# **Master thesis**

# Recommendations for IT procurement of non-commodity outsourcing

A conceptual framework

**Kimberly Lemmens** 

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# **Management summary**

Control over IT is an issue and non-commodity IT sourcing attempts often fail to realize anticipated objectives and cost savings. Accordingly, there is a great interest for successful and cost-effective IT procurement. Therefore, the objective of this research is to develop a conceptual framework for cost-effective IT procurement for non-commodity outsourcing. To develop an easy and comprehensive framework, main focus areas are identified, which cover only the most important key factors and issues. This framework provides recommendations to manage the main focus areas for sourcing of non-commodity IT services.

These focus areas are identified from a profound literature review and multiple-case study research. Findings from the literature review indicated that the IT procurement process consists of the business function, the IT demand function, the IT supply function and the service provider function. For each function, influencing factors for successful IT procurement are identified. These key factors are assessed on their influence on cost-effectiveness.

Case study research introduced additional influencing factors for further refinement of the framework. The identification of these factors is conducted on basis of analytic analysis of the results from the case study research and the literature review. Cluster analysis is used to identify the main focus areas that cover the key factors and issues.

Four best practice models are considered for the construction of the conceptual framework. These models include eSCM, CMMI-ACQ, IPCM and ISPL. These models are assessed and compared on their strengths and weaknesses, considering amongst others support for the IT procurement process and cost-effectiveness. The eSCM model is found most useful as it supports cost-effectiveness, sourcing governance and organizational sourcing strategy.

This study resulted in five main focus areas for IT procurement to successfully and costeffectively procure IT services. When an organization decides to source an IT service to a service provider five focus areas should be considered:

- Strategic sourcing includes the definition of the organizational sourcing objectives and strategy. Strategic sourcing is supported by assessment of sourcing options and organizational competencies. To assure that this focus area is continued on the tactical level a sourcing policy needs to be defined.
- Clear and validated definition of objectives for a sourcing needs to be promoted. First, the
  definition of objectives needs to be conducted in realistic and comprehensive way using an
  accurate business case. Second, accurate SLAs and measures need to be defined.
- The demand-supply function needs to be supported by proper definition of roles and responsibilities. It needs to be assured the market is properly addressed, a knowledge system is used and the cost savings and defined and changing objectives are achieved.
- In order to add value the IT procurement function needs to be supported by proper definition of the sourcing processes. Early involvement of IT procurement will increase cost-effectiveness. This function needs to have expertise for both procurement and IT.
- Focusing on a healthy client-provider relationship is necessary as neglecting the relation between the client organization and the service provider may diminish the above focus areas. This focus area is supported by relationship management.

A conceptual framework with 15 eSCM practices provides recommendations for these focus areas. The framework for IT procurement of non-commodity outsourcing enables straightforward implementation and maximum cost-effectiveness.

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To complete the master Industrial Engineering and Management (Information Technology and Management track) I have written this master's thesis. This thesis is a result of the research that was performed on the topic of cost-effective IT procurement. The thesis is the last part of the master program to be concluded previous to acquiring the master's degree.

I conducted my thesis at KPMG IT advisory in Amstelveen under supervision of Paul Olieman. They offered me the opportunity to study the field of IT procurement. They provided me with leads to improve my research and the organizations I studied to accomplish this research.

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Conducting research involves processing and organizing a vast amount of information. This overwhelming amount of information is not only present during the literature study, just as much it is present in the case study research. All through this research I improved at structuring these large sets of information. In addition, I learned better to separate the essentials from the side issues. During the writing of my thesis I improved in producing a clear and comprehensive report.

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# 1 Introduction

Nowadays, organizations are able to procure all their needs for IT in the market. Outsourcing is an often used means for procuring IT when organizations want to focus on their core business processes. Outsourcing advocates argue that it enables cost savings (e.g. by economies of scale) and increases performance of the IT function (e.g. by innovation). In contrast, these objectives are not always achieved as will be illustrated in this chapter.

This chapter presents the subject and problem context of the research for this thesis. From the problem context, the objective of this research and the research question are derived. Furthermore, both the theoretical significance and practical significance are explained. Next, the environment in which the research is conducted is clarified. In addition, an audience profile is provided which clarifies to who this research is of interest. Finally, the outline of this thesis is provided.

# 1.1 Background

In 2008, several leading Dutch IT service providers observed approximately 20% growth in demand for outsourcing projects (Zaal, 2008). Many client organizations still assess outsourcing on the tactical level. The client organizations often are relatively immature and they conduct outsourcing as a simple procurement transaction that is managed by the general procurement function (Ramakrishnan, 2008). Even though the maturity of IT procurement has improved recently, the total number of failures has not been reduced (Snijders & Tazelaar, 2005). A 2008 study on outsourcing showed 44% of the respondents did not realize cost savings (Handley & Benton, 2008). Client organizations report their dissatisfaction about costs and significant loss of control over their IT and service providers find it difficult to deliver innovation and added value (Willcocks, Feeny, & Olson, 2006).

IT procurement comprises more than managing contracts with IT service providers and much more than managing risks in acquiring IT services. IT procurement is a key factor in accomplishing the IT architecture and the IT strategy (Sitruk, 2008). As more IT services are supplied from outside the company, the procurement function becomes more important. Effective sourcing and managing IT procurement in an integrated way (holistically) has numerous advantages. These advantages include amongst others, cost savings caused by economies of scale, flexibility and the ability to focus on the core activities (Jennings, 1997). These advantages contribute to the frequent application of outsourcing as a means for acquiring IT services.

