naming is proposed for each dimension and attributes within each dimension in the focal papers; however, we have tried to assign the most frequent titles to the dimensions and their attributes. There are also some dimensions that are mentioned only in a very few papers but are not included in this list. For instance, *the chronology of sourcing* is only mentioned in Jouanne-Diedrich, 2004 which is not included in our list of dimensions. Furthermore, various attributes are suggested for some of the dimensions but we have selected the most frequent attributes and explained them in Table 4.1. For instance, there are many different hybrids or innovative pricing models available in the extant literature but we mention the most common ones.

The descriptions of the extracted list of ITS dimensions is shown in Table 4.1. Following by a complete concept matrix of the appearances of each dimension in the focal scientific papers in Table 4.2.

Dimension	Description	Options	Code
Vendor construction	The number of vendors that the client is dealing with	Single vendor, multi vendor	C1
Degree of outsourcing	The percentage of the IT budget allocated to outsourcing	Total or comprehensive outsourcing in which significant part of a project is outsourced, selective/quasi outsourcing in which a part of a project or specific service that is part of a project is outsourced and total insourcing.	C2
Duration	The average duration of the contract between the client and the vendor(s)	Long (>1 year), Mid (6-12 months), Short (<6 months), Rollover (Extended continuously)	C3
Ownership (IP)	Describes which party controls and/or owns the various service delivery resources (especially IP and assets)	Client owns IP, Joint Venture, Vendor owns IP	C4
Pricing model	The framework of billing	Fixed price, Time & Material, Payment per sprint, Two-phase	C5

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Table 4.1 – continued from previous page

Dimension	Description	Options	Code
Relational governance	Unlike contractual relationship, this type of relationship is based on trust, bonds and ties between parties	Transactional (weak bonds) and partnership (strong bonds)	C6
Scope	Scope of outsourcing and functions/services which are outsourced	IT infrastructure (network, automation, etc), information systems/applications (system engineering, monitor, maintenance, change applications), information supply (functional management, support, coordination, etc)	C7
Exit plan	A plan for reversing the outsourcing partnership drafted during the early stages of each project	Backsource, switch vendor, kill the project, use as-is	C8
Location	The location of vendor(s) and its distance with client	On-site, onshore, nearshore, offshore	C9
Intention	The purpose of sourcing	Cost reduction, improvement of service quality, innovation, access to skill, focus on core capabilities	C10
Sourcing model	The level of team governance and responsibility distribution between client and vendor	Staff augmentation or unmanaged capacity is used when individuals are sourced without steering from vendor's side. Managed capacity means that the client requests a certain quantity of person-days who are partially managed by the vendor. Managed services are when a vendor takes complete end-to-end responsibility.	C11

TABLE 4.1: List of ITS dimensions

Article	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Demirbas, Gewald, & Moos, 2018	×	×	×		×	×	×		×	×	
Hopwood, 2018	×		×	×		×		×	×	×	×
Cullen, Seddon, & Willcocks, 2005a	×	×	×	×	×	×	×				×
Leimeister, 2010	×	×		×			×	×			×

Continued on next page

Table 4.2 – continued from previous page

Article	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Schoeman et al., 2008	×	×	×	×	×		×				
Könning, Westner, & Strahringer, 2018	×		×			×	×		×		×
Derksen, 2013	×		×		×	×	×			×	
Fitzgerald et al., 2017						×	×	×	×	×	
Bary, 2018	×	×	×	×					×		
Lacity, Khan, & Willcocks, 2009		×	×		×	×				×	
Al-Ahmad & Al-Oqaili, 2013	×					×		×	×	×	
Hyder, Heston, & Paulk, 2004	×	×								×	×
Lee et al., 2003	×	×	×	×							
Lee, Miranda, & Kim, 2004		×	×	×		×					
Dibbern et al., 2004	×	×		×							×
Jouanne-Diedrich, 2004	×	×		×					×		
Hodosi & Rusu, 2019	×	×									×
Gerbl et al., 2015				×		×			×		
Gerster, Dremel, & Kelker, 2018			×			×				×	
Dutta, Gwebu, & Wang, 2017	×	×							×		
Mahnke, Overby, & Vang, 2005	×				×					×	
Su, Levina, & Ross, 2016	×									×	
Aris, Arshad, & Mohamed, 2008	×					×					
Pratap, 2014	×					×					

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Table 4.2 – continued from previous page

Article	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Simmonds & Gilmour, 2005						×				×	
Varajão, Cruz-Cunha, & Glória Fraga, 2017									×	×	
Nordigården et al., 2014		×								×	
Fjermestad & Saitta, 2005										×	
Ali & Green, 2012						×					
Ågerfalk & Fitzgerald, 2008									×		
Pries-Heje & Pries-Heje, 2014					×						
Babin & Saunderson, 2016						×					
Count	19	14	11	10	7	16	7	4	11	14	7

TABLE 4.2: Concept matrix of the ITS dimensions in scientific papers

Among the extracted dimensions, *intention* and *scope* are in essence different since they can be arranged even before the whole process of decision-making begins. The intention of outsourcing is usually determined previously when general sourcing or business strategies are defined based on the available outsourcing theories (Nordigården et al., 2014). The scope is also usually identified when the business case is outlined. However, both of these dimensions should be fully recognised and properly set to efficiently define ITS strategies.

Revised Map of ITS Strategy Dimensions

In order to better demonstrate all of the dimensions, we present the map of ITS dimensions in Figure 4.3 which is inspired by the way Jouanne-Diedrich, 2004 presented his dimensions list. The demonstrated map of ITS dimensions is also reviewed and slightly revised by a group of 10 experts. Among the previously identified dimensions, *exit plan* was removed since it was the least mentioned dimension in our literature list and according to the experts' suggestions, a proper exit plan is usually drawn for a specific project and when goals are not met; therefore, this plan may vary significantly from project to project and cannot be predicted at the beginning of a project.

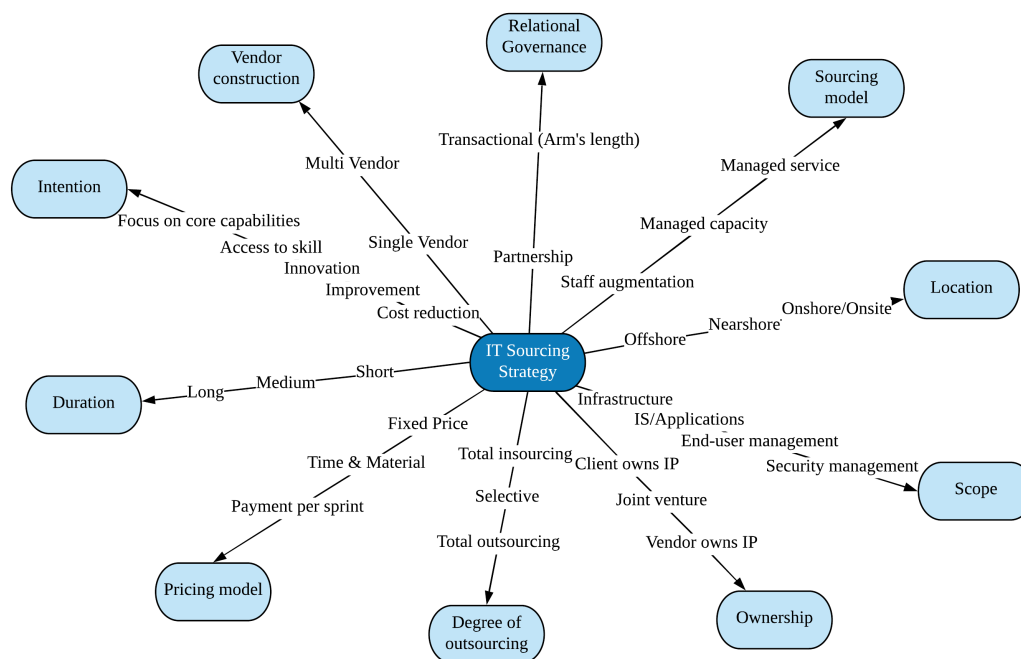


FIGURE 4.3: Finalised ITS strategy dimensions and their corresponding options

4.2.3 ITS Process

Alborz, Seddon, & Scheepers, 2004 divide the ITS process into two main stages namely, configuration stage and operationalisation stage. This separation which is also supported by other researchers like Cullen & Seddon, 2004 and Marchewka & Oruganti, 2013 is based on the thought that ITS should be well-arranged before the actual sourced project is initiated to improve the chance of success. It also implies that sourcing strategies should be configured before execution which is expected when following the configuration-based approach.

There are very few research that study ITS as a plan and try to systematically find a method to ITS process. As an example, via an SLR, Lacity, Khan, & Willcocks, 2009 define three major steps in ITS, namely *ITS decision-making*, *ITS contractual governance* and *ITS relational governance*. Accordingly, Aris, Arshad, & Mohamed, 2008 propose a framework with four main steps to a successful ITS: *analysis of decision*, *selection of vendor*, *contract management* and *continuous monitoring*. Sarfraz et al., 2016 classify the activities which should be done after an ITS strategy is set, into four categories of *negotiation and decision*, *implementation*, *optimisation and renegotiation* and finally *assessment*. There are also some researchers that divide ITS into three main phases of *strategic*, *pre-signature* and *post-signature* (Hopwood, 2018; Al-Ahmad & Al-Oqaili, 2013; Simmonds & Gilmour, 2005). Most of these researchers assume that the strategic part of ITS is the first phase in which sourcing decisions are made and

the configuration of sourcing is set up. This phase is followed by a long journey of vendor selection, negotiation and service confirmation. In the end, the actual service will be implemented, monitored and evaluated.

By consolidating the aforementioned findings, we can represent a holistic model of how an ITS strategy is set up and put into the action. Figure 4.4 shows the main stages of ITS. Details of the activities and concepts are also explained in Appendix F. During the decision-making phase, ITS configuration is arranged which enables decision-makers to figure out what types of vendors they are looking for. Decision-making phase is also the main focus of this study since ITS strategies are configured in this phase. In the contracting phase, organisations try to communicate with potential vendors, set some meetings, analyse offers and sign a contract. In the end, when executing the project, continuous monitoring and collaboration allow organisations to evaluate the performance of vendors, steer the sourcing process and maintain a productive relationship with vendors.

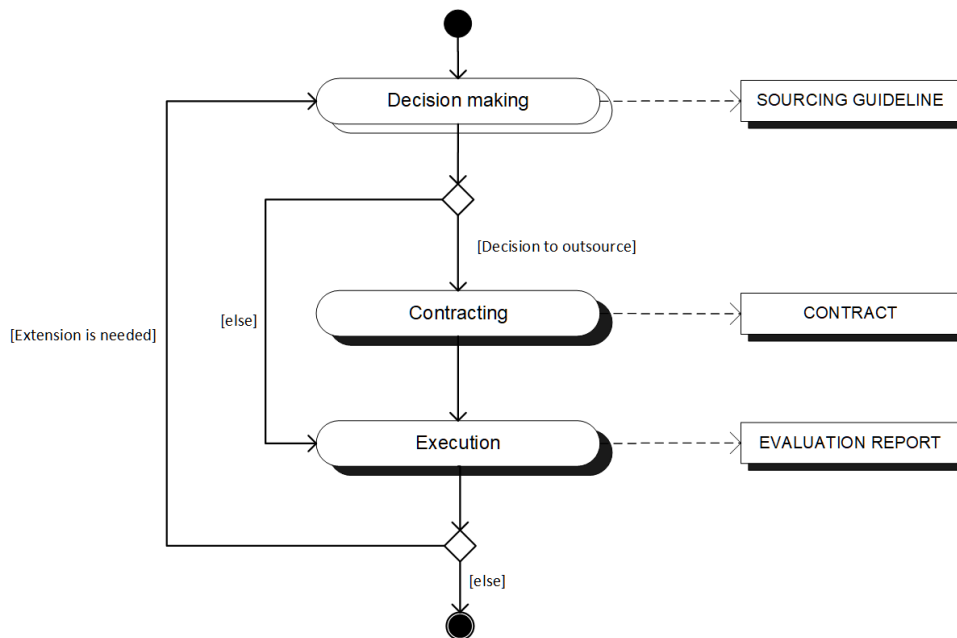


FIGURE 4.4: ITS main stages

ITS Decision-Making Process

It is now clear that ITS strategies must be configured properly and proper values should be assigned to ITS strategy dimensions in the decision-making phase before jumping into the rest of the phases. But the way organisations come up with these fitting values and approach decisions is scarce in literature (Westphal & Sohal, 2016). To fill this gap, Westphal & Sohal, 2016 study four large Australian-based companies and conclude that in order to efficiently define successful ITS strategies, *the discovery*

process should be followed. The discovery process is a methodological approach to strategic decision-making and is not necessarily related to any specific type of strategy (Nutt, 2011). The approach consists of four major phases and starts with a call for gathering intelligence and understanding the context followed by the search for possible options, evaluating the options and uncovering the final solution (Nutt, 2008). A few scholars like McIvor, 2000, Dibbern et al., 2004, and Kazmi, Hafeez, & Ali, 2018 have also tried to partially identify the steps that should be taken when configuring ITS strategies. By comparing the methods which are proposed by these researchers, we observe some similarities with the concept of the discovery process. Therefore, we can classify the steps proposed in these papers under the main phases of the discovery process as shown in Figure 4.5.

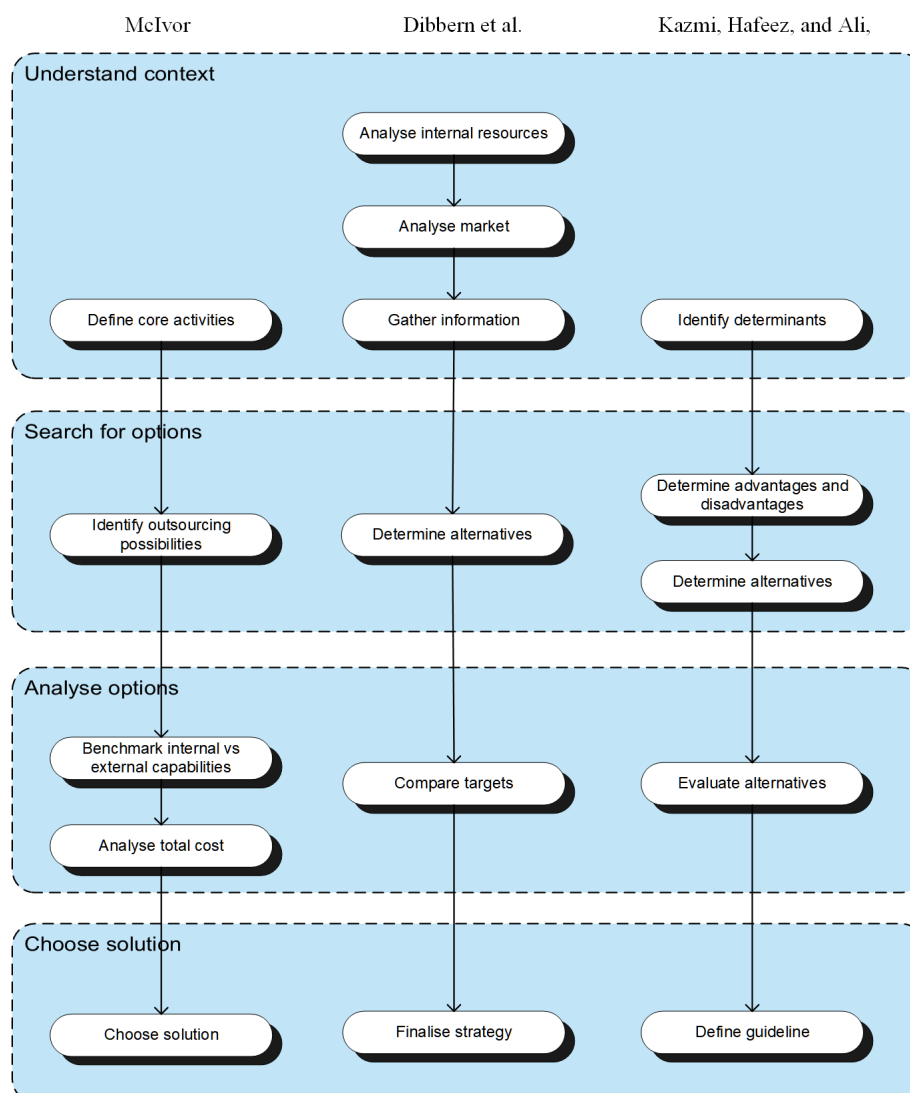


FIGURE 4.5: Comparison of three different ITS decision-making processes proposed by McIvor, 2000, Dibbern et al., 2004 and Kazmi, Hafeez, & Ali, 2018