Once an IT service has been procured, the contract has been signed and the service has been delivered, several issues become evident. The contract seems negotiated accurately. The contract includes objectives like: economies of scale, more effective deployment of employees and costs savings. However, before is illustrated that the achievement of the objectives and cost savings is repeatedly dissatisfying, especially when considering outsourcing. Cohen and Young (2006) state that unstructured and compulsive sourcing leads to problems, as client organizations vastly underestimate the complexity of managing outsourced critical services (non-commodities). Additional costs need to be made, as processes and responsibilities are not completely included in the contract. Furthermore, issues appear considering contract flexibility, conflicting expectations of service providers and client organizations and poor service delivery.

#### **1.2** IT procurement

The topic of this research is IT procurement for non-commodity outsourcing. In order to introduce the main subject a definition is provided, the organization for IT procurement is introduced and additional concepts are explained.

#### Definition

The definition of IT procurement is derived from the definition of general procurement. General procurement is a day-to-day activity and is found in practically every organization. Several similar definitions are found in literature for the concept of procurement. Procurement is often referred to as purchasing or sourcing. Two definitions are worth mentioning. Thiadens (2005) defines procurement as all activities aimed at managing and controlling the incoming flow of goods and services. Another short definition comes from Telgen (2004) and is defined as: procurement includes everything involving an external invoice.

Procurement, sourcing and acquisition are used interchangeably in the information systems research field. Outsourcing can be considered as a complex type of procurement (Saunders, Gebelt, & Hu, 1997). Therefore, outsourcing is also included in the definition as is provided below. As none of these definitions concentrates on sourcing of IT, these definitions are not suited for the definition of IT procurement. The following definition is derived from the aforementioned definitions:

IT procurement is the process of sourcing of an IT service from (a) service provider(s) by a client organization.

Two concepts in this definition need further clarification. The first concept is the service provider. Generally, IT procurement can occur both internal and external to the organization. The former encompasses in-house service development and the latter entails acquisition of IT from an external service provider. In this research, service providers are defined as both internal and external to the client organization.

The second concept that needs clarification is 'IT service'. IT products are also included in this definition. Since products are mostly delivered as part of a service and in literature both are referred to as services. For example, when acquiring office automation, besides the physical products (e.g. laptops) the provider delivers a service (e.g. maintenance and delivery of spare parts). Therefore, in this research both products and delivered services are referred to as services.

The difference between commodities and non-commodities procurement is rather important as a distinction is drawn between the operational and the tactical, and strategic level of procurement. The value of one IT service to one organization may be of unequal value to another organization. Often the distinction is drawn between standardized and customized services. Software licenses are a good example of commodities. Non-commodities are for instance very specific and tailored development projects, but also office automation can be considered as a non-commodity.

For this research non-commodities are defined as services that are considered core to the organization, which directly impact revenues. Therefore, the impact and risk to the business of IT procurement for non-commodities are higher than for commodities (Kraljic, 1983), which

are non-critical in nature. Furthermore, it is more difficult to determine the total cost, since the risks make the costs more unpredictable for non-commodities. For this reason, the IT services considered in this research are non-commodities.

#### Process

Figure 1 provides an overview of the procurement process as described by Van Weele (1997). This model distinguishes between a tactical procurement process and an operational procurement process. The tactical process consists of specifying and selecting for a service and results in a contract between the client and the provider. The operational process includes ordering, monitoring and the after care sub process.



Figure 1: Procurement process by Van Weele (1997)

The strategic procurement process is missing in the procurement process as displayed in Figure 1. This process is preceding the procurement process. The strategy for IT procurement is one of the crucial success factors and should be deduced from the company's business strategy (Cohen & Young, 2006). The IT sourcing life cycle as illustrated in Figure 2, has a strategic process included and illustrates the IT procurement perspective. The arrows indicate the phases in the sourcing life cycle:

- Strategy indicates assessing or developing a sourcing approach and review the approach chosen.
- Preparation includes the design of the process to be supported by the sourced service.
- Selection includes provider selection, negotiation and request for proposal.
- Transition assesses project management and asset management.
- Delivery includes cost analysis, service level management and contract management.
- Evolution reassesses service requirements and benefits realization.



Figure 2: Sourcing Life Cycle by KPMG (2008)

Besides the perspective of the general procurement process and the sourcing life cycle, a more straightforward classification of the IT procurement process is defined as pre-contract phase, contract phase and post-contract phase (Alborz, Seddon, & Scheepers, 2003). These phases are illustrated in Figure 3. This perspective will be used in this research, as it provides a comprehensive though concise view on IT procurement.

Strategy	Specifying	Selecting	Contracting	Ordering	Monitoring	After care
•	Pre-contract	•	Contract	4	Post-contract	•

Figure 3: IT procurement process

#### Organization

The IT procurement can be organized in several ways. Several processes are residing in an organization that is procuring IT. One specific framework perspective for analyzing the IT organization is the nine-square model, which originates from the information management field. This framework is provided in Figure 4 (as described in Folkerts (2008a) and adapted from the 'negenvlaksmodel' from Maes (2003)).



Figure 4: Nine-square model (Folkerts, 2008a; Maes, 2003)

From the perspective of information management, the nine-square model illustrates the IT service indirectly supports the business, via the information that the IT service produces. Looking at this model horizontally, it relates the processes for information that originates from the IT service to the business (Maes, 2003). This framework is implicitly implemented in every organization to some extent, since every organization uses information provided by IT services.

From the perspective of the business and the perspective applied in this research, the nine-square model describes the relations between three functions:

- Business operations: This function involves regular business operations including (human) resources and processes.
- IT demand: This function translates the business needs for information facilities into IT demand.
- Service provider: This function entails either an external or internal service providers of IT services. The service providers supply the organization with the IT service.

The classification at the vertical dimension of the model in Figure 4 is commonly used in business practice and theory. It consists of strategic, tactical and operational:

- The strategic level comprises organizational mandate for the vision and objectives of the organization.
- The tactical level entails policies, plans and organization in conformity with the vision and objectives of the organization.
- The operational level encompasses procedures for managing and running the organization according to the vision and policies.

Maes (2003) states that this model should not be extended, as this will not benefit the managerial applicability of the model. However, it is observed that a function is missing, which monitors and directs the service provider after the IT service is delivered. Often several providers are involved in one or more IT procurement projects. Therefore, a multisourcing environment is assumed in this research, in which multiple providers are supplying their IT service. Activities that aim to monitor and direct the service providers in the procurement process are of interest, since this is the means for really achieving the objectives and cost savings for IT procurement.

#### Centralized vs. decentralized

The procurement function may provide its expertise in either the business or the IT demand function, as an IT service can be procured in the business or by the IT demand. Three possible organizations for IT procurement can be distinguished (Dimitri, Piga, & Spagnolo, 2006), as illustrated in Table 1. First, IT may be procured decentralized, this entails that each business function is responsible for their demand for IT and they procure their own IT. Another possible configuration is centralized IT procurement in which the responsibility is situated in the IT demand function. This configuration makes centralized procurement possible. Obviously, this type benefits from economies of scale and is therefore more cost-effective. Finally, a hybrid configuration includes both decentralized and centralized procurement.

Procurement	Business	IT demand
Centralized		1
Decentralized	2	
Hybrid	*	1

Table 1: Procurement type

#### 1.3 Issues

Several issues have been mentioned before like loss of control, cost effectiveness and risks. Other issues that are of particular interest when considering IT procurement for outsourcing are regulations, the dynamic nature of IT and difficulties in obtaining resources.

IT facilitates information within an organization. On its turn, information is one of the core resources of an organization. It is important to have direct control over IT, as it implies direct control over information. The trend to outsource IT causes a lack of direct control over IT (Lacity, Willcocks, & Feeny, 1995). Control over IT is particularly challenging in a multisourcing environment, as several dissimilar service providers need to be directed. Consequently, control over IT procurement should be organized effectively in-house, since this is generally less complicated and provides direct control over the IT procurement process (Cohen & Young, 2006)

Control over IT is particularly of interest, when considering the risks and compliance issues involved. High impact of potential risks for IT procurement results from the observation that outsourcing mostly involves long term contracts. Furthermore, the impact is high when considering outsourcing of non commodities. Accordingly, the impact of the risks is higher and this is amongst others expressed in the large switching costs (Lacity, Willcocks, & Feeny, 1996). IT procurement is also affected by compliance issues. Thiadens (2005) recognizes these risk and compliance issues by arguing that these issues draw to the fact that IT procurement is a vital issue for organizations.

Next, developments in IT emerge rapidly. Therefore, IT is known to be agile and dynamic. Firstly, this causes the minimal applicability of historical data for optimizing IT procurement (Brereton, 2004). Secondly, the long term duration of most procurement processes and the agility and dynamic nature result in procured IT that can be outdated before the deal is closed. Lastly, predicting future IT capabilities and needs is challenging (Lacity e.a., 1996).

Finally, several experts acknowledge that IT resources are hard to obtain. Therefore, in order to stay cost effective, the demand for more strategic approach of procurement of IT grows. The above arguments add to the credibility that IT procurement should be approached in a strategic and a more structured manner.

#### Cost-effectiveness

An issue for most organizations is how to minimize risk while cost effectively procuring IT services in an industry and an environment typified by continuous change (O'Brien &

Buchanan, 2008). However, the focus on cost-effectiveness is not naturally present in the IT procurement process. Therefore, this issue is the main focus for this research about IT procurement.

Cost-effectiveness is defined as the benefits in relation to the costs involved. Costeffectiveness entails both cost savings as well as creating value. Often, only the short term costs are taken into consideration when determining the costs of an IT service. However, ignoring long term costs can cause costs to exceed expectations (Anderson Jr & Parker, 2002). Accordingly, long term costs need to be considered in the process. These recurring or long term costs include, but are not limited to, maintenance costs and costs resulting from resistance of employees. The sum of short term and long term costs is generally referred to as total cost of ownership (TCO).

Furthermore, benefits originating from an IT procurement may be perceived as beneficial for one part of the business (business value). However, the IT procurement may not be aligned with overall business objectives. Rather than only focusing on cost-based procurement, value creation is also an important aspect and Telgen and Sitar (2001) define this as value-based procurement.

An important remark is that IT alone does not create value. Value is created when IT is implemented in an integrated manner, in order to enable the organization to exploit the IT service's capabilities to their full extent (Ward & Daniel, 2006). The real value of a typical IT service lies in the cross-functional use of business processes (Lacity e.a., 1996). Therefore, the added value of an IT service can often not be measured directly. Difficulties in measuring the value lead to difficulties evaluating the procurement effort and create maximum business value.