4.3 Impacts of Agile Practices on ITS

The adoption of agile practices has widespread effects on different parts of an organisation (Gerster & Dremel, 2019; Arbogast, Larman, & Vodde, 2012). ITS strategy is also an aspect which is mostly affected by the need to increase speed and also the flexibility of agile practices (Gerster & Dremel, 2019; Dutta, Gwebu, & Wang, 2017; Arbogast, Larman, & Vodde, 2012). For instance, incorporating agile practices into IT contracts significantly impacts both, fixed price and Time and Material (T&M) contract types since long and precisely specified contracts might be replaced by modules sourced in small and iterative packages (Opelt et al., 2013). On the contrary, sourcing configurations have their own impacts on agile practices as well and may significantly affect team dynamics (ScioConsulting, 2016). Agile practices are low structure methodologies and the people element and trust are more important than contracts and documentations (Sachdev & Iyengar, 2007). For instance, welcoming changes cannot be achieved easily when a contract needs to be signed with another party. Also, agile practices are originally designed for smaller and co-located projects (Paasivaara, 2017; Bass, 2016); therefore, in ITS, business people and developers cannot work together and continuously communicate with each other especially in far-shore projects. Furthermore, fundamental assumptions in agile development are severely challenged when using agile practices in larger scale (Dingsøyr & Moe, 2014). This challenge leads to the usage of scaled agile practices. However, the emergence of scaled agile practices has also affected both agile practices (Dingsøyr & Moe, 2014) and outsourcing practices (Su, Levina, & Ross, 2016).

As discussed before, ITS strategies need to be configured through a set of activities within the decision-making phase. Therefore, the impacts of agile frameworks on ITS strategies can be classified into the impacts on the results of the decision-making process (i.e. ITS configuration and sourcing guideline) and the impacts on the process of decision-making and the way decisions are made. Although realising the effects of establishing large-scale agile frameworks on both of these areas will help decision-makers to properly adjust ITS strategies when transforming into agile, these impacts are not covered well in the extant literature. However, there are several studies which focus on the other phases of the ITS process (i.e. contracting and execution phases) and identify the impacts of agile practices on activities within these phases.

4.3.1 Impacts on ITS Decision-Making Phase

Possible impacts of agile practices on this phase in which ITS strategies are realised and configured are not well elaborated in the identified literature. If we broaden our search terms and go through the publications which are about the role of DT in ITS strategy design, we find a multiple-case study by Demirbas, Gewalt,

& Moos, 2018 which expands on effects of DT on ITS strategy configuration in the financial sector. Although the selection criteria and the agility level of the selected cases are not clear, the researchers point out a tendency to use short-term, near-shore, selective, multi-sourced ITS configuration within large-scale organisations. This finding is in contrast with what the authors had found in traditional organisations.

4.3.2 Impacts on Contracting Phase

Opelt et al., 2013 indicate that large-scale agile practices and the changes they impose on ITS may impact the whole vendor selection and contracting process. Topics like contractual settings, vendor selection, the relationship management, and execution considerations of an outsourced project take a prominent portion of the extant ITS literature Liang et al., 2016; Lacity, Khan, & Willcocks, 2009. The aforementioned topics are as well the main focus of researchers in the scarcely available agile-related literature on ITS. As an example, Thorup & Jensen, 2009 point out the contradictory nature of working agile in outsourced projects. While a key element of agile development is to settle on details and scope during the project and agile iterations, contracts of outsourced projects are based on pre-defined scopes and strictly written agreements between the client and the vendor. Therefore, researchers like Thorup & Jensen, 2009, Pries-Heje & Pries-Heje, 2014, Stettina & Hörz, 2015, and Gerster, Dremel, & Kelker, 2018 bring up the notion of *agile contracting* and including the agile principles in the tender process, vendor selection and contracting.

4.3.3 Impacts on Execution Phase

Since agile practices are in essence designed for software development teams, there are also some papers that delineate team collaboration and executive arrangements of outsourcing in agile environments. Principles of agile methodologies advocate face to face meetings and continuous communication in a co-located setting which are most of the time at stake in outsourced projects (Paasivaara & Lassenius, 2006). Therefore, Himmelreich et al., 2019 propose a model for agile organisations to facilitate collaboration and communication of teams when executing an offshore project. Dreesen et al., 2016 have also done an extensive comparative study on Agile Global Outsourced Software Development (AGOSD) and have proposed methods to enable globally distributed agile teams to better communicate and successfully divide and execute project tasks.

4.4 Takeaways

Throughout our literature review, we emphasised that ITS decision-making is a type of strategic planning and should be treated as one. We argue that decision-makers not only must identify the factors involved in the process of decision-making but also should structurally recognise all decisions that should be made to better comply with the configuration-based approach. Therefore, the usage of the map of ITS strategy dimensions is critical when defining ITS strategies. We also call the process of assigning values to these ITS dimensions, the configuration of ITS strategies. Classifying ITS-related decisions allow us to efficiently study the impacts of large-scale agile frameworks on ITS strategies. We also argue that considering the strategic perspective of ITS, such impacts must be either on the decisions that are made (i.e. the values of the dimensions) or on how these decisions are made (i.e. the process of decision-making). Since these areas are scarcely studied in literature, we perform a multiple case study in order to shed light upon the current status of ITS in large-scale agile organisations.

Chapter 5

Case Study Results

Results of the interviews are explained in this chapter. Following the suggestions of Ayres, Kavanaugh, & Knafl, 2003, the analysis of the results is divided into two parts: within-case analysis and cross-case analysis. Patterns that are observed during the cross-case analysis phase are also brought in the final section.

5.1 Introduction to the Case Studies

The focal cases of this study and their information are demonstrated in Table 5.1. The cases are anonymised and sorted in random order. A code is assigned to each organisation which will be used as a reference to the case from now on. The cases that are shown in this table conform the case selection criteria mentioned in Section 2.2.2. The list of the interviews divided per case is also available in Table 5.2. All interviewees are selected based on the criteria mentioned in Section 2.2.2.

In total, 20 interviews were conducted within case organisations of this study plus eight interviews with experienced freelance consultants to gain more insight into the subject matter. Furthermore, one interviewee was the lead of transformation at organisation C5 as well as C6; therefore during the interview, both organisations were covered. Initially, the study was done in seven case organisations; however, one case was removed since we could only interview one person within that organisation. Therefore we ended up with six cases and 19 interviews. Three of the interviews were conducted in a face to face setting. After the outbreak of COVID-19, the interview settings changed and other 16 interviews were done via online video conversations. Regarding the duration of the interviews, eight are one hour and 11 are between 30 to 40 minutes long. In addition to these interviews, two pilot interviews and multiple introductory interviews with experts are conducted before the official interviews.

Code	Sector	Agile Exp.	Framework	Outreach	# of Staff	Revenue
C1	Finance	4+ yrs	Spotify	Global	40,000	12b €
C2	Electronics	4+ yrs	SAFe	Global	20,000	11b €
C3	Automotive	3+ yrs	SAFe	Europe	1,000	2b €
C4	Energy	≈ 3 yrs	SAFe	NL	4,000	1b €
C5	Finance	5+ yrs	SAFe	Global	18,000	20b €
C6	Energy	6+ yrs	SAFe	Europe	3,000	6b €

TABLE 5.1: List of the cases

Code	Organisation	Role	Experience with Agile
P11	C1	Team Lead (Multiple Teams)	6+ yrs
P12	C1	IT Transformation Manager	7 yrs
P13	C1	Project Lead	9 yrs
P14	C1	Scrum Master	5+ yrs
P15	C1	Program Manager	5 yrs
P21	C2	IT Procurement Manager	5+ yrs
P22	C2	Deal Execution Manager	4+ yrs
P31	C3	Program lvl Agile Coach	3+ yrs
P32	C3	Delivery Lead	10+ yrs
P33	C3	Team Lead	10+ yrs
P41	C4	Program Manager	2+ yrs
P42	C4	Senior Procurement Manager	5+ yrs
P43	C4	Scrum Master	5+ yrs
P51	C5	Lead of Transformation	6+ yrs
P52	C5	Agile Transformation Lead	10+ yrs
P53	C5	Delivery Lead	5+ yrs
P54	C5	Head of IT Sourcing	Experienced
P61	C6	Lead of Transformation	6+ yrs
P62	C6	Delivery Lead	6+ yrs

TABLE 5.2: List of the interviewees

5.1.1 Industry Attributes

According to Lacity, Khan, & Willcocks, 2009, the influence of industry attributes on ITS decisions is not clear; therefore the cases in this study are selected from different sectors to maintain generalisability. Two of the cases are from the finance, two from the energy and the rest are from the automotive and the electronics sectors. Regarding financial stability, all cases are in good financial health. Financial health can significantly affect ITS decisions, especially in larger organisations (Lacity, Khan, & Willcocks, 2009). ITS choices in organisations with poorer financial health may be less strategic; therefore out of the scope of this study. Organisations C3 and C6 are also part of bigger organisations and are supported by their parent companies. Additionally, in all cases, ITS decisions are strategic ones with a high level of complexity.

“[The parent company] has much more resources to handle really big problems... So in case of need, their IT group would come in with much more resources and help to resolve the problem so we would not run to another external vendor.” (P31)

5.1.2 Size Attributes

Size of an organisation may impact ITS decisions and larger organisations may follow more strategic paths of decision-making (Westphal & Sohal, 2016). Therefore, by following Westphal & Sohal, 2016 approach, we selected the cases with more than 1,000 staff. The level of decentralisation of an organisation may also impact its strategic decision-making (Westphal & Sohal, 2016). All cases' main headquarters are located in the Netherlands but the outreach of the cases vary in order to maintain generalisability. For instance, C4 focuses only on the Dutch market while some other cases have a global outreach.

5.1.3 Attributes of the Agile Way of Working

In all case organisations but C4, agile practices have been in place for more than three years. In C4, agile initiatives started in 2017 but since the company staff includes knowledge workers as well as blue-collar workers, in some Agile Release Trains(ARTs), employees have no prior knowledge of agile working and the transformation moved forward slower than in the other cases.

“I doubt very much that anyone would have worked with agile in the past. The reason is that there are business teams and engineers and the people who are on the shop floor who have been shoulder tapped to join the ART.” (P43)

Another fact about the level of agility in case organisations is that they have started the implementation of agile practices from bottom-up and first in a few departments and then scaled up the practices or are in the process of scaling up. P15 mentions, “First, we started in [...] team so now we are working in DevOps and then step by step went forward even to the business side. So we are now a BizDevOps team.”. P22 also indicates “After more than three years, we are still in the first steps of transformation and we are planning to roll out SAFe to other departments as the next step”.

In organisations C4 and C5, the interviewees and especially the procurement team members still perceive agility as a means for the development teams only.

“Agile in our organisation is mostly within the development team and not organisation-wide.” (P42)

In some cases, especially in vendors’ opinion, it is believed that the agile way of working is not being applied efficiently or organisation-wide. P51 says “I would classify these organisations as agile in the name. They adopt a lot of ceremonies and processes but they do not take on a lot of what is necessary for the improvement”. This pattern is seen in C2 and C4 as well. However, as Maples, 2009 mentions, implementing an organisation-wide agile practice is a continuous journey that never ends. What is perceived as mature agile may differ from the vendor’s to the client’s perspective and that is why in this study, the overall age of agile is considered as the main indicator.

Regarding the agile framework in use, C1 is the only case organisation using Spotify framework instead of SAFe. The main reason that C1 has chosen Spotify is the open culture of the organisation and the adaptability of the Spotify framework to their organisational culture according to P14.

5.2 Analysis of the Interviews

After transcribing all the interviews, we had six groups of transcripts representing our six case organisations. Following the suggestions of Ayres, Kavanaugh, & Knafl, 2003, in such a situation, we must conduct a within-interviewee analysis for each interview in a case organisation followed by a within-organisation analysis and in the end a cross-organisation analysis. The results of the first two steps are consolidated and described in Section 5.2.1 and the results of the final step can be found in Section 5.2.2.

5.2.1 Within-Case Analysis

As pointed out in Section 4.3, the impact of agile frameworks on ITS decisions is twofold. On the one hand, agile frameworks may have an impact on the outcome

of the decision-making process (i.e. ITS configuration) and on the other hand, they may influence the process of decision-making. Therefore, each interview transcript is analysed individually. Firstly, to depict the current status of the organisation regarding the ITS configuration and the process of defining ITS strategies. Secondly, to figure out the impacts of establishing agile frameworks on each of them from the interviewee's perspective.

Each interviewee is asked to choose the attributes of ITS dimensions that can best describe the current status in their corresponding organisations. To achieve that, the map of ITS dimensions which is demonstrated in Figure 4.3 is shown to each interviewee. Then in each case, answers are compared among interviewees and the current status of the organisation is drawn by comparing the answers. In case of any discrepancies, the most frequent answer is chosen. If there is no frequently mentioned answer, the answers given by the client side's interviewees and the ones with higher levels are given more weight.

In general, almost all interviewees were aware of the current status of ITS configurations in their organisations but some interviewees were not able to elaborate on the impacts of agile frameworks on ITS or the process of decision-making. This was mostly because some interviewees were not involved in the process of decision-making or decisions were already made before their entrance.

In this section, the analysis of each case is presented. To avoid complexity and repetition, the dimensions which have the same attribute among all cases are not mentioned in separate tables per case. These dimensions and their values are collected and shown in Table 5.3.

Dimension	Choices
Degree of Outsourcing	Selective
Relational Governance	Partnership
Vendor Construction	Multi-vendor
Ownership (IP)	Mostly client except in SaaS
Duration	Long-term

TABLE 5.3: Dimensions with the most cohesive choices

Organisation C1: A Financial Institution

In this financial institute, answers to the questions were mostly harmonious when speaking about the current configurations of ITS strategies. However, different opinions were observed on the impacts of establishing agile frameworks on ITS. The conflict of interests also amplifies this discrepancy: "If you look at the location,

it is being impacted by agile because we prefer people to work onsite although from the cost perspective they will not”, (P13). In C1, the Spotify framework impacts relational governance and the location of outsourcing more than the other dimensions. The current status of ITS strategy configuration in C1 is shown in Table 5.4.

Dimension	Choices
Intention	Cost reduction, access to skills & innovation
Scope	Application, infrastructure
Location	Balanced onsite-offshore & sometimes nearshore
Pricing Model	Mainly time and material
Sourcing Model	Staff augmentation, moving towards managed services

TABLE 5.4: Configuration of ITS strategy in C1

Regarding the decision-making process, the interviewees could not picture a step by step process. They knew that there are different phases that start with decision-making phase followed by vendor selection and execution phases; however, it is the job of senior executives to draw main decisions. “The senior IT lead together with the procurement team come up to reduce costs and it is translated into approaches”, (P13). They also could not mention any impacts of agile practices on this process. The company is also lagging in translating strategies and business values.

“If you look one level higher, they are really struggling to get it[Spotify]... to make the translation and convey the business values and have the teams involved”, (P14).

Organisation C2: An Electronics Supplier

In organisation C2, some discrepancies are observed in interviewees answers. For instance, regarding the sourcing model, P21 states “It is somewhere between managed capacity and managed services. We are stubborn people that know ourselves so we have difficulty to fully outsource as a managed service” while P22 explains that the main sourcing model is staff augmentation. The interviewees also tend to select multiple various attributes within each dimension. The impacts of SAFe on ITS strategy configuration in C2 is limited mainly to the location and the pricing model. The rest of the configurations can be seen in Table 5.5.

In organisation C2, the main stages of sourcing are: defining the case based on ideas that come from the operational or tactical levels, strategic decision making, vendor selection and execution. Interviewees believe that the process of ITS

Dimension	Choices
Intention	Innovation, cost reduction, access to skills & focus on core capabilities
Scope	Application, infrastructure, user & security management
Location	Balanced onsite-offshore & nearshore
Pricing Model	Mainly time and material
Sourcing Model	Staff augmentation plus managed capacity and services

TABLE 5.5: Configuration of ITS strategy in C2

decision-making within C2 is not optimal or well adapted to the ongoing agile practices. About ITS-related decisions, P22 claims that “I think it is based on rational ad-hoc decisions”.

“To my opinion, processes were not always well established... I hope with the agile transformation it will be more evident where these decisions and strategies need to be made” (P21).

Organisation C3: An Automotive Company

Organisation C3 leverages different services from its famous, financially-stable parent company. Therefore, infrastructure needs or security issues are all handled by the parent company. However, C3 has also a degree of freedom to design its own ITS strategy in other domains. The organisation is also trying to bring back services more by focusing on insourcing. “I have PO on my team... The next step will be that we also internally hire some developers ourselves”, (P33). In this organisation, the impacts of agile frameworks are mostly on the sourcing model. The rest of the dimensions are configured as demonstrated in Table 5.6.

Dimension	Choices
Intention	Mainly cost reduction plus access to skills & quality improvement
Scope	Application development
Location	Balanced onsite-offshore & nearshore (Belgium)
Pricing Model	Mainly time and material
Sourcing Model	Staff augmentation, moving towards vendor-managed models

TABLE 5.6: Configuration of ITS strategy in C3

Organisation C3 considers insourcing and outsourcing when making ITS strategic decisions: “We start with the existing situations and we would do our analyses

on what is strong and what is maybe less strong... What is business-critical for us or could be that this may be cheaper internally?", (P33). In general, analysis of the current situation, decision-making, vendor selection and execution are the phases that are followed regarding ITS in C3. The impacts of SAFe on this process is mostly limited to the vendor selection and execution phase: "I would say [it has impacts] for sure on the culture of working... They are not going to select vendors that have no experience in agile or DevOps", (P31).

Organisation C4: An Energy Provider

The interesting fact about C4, which is the least mature case in terms of agility, is that they only use agile when they do insourcing or when a great portion of a project is insourced.

"When we do agile on-site, we do staff augmentation and we have agile only when we insource things", (P41).

In C4, SAFe impacts the degree of outsourcing, the location and the sourcing model more than the other dimensions. The configuration of ITS strategy in C4 is shown in Table 5.7.

Dimension	Choices
Intention	Cost reduction, focus on core capabilities & quality improvement
Scope	Application & infrastructure
Location	Mostly onsite, sometimes offshore
Pricing Model	Mainly time and material, sometimes fixed price
Sourcing Model	Staff augmentation

TABLE 5.7: Configuration of ITS strategy in C4

Although the steps of decision-making in C4 are not fully clear, this organisation follows a relatively more structured path. After a business case is defined, the first steps of ITS decision-making in C4 are budgetary estimations and the analysis of the feasibility of insourcing. Then, if outsourcing is an option, one strategy is selected based on eight available pre-defined configurations. These configurations are mostly based on the European guidelines on outsourcing arrangements. Then a shortlist of vendors are prepared and a multi-functional team defines the requirements for contracting and executing.

Organisation C5: A Financial Institution

In organisation C5, the company's guideline is in some points in contrast with the preferences of the procurement team or IT leads. For instance, P54 mentions that "Our preference [vendor management team] for vendor construction is to work with one vendor in each area but the strategy of the company is to work with multi-vendor". The agile framework has impacts on the pricing model, the relational governance and the sourcing model. The rest of the dimensions are set as shown in Table 5.8.

Dimension	Choices
Intention	Mainly cost reduction
Scope	Application & infrastructure
Location	Balanced onsite & offshore
Pricing Model	Mainly time and material, sometimes fixed price
Sourcing Model	Staff augmentation & managed capacity

TABLE 5.8: Configuration of ITS strategy in C5

Regarding the process of decision-making, C5 seems to have a quite well-established guideline. It all starts with a business case followed by market research and short-listing of vendors. Requirements are gathered and expectations from vendors are also collected. But there is no consideration of internal capabilities. The goals for the degree of outsourcing are set previously and the organisation tries to outsource whenever feasible. Furthermore, the effort is put into building up a good relationship with partners and to maintain in line with them through continuous evaluation and coordination.

Organisation C6: An Energy Provider

Organisation C6 is a part of a bigger organisation therefore some services like infrastructure is provided by the parent company. Routine tasks and also SAP-related tasks are usually outsourced to offshore vendors while the proof of concepts and a lot of business processes are insourced or are being done on-site. SAFe influences three dimensions namely, pricing model, location and sourcing model more than the other ones in C6. The configuration of the dimensions can be seen in Table 5.9.

The process of ITS follows the main three steps of decision-making, vendor selection and execution. The organisation is flat and the decisions are mostly made in management team workshops but the strategy has not changed significantly for many years: "For the last eight years, we have been working with the same preferred partners", (P62).

Dimension	Choices
Intention	Mainly cost reduction plus quality improvement & access to skills
Scope	Mostly application development
Location	Onsite, nearshore & offshore
Pricing Model	Mainly time and material, sometimes fixed price
Sourcing Model	Staff augmentation & managed capacity

TABLE 5.9: Configuration of ITS strategy in C6

5.2.2 Cross-Case Analysis

In this section, we analyse themes, similarities and differences across cases as previously mentioned in Section 2.2.4.

State of ITS Dimensions

The concepts of ITS configuration-based approach are being applied in all cases and all interviewees were familiar with the elements of the map of ITS dimensions. Considering the results in each case organisation, the most frequently observed attributes of each dimension are shown in Figure 5.1. The attributes which are observed in more than 50% of the case organisations are considered as most frequent. In five dimensions, namely degree of outsourcing, relational governance, vendor construction, ownership and duration, cohesive choices are observed among almost all cases. The diversity of choices is the highest within the intention of outsourcing dimension. However, cost reduction is observed as the main driver of outsourcing in almost all cases.

Apart from the intention of outsourcing, the sourcing model, the pricing model and the location of outsourcing are also three dimensions with the most mixed answers among cases. All organisations but C4 are trying at least one type of managed models of outsourcing alongside staff augmentation. Likewise, except in C4, –which is the least developed organisation in terms of agile transformation, all other organisations are trying to maintain a balance in the location of outsourcing. Regarding the pricing model, no particular pattern is observed but some of the case organisations are attempting to make use of fixed-price contracts besides T&M.

The impacts of agile frameworks on the choices that are made when configuring ITS strategies are most evident on the location of outsourcing and the sourcing model which are mentioned in four cases, the relational governance and the pricing model are also mentioned in three cases followed by the degree of outsourcing which is mentioned in only one case. The same pattern of results is also seen if

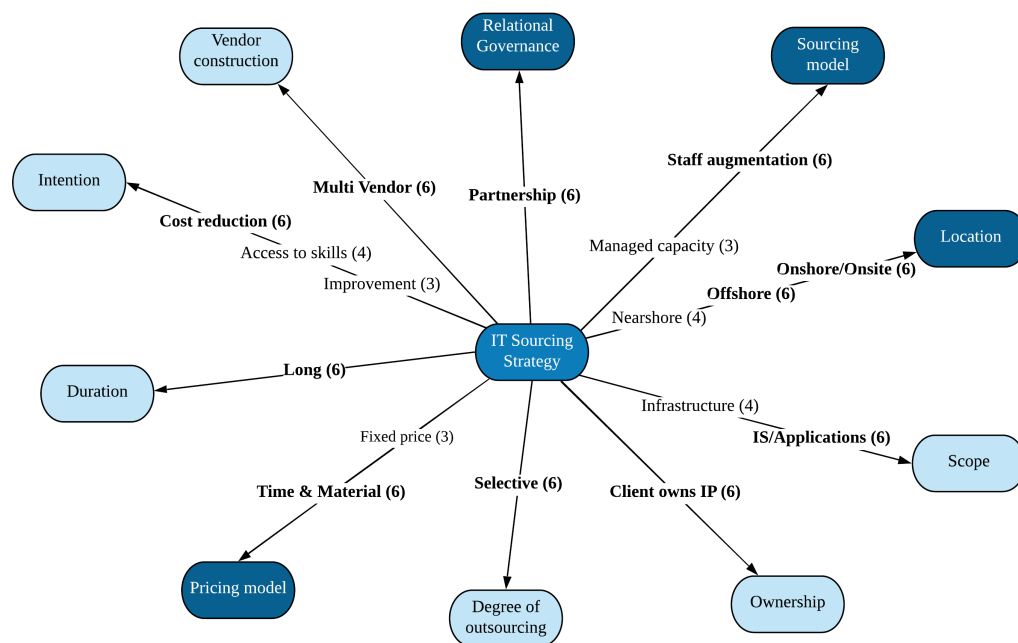


FIGURE 5.1: The most prevalent ITS configuration among cases. The numbers indicate the number of cases using each attribute. Darker blue indicates the dimensions impacted by agile frameworks.

we consider the frequency of mentions among interviewees. The distribution of the claimed impacts of agile frameworks on ITS strategies is shown in Figure 5.2.

State of ITS Decision-Making Process

The ITS process in almost all cases consists of three main stages, namely decision-making, contracting and execution which is shown in Figure 4.4. The main focus of this study is on the decision-making phase and how ITS strategy is configured. However, the interviewees could not provide a clear picture of how ITS-related decisions are made. These decisions were either in place for many years with only minor changes from time to time or they were made at higher levels of organisations among CxOs. Based on the interviews, it is observed that the process of defining ITS strategies mostly follows the path of the organic model of strategic planning in which the vision and the values are of more importance than the process and the plan. Nevertheless, the main steps of the discovery process are partially taken in some organisations. In most cases, this decision-making approach has remained intact for many years. Thorough continuous analysis of the current situation or available options is sometimes skipped or is handed over to partners. This causes inconsistency in decision-making, different experimentation and swinging between choices within dimensions.

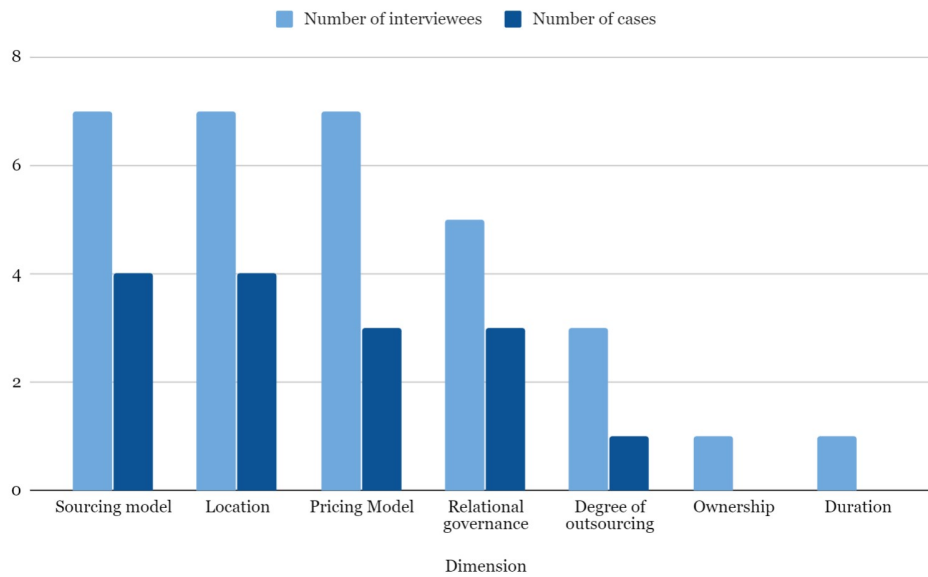


FIGURE 5.2: ITS dimensions impacted by agile frameworks: Observed among cases

“A couple of years ago, we started a new wave of outsourcing. Before that, we had a period of five years that we were turning everything back”, (P12).

Furthermore, agile frameworks do not influence the way organisations make decisions. Among procurement team members, it is believed that agile practices influence the way of working much more than the way of decision-making.

“Of course agile has impacts but on decision-making, it is hard to explain. Because agile is the way of working and how we develop code”, (P54).

Other Observed Patterns

Our case organisations are predominantly benefiting from the collaboration of different vendors. An analysis of more than 1,000 ITO deals in Germany, Austria, and Switzerland shows that the multi-vendor type of ITS is on the rise with around 1.5 vendors actively participating on the same deal (Könning, Westner, & Strahringer, 2018). In a multi-vendor setting, some of our case organisations are currently assigning projects to different vendors with different types of contracts at the same time which eventually causes conflicts. For instance, a partner with T&M-based contract is currently working beside a vendor with a fixed-price plus bonus contract. This is observed in both C1 and C6 cases.

“[...] has a contract which is T&M and can deliver people and [...] has a contract which is managed by the performance of the teams and then it does not really match”, (P62).

As a result of these conflicts, vendor consolidation is also observed in some cases. For instance, in C1, there is now a tendency towards limiting the number of vendors. P11 indicates “More or less, they are doing it end-to-end and trying to limit the number of vendors and give one task to one vendor”. This can also be seen in C2, C4, C5 and C6. P54 states “We are doing multi-vendor [...] but our preference for vendor construction is to work with one vendor in one specific area”. P21 also indicates “If you look at the big picture, for example, infrastructure [...] is single vendor but other activities like the agile way of working, DevOps [...] is multi vendor”. Vendor consolidation as well affects relational governance in some cases. It is sometimes believed that relational governance is partnership on paper but transactional in reality.

“They mention that it is a partnership but sometimes it feels more transactional”, (P22).

Although all cases are predominantly using staff-augmentation as their sourcing model at the moment, they are shifting their sourcing models into using more managed models. This can be observed in all cases except in C4 and it is mentioned by at least one interviewee per each case. This shift is mostly seen in SaaS-based services.

Overall, the dimensions on which agile frameworks have more effects are more volatile in terms of choices. Experienced organisations such as C1 and C6 are more eager to work with fewer partners and hand over responsibilities and governance to these trusted partners. But less experienced organisations such as C4 are still trying to avoid conflicts by emphasising on insourcing rather than embracing the challenges of outsourcing alongside the agile way of working.

5.3 Reflection on the Map of ITS Dimensions

During the interviews, interviewees were also asked to give their feedback on completeness of the map of ITS dimensions as explained in Section 2.1.2. The map was generally well-received; however, two interviewees mentioned risks of sourcing as a possible dimension that can be added to the map.

“Risk is a dimension in the end... If we talk about progressing from staff augmentation to managed services, we are basically shifting risks [from client to vendor].”, (P32).

Nevertheless, ITS risks should always be considered when assigning values to each of ITS dimensions. They are outcomes of the rationale behind decision-making

and cannot be arranged separately (Cullen, Seddon, & Willcocks, 2005b). Organisations try to properly arrange ITS dimensions to mitigate the risks associated with sourcing (Sharma, 2020); therefore, risks are fundamentally different concepts than dimensions.