In summary, to assess the cost-effectiveness of IT procurement two aspects are considered: cost-based procurement and value-based procurement. Cost-based IT procurement involves cost savings and total cost of ownership (TCO) and value-based procurement involves creating maximum business value.

#### **1.4 Problem statement**

As is illustrated above the need for control over IT and cost-effectiveness are important issues. However, a lack of knowledge and expertise results in dependence on service providers. Both internal and external sourcing is preferred and a multisourcing environment is assumed (Cohen & Young, 2006). Therefore, directing and monitoring of the delivery of the sourced services is relatively complex. However, this is significantly important in order to meet the **business**' needs and increase business value.

Multiple internal and external service providers should be managed in the best possible way. An IT supply orchestration function is proposed to properly organize this (Folkerts, 2008b). The IT supply orchestration function will be further referred to as the IT supply function. The IT supply function should not be confused with the service provider function. The IT supply function is an internal function which directs the (internal and external) service providers.

The need for a more efficient and effective IT procurement process is an important theme as organizations with optimal resource management spend around 20% less on IT procurement (Harink, 2003). However, little empirical research has been performed in this field of study

(Heckman, 2003; Love, Skitmore, & Earl, 1998). A recent international study (Schors, 2008) among 600 large organizations concludes that organizations underestimate the importance of the procurement function altogether. This study concludes this is the reason why procurement is not contributing to the organization's strategy. However, it is proposed that the IT procurement function may be one of the few means to influence cost-effectiveness. Therefore, cost-effective IT procurement has substantial practical and theoretical relevance.

Despite contracts, it continues to be difficult to monitor and evaluate the organization's outsourced IT. Several best practices are described in literature and multiple capability models are in use that prescribe best practices for IT procurement. However, these practices are generally too extensive, inconveniently arranged and are often not entirely applicable for the organization's purpose. In addition, Heckman (1999) found that organizations lack formalized processes for IT procurement. To ensure that these processes are formalized, an integrated framework of recommendations is developed in this research.

The research objective is to improve IT procurement cost-effectiveness by developing a framework of recommendations for IT procurement of non-commodities outsourcing. Combining theory from literature with best practices in IT procurement results in recommendations that describe how IT procurement is most cost-effectively organized. Organizations will be able to positively influence the process of procurement by acting upon these recommendations.

As a result from the problem context above a main research question is formulated:

How is the IT procurement for non-commodity outsourcing organized most cost-effectively?

Client organizations in a multisourcing environment are expected to have a defined IT procurement process and are more likely to implement a best practices framework for IT procurement. This entails that large organizations are considered in this research which are required to interact with several service providers. The focus on large organizations entails the focus on large IT procurement projects, rather than small ones, as large projects involve a lot of time and money.

#### **1.5** Research environment

The master project is performed at KPMG in Amstelveen, at the IT Advisory (ITA) department. KPMG is a company with about 123,000 employees in 148 countries. KPMG in The Netherlands offers audit, tax and advisory services to a broad group of clients: major domestic and international companies, medium-sized enterprises, non-profit organizations and government institutions.

ITA offers audit and advisory services to both private and governmental clients. The services ITA provides include among others, risk analysis, IT assessments, assessments of continuity plans and IT strategy and performance.

This thesis is primarily intended for people who are interested in IT procurement within organizations. Above all it is written for the organizations who try to approach IT procurement in a cost-effective way. For this group leads for implementing processes are provided.

The thesis is also of value for the organizations involved in the case studies. The conclusions of this study offer them an approach to conduct more cost-effective IT procurement. Additionally, this thesis is written for readers with knowledge of the contemporary role of IT in organizations. Therefore, basic knowledge in the field is assumed.

Finally, this thesis demonstrates the academic process of this study. Therefore, as proposed by Yin (2003) this thesis strives to demonstrate that the methodology and theoretical issues are mastered. Furthermore, it attempts to provide an indication of the care with which the research is conducted.

# **1.6** Structure of the thesis

The thesis started with this introduction on IT procurement, which explains the central concepts of this research. The context and motivation for this research and the research question are provided by demonstrating both practical and academic relevance. Chapter 2 elaborates on the research design. Chapter 3 provides a literature review, which is the first part of the actual research. Chapter 4 illustrates the case studies that are conducted for the purpose of this research. Chapter 5 discusses the best practice models that are considered for this research. Chapter 6 outlines the analysis and the corroboration of the results, which results in the conceptual framework. Finally, Chapter 7 provides the conclusions and recommendations of this research. The outline is illustrated in Figure 5 and is further clarified in Section 2.1.



Figure 5: Outline

# 2 Research design

Every organization is interested to improve their cost-effectiveness considering IT procurement. In order to provide these organizations with recommendations to achieve this objective this research is conducted. To design this research it is perfectly possible to apply various research methods. However, the most suitable and convenient research method is identified and arguments are provided in order to show a founded approach is taken.

This chapter provides the approach for solving the research problem as was discussed in the previous chapter. The research approach and research strategy are discussed to illustrate the approach in answering the main research question. A research model is provided in Section 2.1. This model illustrates the objective of this research that is achieved in a number of steps. The approach of the literature review and the case studies is explained in Section 2.2 and Section 2.3.

# 2.1 Research model

The research model in Figure 6 provides an overview of the research approach. It is constructed using the method of Verschuren and Doorewaard (2000) for designing a research model. The research approach consists of a literature review (Chapter 3) and case study research (Chapter 4).



Figure 6: Research model

An analysis of the literature (Chapter 3) consists of a profound literature review in order to construct a theoretical foundation for this research. Best practices are identified by studying several capability models and procurement frameworks (Chapter 5).

The theoretical framework is the input for the field study (Chapter 4), which is performed in the form of multiple-case studies. By interviewing experts involved with the case study organizations, issues and practices are found from practice. Once the issues are identified, supporting practices are determined and a conceptual framework is constructed (Chapter 6). In order to validate the identified practices these need to satisfy the evaluation criteria, which are identified in the literature review.

#### 2.2 Literature study

The purpose of the literature study is twofold. First, it provides input for theory development. In this particular instance, the developed theoretical framework facilitates the design of the case studies, as it forms the basis for constructing the questionnaires. The questionnaires are used as a starting point for the interviews for the field study. Second, the theoretical framework is the level at which the generalization of the case study results will occur (Yin, 2003).

This literature review analyzes literature on IT procurement and its processes to extract information for the purpose of this research. The organization for IT procurement will be further researched in order to gain more understanding of the processes for IT procurement. Next, the key factors that influence IT procurement are identified, since these provide theory on how IT procurement success is achieved. These key factors are analyzed for their influence on cost-effectiveness. This review results in a theoretical framework and key factors that are critical for cost-effective procurement of IT.

In order to increase the theoretical foundation and the practical applicability of the framework, the recommendations are founded on best practices. These best practices are based on profound research and are frequently used in practice. An additional advantage is that these best practices provide leads and are used as a starting point for constructing the framework.

There are several best practice models available for IT procurement. Four best practice models can be taken into consideration. These are chosen since these models are specifically used for IT procurement. It is possible to reflect on the e-Sourcing Capability Model (eSCM), the Capability Maturity Model Integration for acquisition (CMMI-ACQ - a model adapted from the CMM for software development), the Information Services Procurement Library (ISPL) and the Information Procurement Capability Model (IPCM).

Summarizing the following two literature collections are used for this research:

- 1 General literature on IT procurement processes, issues and IT procurement organization, including roles and responsibilities.
- 2 Capability models on either IT sourcing, IT acquisition or IT procurement:
- 2.1 *eSCM-CL*: The model provides a best practice framework that IT service clients can use to develop and improve their ability to acquire high quality IT services, while minimizing costs and risks. The model has five levels; these encompass the level of maturity (quality) of the client (Hefley & Loesche, 2004).
- 2.2 CMMI-ACQ: The CMMI-ACQ model is a five level scale model, which allows organizations to measure their capabilities in respect to IT service acquisition. It also provides leads for organizations to improve their service capability (Team, 2007).

- 2.3 *IPCM:* The IPCM model is developed by Det Norske Veritas (DNV) together with governments and private international enterprises. The model provides best practices for IT procurement. IPCM can be used separate or in addition to the CMMI-ACQ model (DNV, 2005).
- 2.4 *ISPL*: The ISPL library is a European best practice method for tendering and delivering IT projects and services. It is used by both client and provider organizations, in both the public and private sectors. ISPL helps to establish a professional relationship between the client and provider organizations (Verhoef, Kemmerling, Meulen, & Schutte, 2004).

# 2.3 Field study

The purpose of the field study is to obtain an expert point of view on IT procurement through thorough understanding of practice, while remaining objective. This field study is conducted using the case study research method. One characteristic of the case study research is that it provides an in-depth investigation of phenomena in their real life setting (Yin, 2003). These phenomena are organizational processes for IT procurement.

#### Method selection

IT procurement involves complex processes, as is illustrated in Section 1.2. Therefore, it is very difficult to realistically simulate these processes in a laboratory setting. Which makes it only feasible, to do the research in the natural environment. In addition, there are too many variables (e.g. environmental conditions, variation in IT services) to effectively apply quantitative research methods within the timeframe of this study. The two abovementioned reasons suggest that the qualitative research method is most suitable for this research. The **research question is a** 'How' question, therefore typically the case study research method is used (Moody, 2008; Yin, 2003).

The case study research method is commonly considered challenging because of its lack of objectivity. The lack of objectivity results in less confident conclusions due to the subjectivity of the analysis (low internal validity) and the chance of alternative interpretations of the results (low construct validity). Additionally, the impossibility to replicate the research for other case studies (low reliability) and the inability to generalize from single situations makes it less desirable to use (low external validity). Because of the exploratory nature of this research it is a good starting point for building evidence for answering the main research question (Yin, 2003).

#### Data selection

Several sources of evidence can be considered for the case studies. Six main sources of evidence are documents, archival records, interviews, direct observation, participant observation and physical artifacts (Yin, 2003). These sources of evidence are complementary: subjective vs. more objective (e.g. interviews vs. observation) and qualitative vs. quantitative (e.g. interviews vs. archival records). Generally, it is desirable to use as many different sources as possible to corroborate the information.

The most trivial source for this research are interviews, which provide qualitative data. Another opportunity to gather information resides in examining the contracts of sourcing

deals. Unfortunately these contracts are primary confidential, resulting in difficulties obtaining these contracts for research purposes. Therefore, the approach of gathering evidence from documents (contracts) is discarded. For this research is chosen to only use interviews and synthesize and confirm these results with evidence found in literature.