5.4 Takeaways

In this section, we analysed the results of each case individually. Then by performing a cross-case analysis, we found out the similarities and patterns among cases. The results clear the state-of-the-practice of ITS configuration among case organisations. In some dimensions such as *vendor construction*, *degree of outsourcing*, and *scope*, the results conform to a previous research by Demirbas, Gewald, & Moos, 2018 on non-IT sourcing strategies. However, differences are observed in *duration* and *location*. The results also show that organisations are trying to adjust their ITS strategies by rearranging and reassigning values of certain dimensions. Some dimensions have cohesive values among cases but three dimensions, namely *location*, *pricing model*, and *sourcing model* still do not have a definite value. Some organisations are slowly shifting from one model to another within the aforementioned dimensions. This pattern has already been predicted by Beulen, 2018 in a distributed survey among large-organisations in the Dutch market; however, the research focus was only on the location of outsourcing and the pricing model. This change may also have effects on other dimensions which are currently congruent such as vendor construction. For instance, in more mature agile organisations such as C1 and C6, a new trend is observed. These organisations have started moving towards managed services and now, they are also looking at other dimensions such as vendor construction to consolidate some of their partners and to decrease the complexity of their ITS portfolio. This trait is closely related to the overall experience with agile frameworks. Nonetheless, less experienced organisations like C4 are less involved in such struggles.

It is also observed that regarding the decision-making process, some organisations are more mature than the others but in general, the steps of this process are not fully clear. Sometimes, the decisions are made based on an opportunity that arrives and less effort is put on the analysis of available options.

Chapter 6

Discussion

In this chapter, we reflect on the findings from our point of view and discuss the results. Nevertheless, every research is subject to some limitations. Therefore, the most relevant limitations are covered in this chapter as well.

6.1 The Synthesised Findings

By reviewing the case study results, it is eminent that some choices within some dimensions are incongruent among cases. These dimensions are *intention, sourcing model, location, and pricing model*.

Agile values emphasis on the quality, the flexibility and the customer-centricity of services (Rosing, Scheel, & Gill, 2015). Cost efficiency is not at the centre of attention when practising agile (Gill & Henderson-Sellers, 2006). Agile practices may even lead to deterioration of cost (Suetin et al., 2016). Therefore, cost reduction as the main intention of outsourcing among our cases is different from the other intentions of outsourcing which are more in alignment with agile practices (e.g. improvement of quality). This reason may justify the mixed answers that are given regarding the intention of outsourcing.

The location of outsourcing is another incohesive dimension. Agile practices advocate insourcing and the distance and its subsidiary challenges such as temporal and socio-cultural differences are the most challenging issues in distributed agile (Ghafoor, Shah, & Rashid, 2017). Although outsourcing to offshore locations enables cost reduction, it contradicts agility. The same pattern is also observed in the sourcing model and pricing model dimensions. Staff augmentation and T&M are both more agile in nature than their counterparts (i.e. managed models and fixed-price model). All of these three dimensions are also claimed to be impacted by agile frameworks.

In general, there seems to be a conflict between agility and outsourcing and organisations are struggling to find a balanced fit when configuring ITS dimensions. The main intention of outsourcing is still cost efficiency which has also been proven to be the main driver in different studies (Varajão, Cruz-Cunha, & Glória Fraga, 2017;

Rajaeian, Cater-Steel, & Lane, 2017; Lacity, Khan, & Willcocks, 2009). As mentioned before, cost efficiency and agile values have contradictory principles in nature. This will result in an unbalance among the dimensions that are impacted by agile transformation. Organisations at any point must realise that there is an optimum point between the attributes of each ITS dimension (balance perspective) and these optimum points must be set considering internal and external factors (fit perspective) (Kotabe, Murray, & Mol, 2008). However, establishing agile frameworks significantly changes this balance and organisations need to adapt their ITS strategies according to this disruption. This change in balance and the seek for optimum points are also partially predicted in previous studies. In a survey distributed among Dutch agile organisations in 2017, it was predicted that the location of outsourcing and the pricing model of sourcing strategies are going to be revised in three years due to the implications of agile transformation (Beulen, 2018). In a similar study, Demirbas, Gewald, & Moos, 2018 predicted the same pattern but they also mentioned that DT will force organisations to move towards short-term contracts. Although this point of view is justifiable from the agile perspective, in practice, the cost of negotiations and contracting does not allow organisations to switch easily to deals with a shorter life-span (Nicoletti, 2018). Therefore, the duration is not going to change or to be significantly impacted by agile practices according to our results.

We argue that the balance can be achieved by first, recognising the dimensions of ITS strategies and contextual factors. Second, by adhering to a formalised decision-making process in order to structurally assign values to each dimension. While finding the optimum point for some dimensions seems to be straight forward, in the dimensions which are mostly affected by agile practices, this task is a long course of trial and error and experimentation. This struggle is depicted in Figure 6.1. The location of outsourcing, the sourcing model and the pricing model are three main

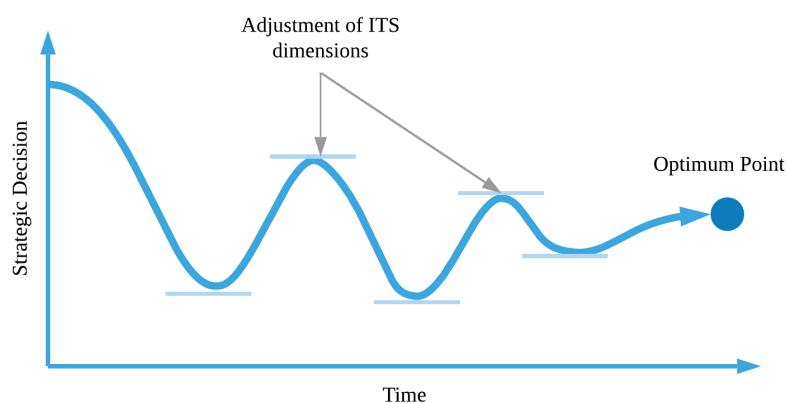


FIGURE 6.1: Experimentation of different strategic choices to find the optimum point within an ITS strategy dimension

dimensions that should be at the centre of attention when sourcing in an agile environment.

We also state that organisations can benefit from the map of ITS dimensions to identify the decisions that should be made when configuring ITS strategies. Identifying decisions and possible options to these decisions will help organisations to structurally find a balanced fit among all dimensions. Neglecting a dimension or an option may completely change the balance; therefore, this map allows organisations to comprehend all possible dimensions and choices. Furthermore, following a methodological approach such as the discovery process may allow organisations to find the optimum point of sourcing more efficiently. Continuous analysis of the current situation and continuous elicitation of possible options and evaluation of the options is a way of discovering a balanced fit without relying too much on experimentation. The revised version of the discovery process which is demonstrated in Figure 6.2 can help agile organisations more efficiently find the optimum point of their ITS strategy. As previously evaluated by Westphal & Sohal, 2016, the adoption of a method which is based on the discovery process is more likely to generate the results that ITS decision-makers are hoping to achieve. Whilst going through the discovery process may take longer than ad-hoc decision-making, –which is mostly triggered by an opportunity, at a minimum, it enables organisations to learn from choices and their consequences; therefore, reduces the amount of experimentation. The proposed model is also validated by four experts as a potential solution to the aforementioned issues. Details of the activities and concepts of this model are also explained in Appendix G.

As it can be seen in Appendix G and also in Figure 4.5, the phases within the model can include various activities; however, as previously mentioned in Section 5.2.2, decision-makers prefer a holistic approach when defining ITS strategies in order to have the freedom to make decisions based on opportunities. During the sessions with experts, it was realised that this high-level model may be more applicable than a detailed step-by-step one and can be used as a settlement point. In this way, organisations will grasp the main stages of a structured decision-making path and at the same time will have the freedom of a holistic approach.

6.2 Limitations

Several limitations can be identified for the research approach, literature review and the multiple case study which are concisely discussed in this section.

Regarding the literature review, there are three main limitations. First, the lack of comprehensive studies on the dimensions of ITS strategy, especially in recent years led us to further investigations. As a result, the scope of the study was broadened. Second, although a multi-vocal literature study was done in this research, some of

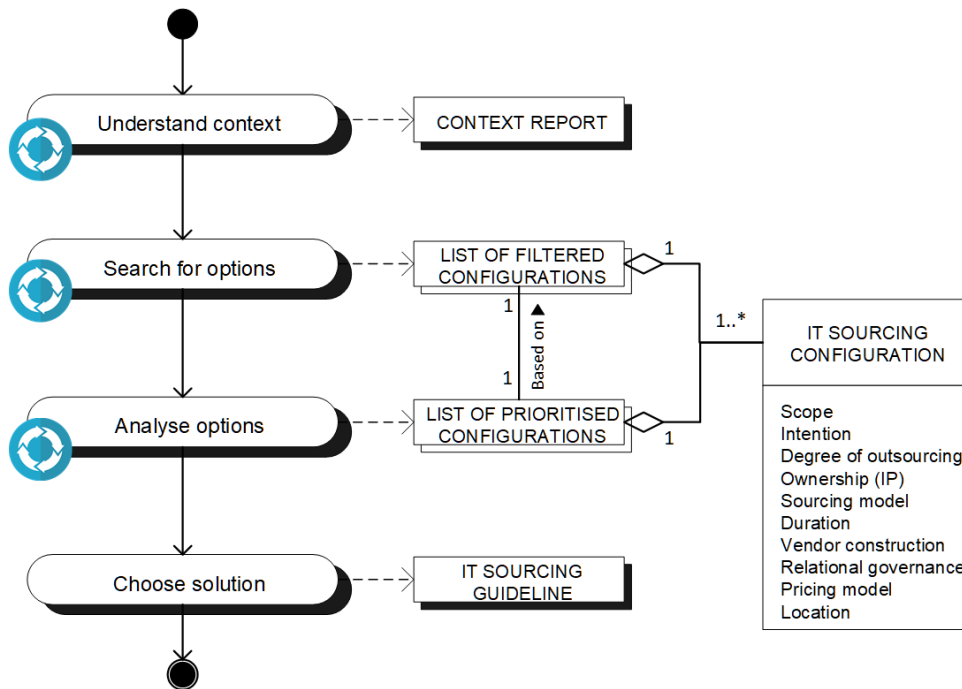


FIGURE 6.2: Revised version of the Discovery Process

the recent case studies on large-scale agile frameworks must be excluded since they are subject to bias. These studies are mostly performed by consulting companies advocating a particular type of framework and are published as white papers. Therefore, a thorough objective analysis was required to exclude such studies and at the same time compensate for the gap in literature. Third, the literature study and the coding of the findings was performed by one researcher which leaves the room for potential bias. However, alternatives were chosen to mitigate the effects. These alternatives are mentioned in Section 2.2.4.

We faced a few major limitations in our multiple-case study as well. Most of these limitations were due to the aftermath of COVID-19 which are previously pointed out in Section 2.2.6. The changes of interview settings from in-person meetings to online and cutting the interview duration down to around 30 minutes were some major setbacks. Consequently, interview materials and guideline were revised and a new pilot interview was conducted. The validation process of the map of ITS dimensions also changed significantly since paper and pen were replaced by screen sharing and e-whiteboard tools. The impact of these changes on the validity of the results is still subject to further investigations. Another obstacle was the amount of effort put on finding proper case studies and reaching out to potential interviewees due to the strict set of selection criteria and the limited number of convenient samples that comply with the criteria. Strategies are drawn at higher levels of organisations; however, accessing to higher-ups was also limited. Due to the outbreak of COVID-19, higher-ups were mostly engaged in setting up measures; therefore hardly available

for research purposes. We tried to perform an embedded study within some cases to compensate for this limitation if procurement managers were not accessible. In the end, we had to remove one of the cases since we could only conduct one interview in that particular organisation. Considering all these limitations, almost all previously arranged interviews got cancelled as a result of COVID-19 and this added up to the complexity of the case selection process. The last obstacle is the language barrier. Although all interviewees were able to hold a conversation in English, the level of proficiency was different among interviewees. This resulted in more rigorous and time-consuming transcription and coding procedure.

The exploratory nature of this research and the vagueness of the situation at the beginning of the work caused some disruptions in the research method when the preliminary interviews were conducted. During the interviews, it was realised that the process of ITS decision-making is completely unclear to the interviewees or the interviewees are unwilling to reveal the steps of this process to other parties. Therefore, instead of focusing on the extraction of a method out of the interviews, we tried to design a model of this method by rigorously studying literature and then showing the method to the interviewees to get their approval. This approach inevitably creates subjective results; hence, we believe that a thorough analysis in more case studies is required to better validate this contribution of the research which is the revised version of the discovery process.

6.2.1 Threats to validity

This chapter aims to discuss the quality and accuracy of this research by determining its validity. The classification of these validity threats is adapted from Wohlin et al., 2012 and Yin, 2017. We have addressed most of the threats in their corresponding sections; however, this section is dedicated to more general concerns that affect the validity of the research as a whole.

Construct Validity

To answer the main MRQ, we needed to first, conduct an SLR to clear the existing ambiguity in literature and second, use this knowledge as a scaffold for our multiple-case study. In both of these phases, we tried to collect different perspectives to better depict the state-of-the-practice. We used triangulation of data to cover different sources of evidence as described in Section 2.2.3 and to increase the credibility and validity of the results. We also made use of early on validations and peer reviews at each stage in order to better steer the research process. Moreover, the map of ITS dimensions which was created in the first phase of the research and was used as an instrument for the second phase was validated by at least ten experts.

Regarding the case selection and interviewee selection, we tried to include different stakeholders at different levels of organisations to cover various perspectives. We also conducted interviews with partners of each case organisation to cover the vendor's perspective as well as the client's.

Due to the limitations caused by COVID-19, we used the expert opinions technique instead of the focus group technique in order to validate the results. However, we followed the tips mentioned in Section 2.1.2 to increase the integrity of the validation.

Internal Validity

In order to strengthen the internal validity, the patterns observed in the cross-case analysis section were compared to the patterns seen in literature. Although a similar case study was not found in literature, we tried to partially match the illustrated state-of-the-practice of our study to the trends which were portrayed or predicted in other publications. This pattern matching technique which is first proposed by Trochim et al., 1989 will strengthen the inference and shed more light upon *how's* and *why's*.

External Validity

The focus of this research was on the Dutch market; however, multiple complementary interviews were conducted with experts outside of the Netherlands to assess the applicability of the results in other markets. Three interviews with experts in India portrayed the same pattern in large-scale agile organisations. However, it was mentioned that the traits that were observed among the case organisations cannot be generalised to Small and Medium Enterprises(SME).

Another critical factor that limits the generalisability of the research is the usage of large-scale agile frameworks within case organisations. The results cannot be postulated for non-agile organisations or organisations that are not using an agile framework at enterprise scale. Furthermore, five out of six case organisations of this study use SAFe as their agile framework which represents the popularity of SAFe among other frameworks as pointed out in reports (VisionOne, 2020). However, we tried to keep the findings applicable to other frameworks by maintaining the neutrality of the questions and by emphasising more on the core values and principles of agility at enterprise scale instead of asking framework-related questions.

Furthermore, all interviews from the vendor's side were conducted in one particular consulting firm. This will result in two concerns. First is that all case organisations were common in working with at least one particular vendor. Second is that the vendor's perspective is representative of one consulting company and not all existing vendors in the market. However, since the interviews with the vendor

were considered to be supplementary interviews to gain more insights, we assigned higher weights to the answers given by the internal staff of the case organisations.

Reliability

Reliability is concerned with the extent to which, the data and the analysis performed are dependent on the researcher and if the same results would be obtained, if the study would be conducted by another researcher (Wohlin et al., 2012). Although the research is conducted by rigorously following the research approaches which are mentioned in Chapter 2, the multiple-case study and the validation part are heavily dependent on the experience of the experts who took part in our study. However, to maintain the reliability of the research, we tried to include different experts with different perspectives. Besides, we strived to keep the research progress transparent by continuously reporting the results throughout the chapters.

Chapter 7

Conclusions

In this chapter, the main findings of this research are summarised and an answer is given to each research question. Then, suggestions for future research are presented.

7.1 Answers to the Research Questions

SQ1 *What are the available approaches to define ITS strategies?*

It was realised during the literature review that there exist different perspectives when defining ITS strategies and in general, organisational strategies. Two main approaches are configuration-base and contingency. In the contingency approach, the contextual and situational factors are of more importance when defining ITS strategies. Contingency approach is based on the idea that ITS strategies differ significantly when these contextual factors change. Therefore, such strategies are in nature different from organisation to organisation. On the other hand, the configuration-base approach focuses more on the outcome of the decision-making process rather than the contextual factors. In this approach, the dimensions that are set when defining an ITS strategy and the values that are assigned to each dimension are more important. The configuration-base approach seeks to find a balance between these dimensions to achieve a fit between the strategy and the situational factors. Therefore, there may be different points of balance and different ways to reach a particular goal. Another notion is that in the configuration-base approach, strategies do not necessarily differ significantly from situation to situation if the major factors remain the same. In general, the configuration-base perspective receives more positive attention in literature.

SQ2 *What are the dimensions of an ITS strategy configuration?*

An exhaustive and up-to-date list of ITS dimensions was not available in literature; therefore, through an SLR, we identified the main ITS dimensions and their corresponding attributes. The validated and revised version of the list is represented in Figure 4.3. These dimensions should be arranged before the contracting phase of an ITS process is started. The final version of the map of ITS dimensions was also used as an instrument in the interviews to structurally identify the state-of-the-practice of ITS strategies in case organisations.

SQ3 *What is the state-of-the-practice of configuring ITS strategies in large-scale agile organisations?*

We conducted more than 20 interviews and covered six large-scale Dutch organisations which have been undergoing agile transformation at enterprise scale to find out what decisions are being made regarding ITS strategies. The results of the interviews confirmed that the cases follow the configuration-based approach to define their ITS strategies. Furthermore, it was observed that the cases' ITS strategy configurations conform to the map of ITS dimensions. A similar pattern of decision-making was also seen among cases. In most of the dimensions, choices were cohesive; however, some dimensions represented mixed choices. These dimensions were *the location*, *the pricing model*, and *the sourcing model*. Organisations were still unable to find a balanced point within these dimensions and choices were not decisive; therefore, they were subject to change.

SQ4 *What are the impacts of large scale agile frameworks on the configuration of ITS strategies?*

In order to understand the adaptability of ITS strategies to agile frameworks, it is also important to realise whether establishing agile frameworks have impacts on the decisions that are made when arranging ITS strategy dimensions. The results of the case study revealed that four dimensions are mostly affected by agile frameworks. These dimensions are *location*, *pricing model*, *sourcing model*, and *relational governance*. Looking at SQ3, it is apparent that even after more than three years of practising agile, organisations are still struggling to find the proper arrangement for the dimensions that are most impacted by agile frameworks.

SQ5 *How do agile organisations configure their ITS strategies considering the impacts of agile frameworks?*

The results of the case study show that organisations are aware of the disruptions caused by agile frameworks. They are also trying to adapt their ITS strategies to these disruptions. However, they are not fully aware of the fact that these changes may also impact the process of decision-making. The current process is based on the discovery process of strategy making and has not changed for years. Steps of this process are also not clear to the participants even at higher levels. Moreover, some decisions are made in an ad-hoc way. As a result, in almost all cases, experimentation is based on trial and error. Within the dimensions that are mostly affected by transformation, the decisions change without proper analysis; therefore optimum points within these dimensions are still not found yet.

MRQ *How can large-scale agile organisations align their ITS strategies with their agile frameworks?*

The MRQ is answered by combining the answers of the above SQs. Outsourcing, which is predominantly driven by the intention to reduce cost is in contrast with the main principles of agile practices. Therefore, organisations should pay extra attention to the dimensions which are located on the intersection of the interests of both views (i.e. agile and sourcing). In order to find a balance between these two views in the aforementioned dimensions, organisations should first, be able to identify the decisions that should be made and follow a structured path of decision-making. Second, organisations should adapt this path to agile frameworks and their flexible nature. We proposed two separate instruments in order to enable this adaptability. Organisations will be able to define their ITS strategies more structurally by using the proposed map of ITS dimensions. Furthermore, by following the proposed method of ITS decision-making process shown in Figure 6.2, organisations will be able to continuously diagnose the current situation, analyse the available options and evaluate them to properly find the optimum point and avoid experimentation. This process may be resource consuming; however, targeting the most important dimensions, namely *location*, *pricing model*, and *sourcing model* will reduce the complexity of this process and increase the applicability.

7.2 Future Work

The results and the limitations of this research give opportunities for more extended research in several directions.

7.2.1 Comparison of ITS in Agile and Traditional Organisations

Traditional methods of working have been in place for many decades. The state-of-the-practice of ITS in traditional organisations has deviated significantly in different eras of outsourcing. To better assess the impacts of agile frameworks on ITS strategies, a comparative study in this area would also be helpful. Samples of such studies could be divided into four groups of *traditional*, *bimodal*, *immature agile*, and *mature agile* large organisations.

7.2.2 Study of Impacts of Agile Practices on ITS in SMEs

Large-scale organisations require an agile framework to be able to effectively apply agile at enterprise scale. However, SMEs do not necessarily need such tools. The map of ITS dimensions which was created in this research applies to SMEs as well. Nevertheless, behaviours of SMEs when defining ITS strategies in agile environments may differ from larger organisations'. This has also been mentioned by an expert during the validation stage of this research. The results of such a study would significantly help SMEs to adjust their IT sourcing strategies to their agile practices.

7.2.3 Study of the Other Markets

This research was performed in the Dutch market. However, as pointed out by one of the experts during the validation phase, the results may slightly be different in other markets, especially in North America. Distance from the major go-to places of outsourcing and cultural differences may lead to different sourcing decisions; therefore, further studies are required to enable generalisability of the results of this research.

7.2.4 Evaluation of the Proposed Solutions

The suggestions of this research and also the artefacts that were designed should also be implemented in the real world to be assessed in practice. Outsourced contracts are normally long-term and last for more than three years. Further research can be focused on the implementation of the suggested solutions. Furthermore, this evaluation should be measured carefully using proper success indicators and if possible, compared to similar outsourced projects in the same organisation.

Appendix A

PDD of the Multiple-Case Study

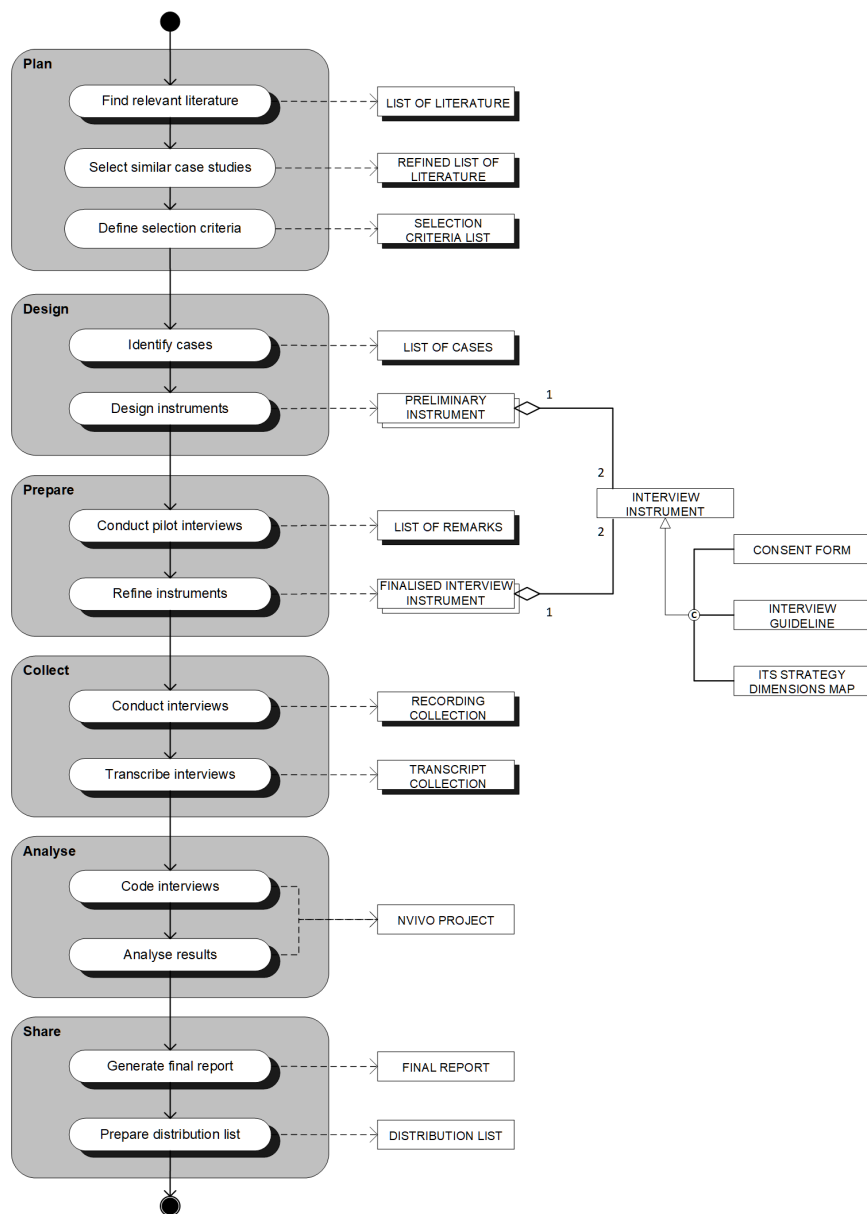


FIGURE A.1: PDD of the Multiple-case Study adapted from Yin, 2017

Appendix B

Assessment of Literature

Code	Papers	Journal	Author(s)	Citations	Year	Reading date	Overall score /10	Tags	Notes	Main contributions
46	Retained Organizations in IT Outsourcing		Marius Goldberg		2017					
47	IT outsourcing governance: Client types and their management strategies	Springer Science & Business Media	Leimeister	59	2010	18/2/2020	10			
48	Agile Practicing and Outsourcing	IJCSIS	Muhammad Sarfraz	2	2016	19/11/2019	8	Model, Outsourcing software development, Model evaluation	A model is proposed and evaluated. Model just considers communication, coordination and quality dimensions.	Outsourcing Model in Large-scale Agile
49	An Empirical Investigation on Effort Estimation in Agile Global Software Development	Global software engineering / IEEE	Ricardo Britto	27	2015	19/11/2019	5	Survey, Effort estimation	The effects of outsourcing strategies on effort estimation techniques	If one effort estimation technique is used, outsourcing strategy has no effect but if more is used, some outsourcing strategies are preferred more
50	Requirements Engineering at a Distance - Adapting the Requirements Engineering process to accommodate different Sourcing Strategies in a Structured Project Environment	MCs thesis	Dion Kusters	0	2018	19/11/2019	9	Sourcing strategy, Sourcing definition	Taxonomy of sourcing strategies, Definitions of sourcing strategies, Spectrum of sourcing strategies	Definitions and sourcing strategies can be used (sections 2.2 and 2.3). The main subject and conclusion is not related to my topic though
51	Acquiring the capabilities you need to go digital	White paper: McKinsey & Company	Matthias Daub	8	2015	20/11/2019	10	IT sourcing, Digital sourcing	Difference between IT and traditional sourcing. How to pick the right vendor	Specifies why IT sourcing is completely different from general sourcing. IT sourcing requires separate studies. Plus, IT sourcing is in essence very flexible and changing. Companies usually want short-term and flexible contracts for IT sourcing. Plus the criteria to select the right vendor.
52	Need for a smart solution: developing a sourcing strategy for a policy system at a German insurance company	Information Technology Teaching Cases	Max Roßmehl	1	2016	20/11/2019	4	Sourcing reasons	Pros and cons of outsourcing	An insurance company decides that outsourcing of digital solutions is better than allocating inhouse resources
53	Assessment of hybrid Lean-Agile (Leagile) supply chain strategies	Manufacturing Technology Management	Masoud Rahiminezhad Galankashi	23	2015	20/11/2019	1	Lean agile supply chain management		
54	Beyond the Border: A Comparative Literature Review on Communication Practices for Agile Global Outsourced Software Development Projects	HICSS / IEEE	Tim Dreesen	11	2016	22/11/2019	8	Agile global outsources software development,	Information Technology Outsourcing market 285b\$ in 2014 and 80% of companies use distributed agile approaches AGOSD is only considering the vendor to be agile (software development company) and not the client	Comprehensive list of communication techniques in ASD and AGOSD. Proven scarcity in the domain of large-scale agile outsourcing communication

FIGURE B.1: Assessment sheet of the identified literature

Appendix C

Interview Instruments

Interview Consent Form

Interviewee:

Interviewer: Fouad Amiri, ***@***.***

Dear interviewee,

The interview will take approximately one hour as we follow an interview protocol. There are no risks associated with your participation and you can stop the interview at any point in time. Procedures for academic research obliges that interviewees explicitly agree to be interviewed and how the information contained in the interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

By signing this form, you agree that:

- You are voluntarily taking part in this interview. You understand that you do not have to take part and that you are allowed to stop the interview at any point in time.
- The transcribed interview or extracts from it may be used in academic or corporate articles.
- You have been able to ask all the questions you might have and can always contact the researchers regarding questions you might have in the future.
- The interview will be recorded and a transcript will be produced.
- The actual recordings will be destroyed after transcribing.
- Access to the transcript will be limited to the interviewer and the academic supervisors of the research.

- Any content from the interview that is made available through publications or other outlets will be anonymous so it is impossible to directly or indirectly recognise you or the name of your company.

Any variations in the above conditions will only occur with your explicit permission.

Date:

Interviewee's signature:

Interview Guideline

Interviewer: Fouad Amiri, Utrecht University student, ***

Interviewee:

Function/role, department:

Date, place of interview:

Introduction

*Thank you for agreeing to participate in this interview. I am Fouad Amiri, a student of Business Informatics program at Utrecht University and I am currently working on my Master's degree research thesis as an intern at ***. This interview is also a part of my research. To facilitate our note-taking and analysis, I must audiotape our conversations today. For your information, only the researcher and the supervisors of this project will have access to the transcripts.*

Start recording

Interview arrangements

I have planned this interview to last no longer than 60 minutes. During this time, I have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning.

Explanation and purpose of research

You have been selected to speak with me today because you have been identified as someone who has a lot to share about sourcing strategies and their design process within your organisation. During this interview, we will discuss IT sourcing arrangements and the impacts of agile methods on them.

The objective of this research is to define a structure for IT sourcing strategies in large-scale agile organisations. This will be achieved by combining the analysed results of the interviews with the available literature.

By participating in this interview, you will contribute to the process of creating a scientific method for designing IT sourcing strategy. Furthermore, if interested, we can use your help in reviewing and validating the designed method and the results of the research will be presented to you later.

Let's start with some short and essential questions about you and the company:

Interviewee's background

1. Would you please introduce yourself? Title and main responsibilities, division or department.
2. How long have you been working in this company?
3. How familiar are you with agile/DevOps methods and IT sourcing?