#### Quality criteria

Issues considering validity and reliability of the case study research method are mitigated to a large extent by three means. Since, a limited number of case studies can be conducted (due to time constraints) and because of the exploratory nature of the research, the first issue is external validity. Multiple similar organizations are considered for the case studies, such that a first attempt can be made and the generality of the type of sourcing organization can be assured. Furthermore, a priori theory is used to analytically generalize from the findings. Second, internal validity is increased by asking interviewees to consider one specific instance of IT procurement in the past. Third, reliability is handled by using a case study protocol, such that the case study can be replicated for another case.

Yin (2003) discusses several issues arising when using the interview approach. First, bias due to poor questionnaire design is an issue. This bias is lowered by constructing the questionnaire based on theory and consultation of subject matter experts. Second, response bias origins from respondents that are not representing the intended population. The response bias is partly counteracted by asking the interviewees to answer on behalf of the organization. The third issue is called reflexivity. Reflexivity arises from interviewees who answer what they assume the interviewer wants to hear. The questionnaire should be carefully designed in order to counteract this bias. By continuing asking questions the interviewer anticipates reflexivity may happen. Finally, the interview is recorded in order to prevent difficulties concerning recalling the information provided.

#### Case selection

It is important to define what type of organization is considered in this research. As said before, the exploratory nature of this research and the limited case studies contribute to the importance of raising the generality of the findings. Therefore, this study reflects on several similar cases, in order to be able attempt to generalize on the specific homogenous organizations. Possibilities to homogenize are amongst others: type of sourcing, large vs. medium-small organizations and different industries.

This research concentrates on large (> 5000 employees) with significant annual IT spending (> 8% of annual turnover), choosing to source non-commodity IT services in a multisourcing environment. Both the client side and the provider side are considered as it provides insight in two different perspectives. From the provider organization this entails interviews with account executives. From the client organization, the IT procurement manager and if applicable the IT responsible involved in IT procurement process are interviewed.

The analysis of the interview results will lead to factors that impact the IT procurement process. The key factors identified in the literature review are complemented with the analyzed results. The analysis is conducted by assessment of the key factors on importance and presence within the interviewed organizations. Furthermore, the issues that appeared from the interview results are analyzed. Summarizing, cases studies are conducted by means

of interviewing representatives of the organizations involved in an IT procurement process, both from client and provider organizations.

#### 2.4 Research questions

The purpose of a literature review is to develop sharp and insightful research questions (Yin, 2003). In order to answer the main research question the research model is decomposed and sub questions are assigned to each component of the research model. Looking at the research model the main research question is divided into the following sub questions:

- 1 How is IT procurement organized in an organization? (Chapter 1, Chapter 3)
  - How is procurement of IT defined in literature?
- 2 Which functions, factors and processes for cost-effective IT procurement can be distinguished in literature? (Chapter 3)
  - Which functions for the organization of IT procurement can be distinguished?
  - What is the most logical distribution of the factors and processes in categories?
  - How can a framework be constructed from these functions, factors and processes?
- 3 Which factors and issues for IT procurement can be derived from the case studies? (Chapter 4)
  - What practices come across in daily IT procurement?
  - What practices do the case study organizations propose?
  - Which roles and responsibilities are used in daily IT procurement?
- 4 Which best practices for IT procurement can be identified from capability models and libraries for IT procurement? (Chapter 5)
  - Which best practices are proposed by eSCM?
  - Which best practices are proposed by CMMI-ACQ?
  - Which best practices are proposed by IPCM?
  - Which best practices are proposed by ISPL?
- 5 How can the factors and issues derived from the case studies be aligned with the conceptual framework and the best practices from the capability models? (Chapter 6)
- 6 What are the consequences of the conceptual framework for the cost-effectiveness of IT procurement? (Chapter 6)
  - Can the improvement of cost-effectiveness be quantitatively proved? (further research)

#### 2.5 Result

The final product of this research is a framework of recommendations for cost-effective IT procurement for non-commodity outsourcing. Generally, the framework is a basic structure that organizes functions, processes and best practices. DeLone and McLean (2002) argue that a **useful framework** "must be both complete and parsimonious. It must incorporate and organize all of the previous research in the field, while, at the same time be sufficiently simple so that is

does not get caught up the complexity of the real-world situation and thus lose its explanatory value". This citation leads directly to the added value of the framework. It should be able to implement this framework without much effort. Furthermore, the implementation should result in a maximum improvement of cost-effectiveness.

The framework will include practices that need to be present in an organization in order to have an accurate IT procurement process. These practices will prescribe how specific parts of the IT procurement process need to be handled. For example, it could prescribe how stakeholders need to be identified and involved in the process. The framework recommends what processes should be implemented and is not a cookbook-like prescription how cost-effective IT procurement should be done.

# 3 Literature review

The organization and processes for IT procurement of non-commodity outsourcing is of interest to this research. Furthermore, factors that influence IT procurement success and cost-effectiveness in particular, need to be identified in order to answer the main research question.

The conceptual framework is positioned in Section 3.1 by means of the nine-square model as has been introduced in Section 1.2. Section 3.2 provides the key factors for IT procurement, which are applied to identify the recommendations for the purpose of this research. Section 3.3 specifically analyzes the factors influencing cost-effectiveness. Section 3.4 proposes evaluation criteria in order to be able to assess the contribution to success and cost-effectiveness of the key factors and recommendations.