Organisation's background and current status

1. What is the size of your IT department (How many people and teams)?
2. What types of projects are you currently executing in the IT department?
3. Do you consider this organisation as an IT-intensive organisation?
4. How much experience does your organisation have with agile/DevOps?
5. What agile/DevOps methods are you using?

IT sourcing within the organisation**General IT sourcing questions**

Now I would like to know more about how IT sourcing is being done within the organisation.

1. What types of IT services or projects are generally being outsourced in this organisation? (i.e. application management, infrastructure management, end-user management, managed security)
2. How many IT projects/services are being outsourced?
3. What are the main drivers/motives of outsourcing in this organisation? (e.g. cost reduction, focus on core capabilities, improvement, innovation, etc)

Questions about IT sourcing practices and agile implications

1. Does your company have an IT sourcing strategy? If **yes**, what is that strategy? (Do you have any pre-written plans when deciding to outsource?)
2. How often does your IT sourcing strategy change?
3. Who is responsible for sourcing-related decisions within your company?

4. There is a diagram in front of you which shows the common dimensions of sourcing strategies. Each of these dimensions has its own options and by selecting the proper option(s) for each dimension, an IT sourcing strategy would be designed. Would you please take a look at this diagram and choose the options that can best describe this organisation's sourcing strategy?
5. Do you think there is any other dimension or option in your sourcing strategy that you want to add to the list of the dimensions?
6. Can you walk me through the entire process of outsourcing IT services or projects in this organisation? (Please use the paper and the pen and take a few seconds to write down the steps and then explain them)
7. (If not explained well:) Can you elaborate more on the decision-making process of ITS strategies in this organisation?
8. Do agile/DevOps methods have an impact on your sourcing strategy and process? If **yes**, how / on which one of these dimensions?
9. Do you already have a documented guideline for IT sourcing or are you following a specific step by step method?
10. What impact does your IT sourcing strategy have on your IT department, its operational model and the way people work with each other?
11. Do you think anything within your outsourcing process needs to be improved or changed? In general, what works well and what does not? (Challenges and issues)
12. What influence, if any, had your agile/DevOps methods have on this change?
13. How well-equipped do you perceive your company is in case a new service/project needs to be outsourced right now? (What makes you think that way?)
14. Do you also use the gained experience through the previous IT sourcing projects in the future IT sourcing projects? If **yes**, how?
15. How do you deal with disruptions in the operational level in an outsourced project? (For instance, what if something goes wrong which is out of the hands of development teams and require other teams or higher-ups involved)

Questions about the relationship with vendors

1. How do you arrange contract settings with vendors? (Negotiations, Pricing models, SLA, etc)

2. How is the interaction between your organisation and vendors?
3. How is the interaction between the vendors involved in the same outsourced project?
4. How do you grade the vendors you are working with and compare different partners?

Completion

Snowballing

- Do you know anyone else who is knowledgeable in this area or another person in charge of outsourcing within this organisation that can help us?

Closure

- Is there anything you would like to add regarding this interview?
- Do you have any questions from me?

Thank you very much for your time and efforts.

Stop recording

Appendix D

Coding Structure

The screenshot displays a software interface for managing a coding structure. On the left, a tree view shows a hierarchy of nodes under 'Quick Access' and 'Codes'. The 'Codes' section is expanded to show 'Nodes', which includes categories like Agile, Sourcing Strategy Dimension, Relationships, and Cases. On the right, a 'Nodes' table provides a summary of the coding structure, listing the name of each node, the number of files associated with it, and the number of references. The 'Agility Implications' node is highlighted with a dashed border.

Name	Files	Referen
Against ITO	1	1
Agile BPM	1	3
Agile Strategy	1	8
Agility Implications	20	54
Case study Samplin	1	2
Continouos ITO	1	1
Definitions	31	59
Due diligence	1	1
Inter-vendor relatio	1	1
IT Sourcing Incentiv	23	52
ITO background	5	11
ITO Execution	2	2
ITO Framework	9	13
Large-scale agile	1	1
Literature Gap	18	29
Literature Review M	5	13
Method Engineerin	1	1
Multi speed sourcin	3	11
Research Methods	25	79
Retrospective	1	4
Search Keywords	9	11
Sourcing Implicatio	5	10
Sourcing Model	26	43

FIGURE D.1: Coding structure of the identified literature

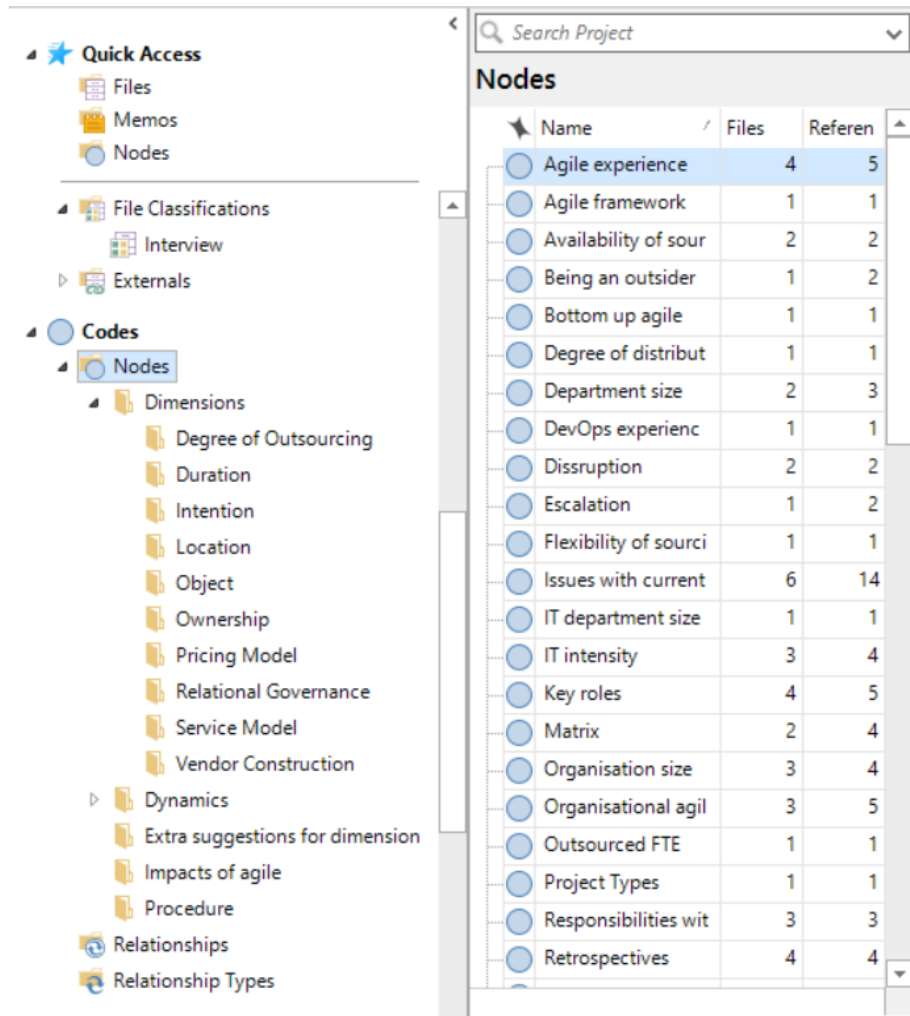


FIGURE D.2: Coding structure of the interview transcripts

Appendix E

List of the Papers about ITS Dimensions

Article	Type	Data	Industry	Agility	Case Size
Ågerfalk & Fitzgerald, 2008	M-CS	S	NS	NS	NS
Al-Ahmad & Al-Oqaili, 2013	CS	I-O	Airline	NS	Large
Ali & Green, 2012	M-CS	S	Auditing	NS	NS
Aris, Arshad, & Mohamed, 2008	M-CS	S	Governmental	NS	Large
Babin & Saunderson, 2016	M-CS	I	Mix	NS	Large
Bary, 2018	Lit	NA	NA	NA	NA
Cullen, Seddon, & Willcocks, 2005a	M-CS	D	Mix	Non-agile	Large
Demirbas, Gewald, & Moos, 2018	M-CS	I	Finance	Non-agile	Large
Derksen, 2013	M-CS	S	Mix	NS	NS
Dibbern et al., 2004	Lit	NA	NA	NA	NA
Dutta, Gwebu, & Wang, 2017	M-CS	D	Mix	NS	Large
Fitzgerald et al., 2017	M-CS	I	TeleCom	NS	Large
Fjermestad & Saitta, 2005	Lit	NA	NA	NA	NA
Gerbl et al., 2015	M-CS	I-D	Mix	NS	Large

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Table E.1 – continued from previous page

Article	Type	Data	Industry	Agility	Case Size
Gerster, Dremel, & Kelker, 2018	CS	I	Automotive	Agile	Large
Hodosi & Rusu, 2019	M-CS	I-S-D	Mix	NS	Large
Hopwood, 2018	CS	I	Finance	Bimodal	Large
Hyder, Heston, & Paulk, 2004	M-CS	D	Mix	NS	Large
Jouanne-Diedrich, 2004	CS	O	Governmental	Non-agile	Large
Könning, Westner, & Strahringer, 2018	M-CS	D	Mix	NS	Large
Lacity, Khan, & Willcocks, 2009	SLR	NA	NA	NA	NA
Lee et al., 2003	M-CS	S	NS	Non-agile	Large
Lee, Miranda, & Kim, 2004	M-CS	I-S	Mix	Non-agile	NS
Leimeister, 2010	M-CS	I-S	Mix	NS	Mix
Mahnke, Overby, & Vang, 2005	Lit	NA	NA	NA	NA
Nordigården et al., 2014	M-CS	I-D	Products	Non-agile	Large
Pratap, 2014	Lit	NA	NA	NA	NA
Pries-Heje & Pries-Heje, 2014	CS	I	Government	Agile	Large
Schoeman et al., 2008	M-CS	I	Mix	NS	Large
Su, Levina, & Ross, 2016	M-CS	I	Finance	NS	Large
Simmonds & Gilmour, 2005	M-CS	S	Mix	Non-agile	NS
Varajão, Cruz-Cunha, & Glória Fraga, 2017	M-CS	S	Mix	NS	Mix

TABLE E.1: List of the papers.

M-CS: Multiple-Case Study, CS: Single Case Study, Lit: Literature Review, SLR: Systematic Literature Review, I: Interview, S: Survey, D: Document, O: Observation, NA: Not Applicable, NS: Not Specified

Appendix F

Activity & Concept Tables of the High-level Process of ITS

Activity	Description
Decision making	The initial stage of sourcing which is mainly about gathering information on ITS and the context and the choices are discussed (Aris, Arshad, & Mohamed, 2008; Dibbern et al., 2004). According to Al-Ahmad & Al-Oqaili, 2013, this stage is concerned with sourcing decisions and it focuses on the factors to be considered when sourcing. Based on the information gained in this phase, organisations should be able to configure their ITS strategy dimensions.
Contracting	If outsourcing is a part of the sourcing guideline, organisations should go through the contracting phase with vendors. This stage is a shared project between the organisation and the vendor (Al-Ahmad & Al-Oqaili, 2013). Sourcing guideline which is the outcome of the previous phase is included in the Request for Proposal (RFP) in this phase (Aris, Arshad, & Mohamed, 2008). The main activities of this stage are selecting proper vendors, negotiation with these vendors and signing the contract.
Execution	This stage includes execution and monitoring of execution. Apart from the implementation of the services, this stage focuses on controlling and auditing the delivered system and the relationship with the vendor (Al-Ahmad & Al-Oqaili, 2013).

TABLE F.1: Activity table of the high-level PDD of ITS

Concept	Description
SOURCING GUIDELINE	Detailed requirements, details of activities that should be sourced and if possible a shortlist of potential vendors with their details plus the configured ITS strategy are the components of this deliverable (Sarfraz et al., 2016; Al-Ahmad & Al-Oqaili, 2013).
CONTRACT	The signed contract which is written based on the SOURCING GUIDELINE. Metrics that facilitate the success measurement should also be included in this deliverable (Al-Ahmad & Al-Oqaili, 2013).
EVALUATION REPORT	The results of monitoring, managing and applied metrics are represented in this report. These results are organised in a way that the organisation can re-evaluate its position in sourcing and its relationship with the vendor (Al-Ahmad & Al-Oqaili, 2013).

TABLE F.2: Concept table of the high-level PDD of ITS

Appendix G

Activity & Concept Tables of the Decision-Making Phase

Activity	Description
Understand context	This complex activity includes the analysis of the current conditions or situations (i.e. the determinants or antecedents) and identifying the core activities (Dibbern et al., 2004; McIvor, 2000). Furthermore, organisations gather internal and external intelligence which is necessary for determining the strategic drivers (Kazmi, Hafeez, & Ali, 2018). The <i>intention</i> of outsourcing should also be clear at this stage.
Search for options	Organisations should identify if there is a possibility to outsource the core and non-core activities which were categorised in the previous stage (Dibbern et al., 2004; McIvor, 2000). Questions like " <i>which part can be outsourced?</i> " and " <i>why this part can be outsourced?</i> " are answered at this stage (Dibbern et al., 2004). Multiple sets of ITS configurations can be proposed at this stage to be further analysed.
Analyse options	After considering what to outsource, the next question is "which choice to make" (Dibbern et al., 2004). At this stage, by benchmarking and in-depth analysis, the overall costs and advantages of insourcing should be compared with the advantages provided by all potential external suppliers (McIvor, 2000). This analysis will enable organisations to prioritise and limit potential ITS configurations.

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Table G.1 – continued from previous page

Activity	Description
Choose solution	Based on the prioritised configurations list, at this stage, the actual selection of the final decision is performed and a guideline to help the organisation assess the various vendor selection criteria is generated (Dibbern et al., 2004).

TABLE G.1: Activity table of the decision making process

Concept	Description
CONTEXT REPORT	A detailed report containing the details of the business case, the requirements, analysis of the current situation including the ongoing contracts, identified core capabilities and a shortlist of capable suppliers (Kazmi, Hafeez, & Ali, 2018).
LIST OF FILTERED CONFIGURATIONS	Some dimensions of ITS configuration such as <i>ownership</i> and <i>degree of outsourcing</i> can be determined when searching for options (Dibbern et al., 2004). Different scenarios that can be considered when searching for options are then categorised in the format of different ITS configurations. Not all dimensions are required to be arranged for every configuration, since further analysis is needed which is done in the next stage.
LIST OF PRIORITISED CONFIGURATIONS	Based on the results of benchmarks and analyses, different scenarios in LIST OF FILTERED CONFIGURATIONS will be assigned a priority and ordered (Kazmi, Hafeez, & Ali, 2018)
IT SOURCING GUIDELINE	Detailed requirements, details of activities that should be sourced and if possible a shortlist of potential vendors with their details plus the configured ITS strategy are the components of this deliverable (Sarfraz et al., 2016; Al-Ahmad & Al-Oqaili, 2013).
IT SOURCING CONFIGURATION	A set of choices that an organisation makes when defining ITS strategies (Cullen, Seddon, & Willcocks, 2005b). IT SOURCING CONFIGURATION is shaped of 10 dimensions which are shown in the map of ITS dimensions and explained in Section 4.2.2

TABLE G.2: Concept table of the decision making process

Bibliography

- Ågerfalk, Pär J & Brian Fitzgerald (2008). "Outsourcing to an unknown workforce: Exploring opensourcing as a global sourcing strategy". In: *MIS quarterly*, pp. 385–409.
- Agrawal, Manish, Rajiv Kishore, & H Raghav Rao (2006). "Market reactions to e-business outsourcing announcements: An event study". In: *Information & Management* 43.7, pp. 861–873.
- Al-Ahmad, Walid & Abedallah Al-Oqaili (2013). "Towards a unified model for successful implementation of outsourcing and reversibility of information systems". In: *Journal of King Saud University-Computer and Information Sciences* 25.2, pp. 229–240.
- Alborz, Shawn, Peter Seddon, & Rens Scheepers (2004). "Impact of configuration on IT outsourcing relationships". In: *AMCIS 2004 Proceedings*, p. 447.
- Ali, Syaiful & Peter Green (2012). "Effective information technology (IT) governance mechanisms: An IT outsourcing perspective". In: *Information Systems Frontiers* 14.2, pp. 179–193.
- Alliance, AGILE (2017). *Agile Practice Guide, Project Management Institute, 2017: Agile Practice Guide*. Vol. 1. Bukupedia.
- Arbogast, Tom, Craig Larman, & Bas Vodde (2012). "Agile contracts primer". In: URL: <http://www.agilecontracts.org>. (accessed: 29.06.2019).
- Aris, SR, Noor Habibah Arshad, & Azlinah Mohamed (2008). "Conceptual framework on risk management in IT outsourcing projects". In: *management* 36.37, pp. 37–38.
- Arsel, Zeynep (2017). "Asking questions with reflexive focus: A tutorial on designing and conducting interviews". In: *Journal of Consumer Research* 44.4, pp. 939–948.
- Aubert, Benoit A, Suzanne Rivard, & Michel Patry (1996). "A transaction cost approach to outsourcing behavior: Some empirical evidence". In: *Information & management* 30.2, pp. 51–64.
- Ayres, Lioness, Karen Kavanaugh, & Kathleen A Knafl (2003). "Within-case and across-case approaches to qualitative data analysis". In: *Qualitative health research* 13.6, pp. 871–883.
- Babin, Ronald & Shane Saunderson (2016). "Governance of outsourcing: Building a better relationship". In: *Journal of Information Systems Applied Research* 9.1, p. 16.