# 3.1 Initial conceptual framework

Often organizations are dissatisfied with their outsourcing projects and blame their service providers. Douwstra and De Vries (2007) identify that the dissatisfaction can be diminished by professionalizing the directing of the outsourcing relationships. In the Section 1.2 has been observed that organization-wide coordination of the service provider is missing in the nine-square model. This function seems to have significant influence on the cost-effectiveness of IT procurement, since when this coordination function is not organized in a correct way, additional and unanticipated costs arise (Douwstra & De Vries, 2007) and maximum value is not created because objectives are not satisfactory achieved.

A coordination entity that facilitates cost-effectiveness should be introduced. The function of this entity is to direct the provisioning of IT, such that a cost-effective IT procurement is secured. As a result of the multisourcing environment in which organizations operate, the client organization needs to direct the service provision from several service providers (both internal and external) to satisfy the need of the business. Instead of following a predefined chorography in which IT demand does not attempt synergy efforts, an orchestration entity directs and coordinates the service providers.

A similar function is proposed in Dutch literature as the 'regie organisatie' (Douwstra & De Vries, 2007; Redwood, 2007). In English literature this is often referred to as the retained organization. In this research a similar function is proposed as the IT supply function.

The IT supply function is provided in the third column of the model in Figure 7. The IT supply function is positioned between the IT demand and the service provider, since it provides for directing the processes of the delivery and monitoring of the IT service of the provider that is requested by the IT demand.



Figure 7: Conceptual framework

It needs to be emphasized that the IT supply function involves not necessarily a new or separate division. Douwstra and De Vries (2007) identify three possibilities for the organization of the IT supply function. First, in the hidden IT supply function the processes are organized in the existing organization. Second, the IT supply function is organized as a separate division. Third, a hybrid IT supply function is a mixed form of an existing and a new organization.

#### Influence on cost-effectiveness

The role of the IT supply function is mainly found in the post-contract phase of the IT procurement process and holds to monitor and direct all providers involved. For the purpose of this research the post-contract phase of the procurement process is of particular interest, since cost-effectiveness is diminished when the intended objectives and cost savings are not achieved. Cost-effectiveness increases when the IT supply function is professionalized. Cost-effectiveness is dealt with by orchestrating the service provider, such that the provider adds value by innovation and flexible operational management (Douwstra & De Vries, 2007).

The IT demand function is mainly found in the pre-contract phase of the IT procurement process. This function provides for the specifying and selecting for the demand of the business. The IT demand function is influencing cost-effectiveness, since organization-wide IT demand leads to cost savings during the pre-contract phase. These savings are illustrated by two examples. First, an environment is created which makes synergy possible in dialog with the IT demand function and the service providers in the market. Synergy is created by procuring IT on a larger scale for several business departments and by choosing one product or provider in preference to separate procurement efforts. Obviously, this leads to higher buying power and lower coordination costs during the post-contract phase. Second, buying IT that fits the organization's IT architecture and IT strategy adds to cost-effectiveness.

The initial conceptual framework in Figure 7 is used for the positioning of the recommendations that are identified in this research. This framework will provide a comprehensive and straightforward view on the processes of IT procurement adding to successful procurement and cost-effectiveness in particular.

#### 3.2 Key factors

For successful and cost-effective IT procurement for outsourcing, the outcome needs to create success for both the client and the provider. In order to study the determinants for successful

IT procurement, key success factors are identified. With the intention to determine the key factors, a literature review is conducted. These key factors are provided in order to emphasize which factors the recommendations need to satisfy or overcome. During the case studies these key factors are validated and complemented with additional key factors.

Key factors for IT procurement arise from a literature review of outsourcing success and failure factors (Delen, 2004), key factors for multisourcing (Cohen & Young, 2006), core IS capabilities for outsourcing (Willcocks, Feeny, & Olson, 2006), strategic guidelines for outsourcing (Jennings, 1997), success factors in IT outsourcing relationships (Alborz e.a., 2003), key issues for IT procurement (Heckman, 2003) and IT procurement success factors (Krouse, 1999). The identified factors are synthesized in Table 2. The factors are selected when they are described in a paper as a success, failure or key factor.

Phase	Factor	(Alborz e.a., 2003)	(Cohen & Young, 2006)	(Delen, 2004)	(Willcocks e.a., 2006)	(Heckman, 2003)	(Jennings, 1997)	(Krouse, 1999)	
	Phasing of process			1					1
<b>5</b>	Sourcing strategy	1	1			1	1		4
ntra	Understanding market	÷.	1	1	1		1	1	6
8	Understanding need		1	1	1		¥*	¥	5
Рис	Enterprise architecture alignment			*	*			4	3
t	Contract development (incl. SLAs)	1							1
ntra	Define roles					2		ð	2
3	Total cost of ownership (TCO)			1		2	ð		3
	Sourcing governance	1	¥	1	1				4
	Relationship management	4	ŝ.		*	1			4
ម្ន	Performance management	e.	2	1	4	2			5
ontra	Contract management	1			4	<b>~</b>			3
at Ct	Knowledge management	1	¥						2
a di	Review sourcing decisions						ð		1

Table 2: Key Jactors

#### Phasing of the process

In order to keep the process manageable, a classification or phasing of the sourcing process is required. Delen (2004) identifies the phases: sourcing decision, provider selection and directing of the provider. This classification corresponds to the one used in Table 2. A more elaborate phasing has been illustrated in Figure 3. The key factors in Table 2 are categorized according to the three phases identified in Chapter 1: pre-contract phase, contract phase and post contract phase.