- Barney, Jay B (1986). "Strategic factor markets: Expectations, luck, and business strategy". In: *Management science* 32.10, pp. 1231–1241.
- Bary, Benedikt von (2018). "How to bring IT home: Developing a common terminology to compare cases of IS back-sourcing". In: *The Twenty-fourth Americas Conference on Information Systems, New Orleans, USA*.
- Bass, Julian M (2016). "Artefacts and agile method tailoring in large-scale offshore software development programmes". In: *Information and Software Technology* 75, pp. 1–16.
- Beck, Kent (2000). *Extreme programming explained: embrace change*. addison-wesley professional.
- Bell, Emma, Alan Bryman, & Bill Harley (2018). *Business research methods*. Oxford university press.
- Bell, Geoffrey G, Philip Bromiley, & John Bryson (1997). "Spinning a complex web: links between strategic decision making context, content, process, and outcome". In: *Strategic decisions*. Springer, pp. 163–178.
- Beulen, Erik (2018). "Implementing and Contracting Agile and DevOps: A Survey in the Netherlands". In: *International Workshop on Global Sourcing of Information Technology and Business Processes*. Springer, pp. 124–146.
- Boehm, Barry & Richard Turner (2005). "Management challenges to implementing agile processes in traditional development organizations". In: *IEEE software* 22.5, pp. 30–39.
- Boyne, George A. & Richard M. Walker (Apr. 2004). "Strategy Content and Public Service Organizations". In: *Journal of Public Administration Research and Theory* 14.2, pp. 231–252. ISSN: 1053-1858.
- Business Agility Institute (2019). *The Business Agility Report: 2nd edition 2019*. Vol. 1. URL: <https://businessagility.institute/download/2019-business-agility-report/>. (accessed: 29.06.2019).
- Canty, Denise (2015). *Agile for project managers*. Auerbach Publications.
- Chia, Austin (2019). "Distilling the Essence of the McKinsey Way: The Problem-Solving Cycle". In: *Management Teaching Review* 4.4, pp. 355–370.
- Clarke, Paul & Rory V O'Connor (2012). "The situational factors that affect the software development process: Towards a comprehensive reference framework". In: *Information and Software Technology* 54.5, pp. 433–447.
- Conboy, Kieran & Noel Carroll (2019). "Implementing large-scale agile frameworks: challenges and recommendations". In: *IEEE Software* 36.2, pp. 44–50.
- Conboy, Kieran et al. (2010). "People over process: key people challenges in agile development". In: *IEEE Software* 28.4, pp. 48–57.
- Creswell, John W & Cheryl N Poth (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

- Cullen, Sara & PB Seddon (2004). "Configuration: An Important Concept for Understanding IT Outsourcing". In: *Pacific-Asia Conference on Information Systems*. Citeseer.
- Cullen, Sara, Peter Seddon, & Leslie Willcocks (Jan. 2005a). "Managing Outsourcing: The Life Cycle Imperative." In: *MIS Quarterly Executive* 4.
- Cullen, Sara, Peter B Seddon, & Leslie P Willcocks (2005b). "IT outsourcing configuration: Research into defining and designing outsourcing arrangements". In: *The Journal of Strategic Information Systems* 14.4, pp. 357–387.
- Da Rold, C, J Grigg, & T Berg (2002). "How to build a sourcing strategy". In: *Gartner Strategic analysis report R-18-10996*, pp. 15–16.
- Daitan, Group (2015). *Best Practices for Agile Software Development in an Outsourced Environment*. Vol. 1. URL: https://www.daitan.com/wp-content/uploads/2017/08/2015.12_Agile_Outsourcing_Daitan_White_PaperFINAL.pdf. (accessed: 24.01.2020).
- Damanpour, Fariborz, Catherine Magelssen, & Richard M Walker (2019). "Outsourcing and insourcing of organizational activities: the role of outsourcing process mechanisms". In: *Public Management Review*, pp. 1–24.
- De Looft, Leon A (1998). "Information systems outsourcing: theories, case evidence and a decision framework". In: *Strategic sourcing of information systems: perspectives and practices*, pp. 249–281.
- De Quinn, James B (2000). "Outsourcing innovation: the new engine of growth". In: *Sloan Management*.
- Demirbas, Ugur, Heiko Gewalt, & Bernhard Moos (2018). "The Impact of Digital Transformation on Sourcing Strategies in the Financial Services Sector: Evolution or Revolution?" In: *The Twenty-fourth Americas Conference on Information Systems, New Orleans, USA*.
- Derksen, Barry (2013). "Impact of IT outsourcing on Business & IT alignment". In: Dhar, Subhankar (2012). "From outsourcing to Cloud computing: evolution of IT services". In: *Management Research Review* 35.8, pp. 664–675.
- Dibbern, Jens et al. (2004). "Information systems outsourcing: a survey and analysis of the literature". In: *ACM SIGMIS Database: the DATABASE for Advances in Information Systems* 35.4, pp. 6–102.
- Dikert, Kim, Maria Paasivaara, & Casper Lassenius (2016). "Challenges and success factors for large-scale agile transformations: A systematic literature review". In: *Journal of Systems and Software* 119, pp. 87–108.
- Dingsøyr, Torgeir & Nils Brede Moe (2014). "Towards principles of large-scale agile development". In: *International Conference on Agile Software Development*. Springer, pp. 1–8.
- DiRomauldo, Anthony & Vijay Gurbaxani (1998). "Strategic intent for IT outsourcing". In: *Sloan Management Review Summer*, pp. 67–80.

- Dreesen, Tim et al. (2016). "Beyond the border: a comparative literature review on communication practices for agile global outsourced software development projects". In: *2016 49th Hawaii International Conference on System Sciences (HICSS)*. IEEE, pp. 4932–4941.
- Dutta, Dev K, Kholekile L Gwebu, & Jing Wang (2017). "Strategy and vendor selection in IT outsourcing: is there a method in the madness?" In: *Global sourcing of services: Strategies, issues and challenges*. World Scientific, pp. 451–477.
- Dyba, Tore & Torgeir Dingsoyr (2009). "What do we know about agile software development?" In: *IEEE software* 26.5, pp. 6–9.
- Eisenhardt, Kathleen M (1989). "Building theories from case study research". In: *Academy of management review* 14.4, pp. 532–550.
- Elshamy, Ahmed & Amr Elssamadisy (2006). "Divide after you conquer: an agile software development practice for large projects". In: *International Conference on Extreme Programming and Agile Processes in Software Engineering*. Springer, pp. 164–168.
- Fitzgerald, Brian et al. (2017). *Scaling a software business: The digitalization journey*. Cham: Springer.
- Fitzgerald, G & L Willcocks (1994). *A Business Guide to Outsourcing Information Technology, A Study of European Best Practice in the Selection, Management and Use of External IT Services*.
- Fjermestad, Jerry & Jo Ann Saitta (2005). "A strategic management framework for IT outsourcing: A review of the literature and the development of a success factors model". In: *Journal of Information Technology Case and Application Research* 7.3, pp. 42–60.
- Fowler, Martin (2000). "Put Your Process on a Diet-As a reaction to cumbersome approaches to development, new methodologies have appeared. These methods attempt a compromise between no process and too much process". In: *Software Development* 8.12, pp. 32–39.
- Fowler, Martin, Jim Highsmith, et al. (2001). "The agile manifesto". In: *Software Development* 9.8, pp. 28–35.
- Fuchs, Christoph & Thomas Hess (2018). "Becoming agile in the digital transformation: the process of a large-scale agile transformation". In: *39th International Conference On Information Systems, San Francisco*.
- Gerbl, Martina et al. (2015). "A multi-theory approach to understanding the business process outsourcing decision". In: *Journal of World Business* 50.3, pp. 505–518.
- Gerster, Daniel & Christian Dremel (2019). "Agile contracts: Learning from an autonomous driving sourcing project". In: *The 27th European Conference on Information Systems (ECIS), Stockholm Uppsala*.

- Gerster, Daniel, Christian Dremel, & Prashant Kelker (2018). "Agile meets non-agile: Implications of adopting agile practices at enterprises". In: *Twenty-fourth Americas Conference on Information Systems, New Orleans*.
- Ghafoor, Fawad, Ibrar Ali Shah, & Nasir Rashid (2017). "Issues in adopting agile methodologies in global and local software development: A systematic literature review protocol with preliminary results". In: *International Journal of Computer Applications* 160.7.
- Gill, AQ & Brian Henderson-Sellers (2006). "Measuring agility and adaptibility of agile methods: A 4 dimensional analytical tool". In: *The IADIS international conference on applied computing 2006*. IADIS Press.
- Gilley, K Matthew & Abdul Rasheed (2000). "Making more by doing less: an analysis of outsourcing and its effects on firm performance". In: *Journal of management* 26.4, pp. 763–790.
- González, Reyes, Jose Gascó, & Juan Llopis (2016). "Information systems outsourcing reasons and risks: review and evolution". In: *Journal of Global Information Technology Management* 19.4, pp. 223–249.
- Gottfredson, Mark, Rudy Puryear, & Stephen Phillips (2005). "Strategic sourcing". In: *Harvard business review* 83.2, pp. 132–139.
- Grieger, Marcus & André Ludwig (2019). "On the move towards customer-centric business models in the automotive industry-a conceptual reference framework of shared automotive service systems". In: *Electronic Markets* 29.3, pp. 473–500.
- Grover, Varun, Myun Joong Cheon, & James TC Teng (1996). "The effect of service quality and partnership on the outsourcing of information systems functions". In: *Journal of Management information systems* 12.4, pp. 89–116.
- Hall, L, S Futela, & D Gupta (2017). *IT key metrics data 2017: Key industry measures*. Tech. rep. Gartner Research Report.
- Heikkilä, Ville T et al. (2017). "Managing the requirements flow from strategy to release in large-scale agile development: a case study at Ericsson". In: *Empirical Software Engineering* 22.6, pp. 2892–2936.
- Hevner, Alan & Samir Chatterjee (2010). *Design research in information systems: theory and practice*. Vol. 22. Springer Science & Business Media.
- Himmelreich, Heiner et al. (2019). *When Agile Meets Outsourcing*. URL: <https://www.bcg.com/en-nl/publications/2019/agile-meets-outsourcing.aspx>. (accessed: 26.11.2019).
- Hoda, Rashina et al. (2017). "Systematic literature reviews in agile software development: A tertiary study". In: *Information and Software Technology* 85, pp. 60–70.
- Hodosi, Georg & Lazar Rusu (2019). *Risks, Relationships and Success Factors in IT Outsourcing: A Study in Large Companies*. Springer.
- Hopwood, Marsha N (2018). "Effective Strategies for Managing the Outsourcing of Information Technology". PhD thesis. Walden University.

- Horlach, Bettina et al. (2017). "Increasing the agility of IT delivery: five types of bimodal IT organization". In: *Proceedings of the 50th Hawaii International Conference on System Sciences*.
- Hsieh, Hsiu-Fang & Sarah E Shannon (2005). "Three approaches to qualitative content analysis". In: *Qualitative health research* 15.9, pp. 1277–1288.
- Hyder, Elaine B, Keith M Heston, & Mark C Paulk (2004). "The eSourcing capability model for service providers (eSCM-SP) v2, Part 1: Model Overview". In: *Information Technology Services Qualification Center (ITSQC), Carnegie Mellon University, Technical Report No. CMU-ISRI-04-113*.
- Jouanne-Diedrich, Holger von (2004). "Jahre Outsourcing-Forschung: Systematisierung und Lessons Learned". In: *Informationsmanagement. Konzepte und Strategien für die Praxis*, pp. 125–133.
- Kalenda, Martin, Petr Hyna, & Bruno Rossi (2018). "Scaling agile in large organizations: Practices, challenges, and success factors". In: *Journal of Software: Evolution and Process* 30.10, e1954.
- Kazmi, Syeda Hina Mazhar, Yaser Hafeez, & Sadia Ali (2018). "Software outsourcing model for risk mitigation". In: *2018 International Conference on Computing, Mathematics and Engineering Technologies (iCoMET)*. IEEE, pp. 1–11.
- Kern, Thomas & Leslie Willcocks (2000). "Exploring information technology outsourcing relationships: theory and practice". In: *The Journal of Strategic Information Systems* 9.4, pp. 321–350.
- Khandwalla, Pradip N (1972). "Environment and its impact on the organization". In: *International studies of management & organization* 2.3, pp. 297–313.
- Kitchenham, Barbara (2004). "Procedures for performing systematic reviews". In: *Keele, UK, Keele University* 33.2004, pp. 1–26.
- Kluge, Susann (2000). "Empirisch begründete Typenbildung in der qualitativen Sozialforschung". In: *Forum Qualitative Sozialforschung*. Vol. 1. 1, pp. 1–00.
- Knaster, Richard & Dean Leffingwell (2018). *SAFe 4.5 Distilled: Applying the Scaled Agile Framework for Lean Enterprises*. Addison-Wesley Professional.
- Könning, Michael, Markus Westner, & Susanne Strahringer (2018). "Multisourcing on the Rise: Results from an Analysis of more than 1,000 IT Outsourcing Deals in the ASG Region". In: *Proceedings of the Multikonferenz Wirtschaftsinformatik*, pp. 06–09.
- Koo, Yunmo et al. (2019). "Congruent patterns of outsourcing capabilities: A bilateral perspective". In: *The Journal of Strategic Information Systems*, p. 101580.
- Kotabe, Masaaki, Janet Y Murray, & Michael J Mol (2008). "Global sourcing strategy and performance: a "fit" versus "balance" perspective". In: *International Business Scholarship: AIB Fellows on the First 50 Years and Beyond*. Emerald Group Publishing Limited.

- KPMG (2019). *Survey on Agility. Agile Transformation: From Agile experiments to operating model transformation: How do you compare to others?* Vol. 1. URL: <https://assets.kpmg/content/dam/kpmg/be/pdf/2019/11/agile-transformation.pdf>. (accessed: 29.06.2019).
- Lacity, Mary, David Feeny, & Leslie P Willcocks (2003). "Transforming a back-office function: lessons from BAE systems' experience with an enterprise partnership". In: *MIS Quarterly Executive* 2.2, pp. 86–103.
- Lacity, Mary C, Shaji A Khan, & Leslie P Willcocks (2009). "A review of the IT outsourcing literature: Insights for practice". In: *The journal of strategic information systems* 18.3, pp. 130–146.
- Lacity, Mary Cecelia & Rudy Hirschheim (1995). *Beyond the information systems outsourcing bandwagon: the insourcing response*. John Wiley & Sons, Inc.
- Lakatos, Imre (1976). "Falsification and the methodology of scientific research programmes". In: *Can theories be refuted?* Springer, pp. 205–259.
- Lamb, Robert (1984). *Competitive Strategic Management*. Prentice Hall.
- Larman, Craig (2010). *Practices for scaling lean & Agile development: large, multisite, and offshore product development with large-scale scrum*. Pearson Education India.
- Lauesen, Soren (2002). *Software requirements: styles and techniques*. Pearson Education.
- Lee, Jae-Nam, Shaila M Miranda, & Yong-Mi Kim (2004). "IT outsourcing strategies: Universalistic, contingency, and configurational explanations of success". In: *Information Systems Research* 15.2, pp. 110–131.
- Lee, Jae-Nam et al. (2003). "IT outsourcing evolution—: past, present, and future". In: *Communications of the ACM* 46.5, pp. 84–89.
- Leimeister, Stefanie (2010). *IT outsourcing governance: Client types and their management strategies*. Springer Science & Business Media.
- Liang, Huigang et al. (2016). "IT outsourcing research from 1992 to 2013: A literature review based on main path analysis". In: *Information & Management* 53.2, pp. 227–251.
- Loh, Lawrence & N Venkatraman (1992a). "Determinants of information technology outsourcing: a cross-sectional analysis". In: *Journal of management information systems* 9.1, pp. 7–24.
- (1992b). "Diffusion of information technology outsourcing: influence sources and the Kodak effect". In: *Information systems research* 3.4, pp. 334–358.
- Mahnke, Volker, Mikkel Lucas Overby, & Jan Vang (2005). "Strategic outsourcing of IT services: theoretical stocktaking and empirical challenges". In: *Industry & Innovation* 12.2, pp. 205–253.
- Mann, Arti et al. (2015). "Spatial and temporal trends in information technology outsourcing". In: *Applied geography* 63, pp. 192–203.
- Maples, Chuck (2009). "Enterprise agile transformation: the two-year wall". In: *2009 Agile Conference*. IEEE, pp. 90–95.

- Marchewka, Jack T & Shiva Oruganti (2013). "A combined model of IT outsourcing partnerships and success". In: *Communications of the IIMA* 13.2, p. 6.
- Marcolin, Barbara L & Kerry L McLellan (1998). "Effective IT outsourcing arrangements". In: *Proceedings of the Thirty-First Hawaii International Conference on System Sciences*. Vol. 6. IEEE, pp. 654–665.
- Mathison, Sandra (2005). "Cross-case analysis". In: *Encyclopedia of evaluation*, pp. 96–97.
- McIvor, Ronan (2000). "A practical framework for understanding the outsourcing process". In: *Supply Chain Management: an international journal*.
- Mersino, Anthony (2018). *Agile Transformations Take Too Long – A Cautionary Tale*. Vol. 1. URL: <https://vitalitychicago.com/blog/agile-transformations-take-too-long-a-cautionary-tale/>. (accessed: 13.05.2020).
- Meyer, Alan D, Anne S Tsui, & C Robert Hinings (1993). "Configurational approaches to organizational analysis". In: *Academy of Management journal* 36.6, pp. 1175–1195.
- Miller, Danny (1981). "Toward a new contingency approach: The search for organizational gestalts". In: *Journal of management studies* 18.1, pp. 1–26.
- Mintzberg, Henry, Joseph Lampel, et al. (1999). "Reflecting on the strategy process". In: *Sloan management review* 40, pp. 21–30.
- Mojsilović, Aleksandra et al. (2007). "A logistic regression framework for information technology outsourcing lifecycle management". In: *Computers & Operations Research* 34.12, pp. 3609–3627.
- Moore, Erik & John Spens (2008). "Scaling agile: Finding your agile tribe". In: *Agile 2008 Conference*. IEEE, pp. 121–124.
- Nicoletti, Bernardo (2018). "Agile procurement". In: *Agile Procurement*. Springer, pp. 49–50.
- Nie, Er & Imed Hammouda (2017). "An exploratory study on strategic software development outsourcing". In: *2017 IEEE 12th International Conference on Global Software Engineering (ICGSE)*. IEEE, pp. 106–115.
- Nordigården, Daniel et al. (2014). "Outsourcing decisions—the case of parallel production". In: *International Journal of Operations & Production Management* 34.8, pp. 974–1002.
- Nutt, Paul C (2008). "Investigating the success of decision making processes". In: *Journal of Management Studies* 45.2, pp. 425–455.
- (2011). "Making decision-making research matter: some issues and remedies". In: *Management Research Review*.
- Oh, Wonseok, Michael J Gallivan, & Joung W Kim (2006). "The market's perception of the transactional risks of information technology outsourcing announcements". In: *Journal of Management Information Systems* 22.4, pp. 271–303.

- Onwuegbuzie, Anthony J, Nancy L Leech, & Kathleen MT Collins (2012). "Qualitative analysis techniques for the review of the literature". In: *The qualitative report* 17.28, pp. 1–28.
- Opelt, Andreas et al. (2013). *Agile contracts: creating and managing successful projects with Scrum*. John Wiley & Sons.
- Paasivaara, Maria (2017). "Adopting SAFe to scale agile in a globally distributed organization". In: *2017 IEEE 12th International Conference on Global Software Engineering (ICGSE)*. IEEE, pp. 36–40.
- Paasivaara, Maria & Casper Lassenius (2006). "Could global software development benefit from agile methods?" In: *2006 IEEE International Conference on Global Software Engineering (ICGSE'06)*. IEEE, pp. 109–113.
- Patil, Shrinivas & Winai Wongsurawat (2015). "Information technology (IT) outsourcing by business process outsourcing/information technology enabled services (BPO/ITES) firms in India: A strategic gamble". In: *Journal of Enterprise Information Management* 28.1, pp. 60–76.
- Pattnaik, Mrs Sasmita, Mrs Rita Prusty, & Manoranjan Dash (2016). "Cloud in financial services: Building value across enterprise". In: *International Journal of Research in IT and Management* 6.6, pp. 25–32.
- Plugge, Albert & Marijn Janssen (2009). "Managing change in IT outsourcing arrangements: an offshore service provider perspective on adaptability". In: *Strategic Outsourcing: An International Journal* 2.3, pp. 257–274.
- Poole, Cynthia Denise McGowan (2019). "IT outsourcing, knowledge transfer and project transition phases". In: *VINE Journal of Information and Knowledge Management Systems*.
- Prahalad, Coimbatore K & Gary Hamel (1997). "The core competence of the corporation". In: *Strategische Unternehmensplanung/Strategische Unternehmensführung*. Springer, pp. 969–987.
- Pratap, Sankalp (2014). "Towards a framework for performing outsourcing capability". In: *Strategic Outsourcing: An International Journal* 7.3, pp. 226–252.
- Pries-Heje, Lene & Jan Pries-Heje (2014). "Agile Contracts: Designing an Agile Team Selection Guideline". In: *Proceedings/Information Systems Research in Scandinavia (iris)* 5.
- Putta, Abheeshta, Maria Paasivaara, & Casper Lassenius (2018). "Benefits and challenges of adopting the scaled agile framework (SAFe): preliminary results from a multivocal literature review". In: *International Conference on Product-Focused Software Process Improvement*. Springer, pp. 334–351.
- Quinn, James Brian & Frederick G Hilmer (1994). "Strategic outsourcing". In: *MIT Sloan Management Review* 35.4, p. 43.

- Rajaeian, Mohammad Mehdi, Aileen Cater-Steel, & Michael Lane (2017). "A systematic literature review and critical assessment of model-driven decision support for IT outsourcing". In: *Decision Support Systems* 102, pp. 42–56.
- Rajagopalan, Nandini et al. (1997). "A multi-theoretic model of strategic decision making processes". In: *Strategic decisions*. Springer, pp. 229–249.
- Ritzer, George & Craig Lair (2007). "Outsourcing: Globalization and beyond". In: *The Blackwell Companion to Globalization*, p. 307.
- Rose, Kenneth H (2013). "A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Fifth Edition". In: *Project management journal* 44.3, e1–e1.
- Rosing, M von, J von Scheel, & AQ Gill (2015). *Applying Agile Principles to BPM: The Complete Business Process Handbook*.
- Rouse, Anne & Brian Corbitt (2004). "IT-supported business process outsourcing (BPO): The good, the bad and the ugly". In: *PACIS 2004 Proceedings*, p. 126.
- Rust, Roland T & PK Kannan (2003). "E-service: a new paradigm for business in the electronic environment". In: *Communications of the ACM* 46.6, pp. 36–42.
- Sachdev, Vishal & Kishen Iyengar (2007). "Will agile methodologies work in offshore outsourcing". In: *SWDSI07 San Diego, USA*.
- Saldaña, Johnny (2015). *The coding manual for qualitative researchers*. Sage.
- Sarfraz, Muhammad et al. (2016). "Agile practicing and outsourcing". In: *International Journal of Computer Science and Information Security (IJCSIS)* 14.6.
- Schoeman, Sijmen et al. (2008). "Bridging the gap between the theory and practice of IS outsourcing strategy design". In: *Second Information Systems Workshop on Global Sourcing: Service, Knowledge and Innovation, 10–13 March, Val D'Isere*.
- Schultze, Ulrike & Michel Avital (2011). "Designing interviews to generate rich data for information systems research". In: *Information and organization* 21.1, pp. 1–16.
- Schwaber, Ken & Mike Beedle (2002). *Agile software development with Scrum*. Vol. 1. Prentice Hall Upper Saddle River.
- ScioConsulting (2016). "Successful Software Development Outsourcing – Impact on Agile". In: URL: <https://sciodev.com/blog/successful-software-development-outsourcing-impact-on-agile/>. (accessed: 08.02.2020).
- Sharma, Swati (2020). "How Outsourcing Practices Are Changing in 2020: An Industry Insight". In: URL: <https://www.infoq.com/articles/outsourcing-practices-change-2020/>. (accessed: 04.07.2020).
- Shrivastava, Suprika Vasudeva et al. (2010). "Distributed agile software development: A review". In: *arXiv preprint arXiv:1006.1955*.
- Simmonds, Alan & David Gilmour (2005). *Governance of Outsourcing*. IT Governance Institute.
- Šmite, Darja et al. (2014). "An empirically based terminology and taxonomy for global software engineering". In: *Empirical Software Engineering* 19.1, pp. 105–153.

- Smith, Heather A & James D McKeen (2004). "Developments in practice XIV: IT sourcing-How far can you go?" In: *The Communications of the Association for Information Systems* 13.1, p. 70.
- Sobol, Marion G & Uday Apte (1995). "Domestic and global outsourcing practices of America's most effective IS users". In: *Journal of Information Technology* 10.4, pp. 269–280.
- Sohel, Shanewaz Mahmood & Mohammed Shahedul Quader (2017). "Transforming IT from a cost centre to a value centre perspective: A case study on the British standards institute". In: *Journal of Services Research* 17.1.
- Sousa, Rui & Christopher A Voss (2007). "Operational implications of manufacturing outsourcing for subcontractor plants: An empirical investigation". In: *International Journal of Operations & Production Management* 27.9, pp. 974–997.
- Stettina, Christoph Johann & Jeannette Hörz (2015). "Agile portfolio management: An empirical perspective on the practice in use". In: *International Journal of Project Management* 33.1, pp. 140–152.
- Strassmann, Paul (1995). "Outsourcing: a game for losers." In: *Computerworld* 29.34, pp. 75–75.
- Strassmann, Paul A (2004). "Most outsourcing is still for losers". In: *Computerworld* 38.5, pp. 25–25.
- Su, Ning, Natalia Levina, & Jeanne W Ross (2016). "The long-tail strategy of IT outsourcing". In: *MIT Sloan Management Review* 57.2, p. 81.
- Suetin, Sergei et al. (2016). "Results of agile project management implementation in software engineering companies". In: *ITM Web of Conferences*. Vol. 6. EDP Sciences, p. 03016.
- Syed, Moin & Sarah C Nelson (2015). "Guidelines for establishing reliability when coding narrative data". In: *Emerging Adulthood* 3.6, pp. 375–387.
- TechNavio (2018). "Global IT Outsourcing Market 2018-2022". In: URL: <https://www.technavio.com/report/global-it-outsourcing-market-analysis-share-2018>. (accessed: 29.12.2019).
- Thorup, Lars & Bent Jensen (2009). "Collaborative agile contracts". In: *2009 Agile Conference*. IEEE, pp. 195–200.
- Tong, Allison, Peter Sainsbury, & Jonathan Craig (2007). "Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups". In: *International journal for quality in health care* 19.6, pp. 349–357.
- Trochim, William et al. (1989). "Outcome pattern matching and program theory". In: *Evaluation and program planning* 12.4, pp. 355–366.
- Varajão, João, Maria Manuela Cruz-Cunha, & Maria da Glória Fraga (2017). "IT/IS Outsourcing in Large Companies–Motivations and Risks". In: *Procedia computer science* 121, pp. 1047–1061.

- Vassiliadis, Bill et al. (2006). "From application service provision to service-oriented computing: A study of the IT outsourcing evolution". In: *Telematics and Informatics* 23.4, pp. 271–293.
- Veltri, Natasha F, Carol S Saunders, & C Bruce Kavan (2008). "Information systems back-sourcing: correcting problems and responding to opportunities". In: *California Management Review* 51.1, pp. 50–76.
- VisionOne (2020). *The 14th annual state of agile report*. Vol. 1. URL: <https://explore.digital.ai/state-of-agile/14th-annual-state-of-agile-report>. (accessed: 24.06.2020).
- Voss, Chris (2010). "Case research in operations management". In: *Researching operations management*. Routledge, pp. 176–209.
- Vries, Frank de & Pamela Verkijk (2017). "The impact of DevOps and Agile on outsourcing". In: URL: <https://www.quintgroup.com/en/insights/the-impact-of-devops-and-agile-on-outsourcing/>. (accessed: 31.12.2019).
- Wang, Xiaofeng, Kieran Conboy, & Minna Pikkarainen (2012). "Assimilation of agile practices in use". In: *Information Systems Journal* 22.6, pp. 435–455.
- Webster, Jane & Richard T Watson (2002). "Analyzing the past to prepare for the future: Writing a literature review". In: *MIS quarterly*, pp. xiii–xxiii.
- Weerd, Inge van de et al. (2006). "A situational implementation method for web-based content management system-applications: method engineering and validation in practice". In: *Software process: improvement and practice* 11.5, pp. 521–538.
- Wernerfelt, Birger (1984). "A resource-based view of the firm". In: *Strategic management journal* 5.2, pp. 171–180.
- Westphal, Peter & Amrik Sohal (2016). "Outsourcing decision-making: does the process matter?" In: *Production Planning & Control* 27.11, pp. 894–908.
- Wieringa, Roel J (2014). *Design science methodology for information systems and software engineering*. Springer.
- Willcocks, Leslie, David Feeny, & Nancy Olson (2006). "Implementing Core IS Capabilities:: Feeny–Willcocks IT Governance and Management Framework Revisited". In: *European Management Journal* 24.1, pp. 28–37.
- Wohlin, Claes et al. (2012). *Experimentation in software engineering*. Springer Science & Business Media.
- Yin, Robert K (2017). *Case study research and applications: Design and methods*. Sage publications.