#### Sourcing strategy

Four out of seven papers recognize the importance of a strategy specifically for sourcing. Inconsiderate procurement decisions result in additional costs and in case of outsourcing loss of capabilities and knowledge (Cohen & Young, 2006). Furthermore, IT procurement is a rather complex process and the agile needs of the business result in the call for a comprehensive organizational sourcing strategy. The sourcing strategy needs to be based on the business strategy (Cohen & Young, 2006). In addition, according to Alborz et al. (2003), if the organization's procurement strategy is not initially defined, the organization exposes itself in an in-efficacious procurement process.

Since the decision to outsource has a long-term impact on the organization, executive management should apply the strategy with ongoing objectives in mind. As part of the sourcing strategy, it is important for client organizations to determine what and why they are outsourcing and what the objectives for the organization are (Cohen & Young, 2006).

Delen (2004) emphasizes that in case of outsourcing, core business processes should not be outsourced. The reasoning is that their core processes provide organizations competitive advantage. Outsourcing core processes will contribute to high risks (e.g. knowledge loss) and moreover high impact of these risks for the business. Jennings (1997) indicates that it is often difficult to differentiate between non-commodity and commodity activities. Therefore, it is difficult to determine what should be sourced to a service provider. Saunders et al. (1997) state, success is determined by considering an IT service as a core function, as organizations may be more thorough in negotiating the contracts. Therefore, more care needs to be taken when outsourcing non-commodities, since the high impact of the risks on the business. The sourcing strategy should anticipate how this is handled.

#### Understanding the market

Six out of seven papers identify the need for understanding the market in which the IT procurement attempt takes place. Feeny and Willcocks (1998) identify informed buying as a core information system (IS) capability, as they indicate that analysis of the external market for IT services is an important factor. Understanding the market helps in selecting a service provider that is most capable for the sourcing (Krouse, 1999). According to Delen (2004), a successful outsourcing needs to be a win-win situation. Therefore, he indicates it is important that the market has capabilities to provide the service more efficient than the client itself.

This key factor also refers to provider evaluation, which organizations need to take into consideration before signing the contract. The provider evaluation is an approach to determine whether a potential provider is able to deliver an IT service based on the defined requirements. According to Alborz et al. (2003), well founded provider selection influences the effectiveness and efficiency of a sourcing project.

#### Understanding the need

Five out of seven papers emphasize that understanding the need from the business is a critical success factor. Krouse (1999) states that the first step should be to determine why an acquisition is needed. Feeny and Willcocks (1998) state that business needs should be understood and supported by the sourcing strategy. Furthermore, business systems thinking is

vital to understanding the need: "Ensuring that IT technologies capabilities are envisioned in every business process" (Feeny & Willcocks, 1998).

#### Enterprise architecture alignment

From the papers assessed, three identify the need for an enterprise architecture and the alignment of the IT service with this architecture. Feeny and Willcocks (1998) define enterprise architecture as: "Creating the coherent blueprint for a technical platform which responds to present and future business needs." The main challenge is to predict future technology developments in order to be able to align the IT service with an effective and efficient architecture.

In line with the purpose of the enterprise architecture the provider's IT service need to be compatible with the client's enterprise architecture (Krouse, 1999). Considering an outsourcing project, Delen (2004) emphasizes that an enterprise architecture is a prerequisite for separating an outsourced process from the organization, in order to be able to successfully transfer the outsourced service to the service provider.

#### Contract development

Contracting can be defined as the development and realization of a contractual commitment between a client organization and a provider. Saunders et al. (1997) identify a highly specified contract is an important factor that determines success. A sound developed contract influences the cost-effectiveness of a procurement attempt and a robust development process for creating contracts is one of the critical success factors in IT outsourcing (Alborz e.a., 2003).

It is rather difficult to quantify IT services. Service level agreements (SLAs) are specified in the contracts in order to describe the objectives for the contract. According to Alborz et al. (2003), many organizations define their SLAs poorly. Not enough effort and time is spent to understand the processes to be sourced or to identify both business and technical requirements. Accordingly, the IT service does not suit users' needs, which impacts the success of the sourcing. Saunders et al. (1997) add that adjustments to the contract in order to anticipate to new technologies, changed business strategy and needs and changing market has to be possible.

#### Define roles

The procurement project team should represent all departments that are affected by the IT procurement (Krouse, 1999). Besides all roles and responsibilities that need to be defined in the contract, three roles are explicitly stated by Cohen and Young (2006) to facilitate some of the factors identified in the post-contract phase. These roles are relationship manager, performance manager and contract manager.

#### Total cost of ownership

Identification of the total costs is a key factor as was illustrated in Section 1.1 in the introduction chapter and is also identified by Delen (2004) and Jennings (1997). If the provider needs to work under a tight budget, the provider is compelled to lower its effort or to charge additional costs. In order to avoid this, careful evaluation of service levels and the various

components that make up the costs need to be conducted (Jennings, 1997). The TCO includes both short term and long term costs.

#### Sourcing governance

Four out of seven papers reviewed argue that governance of a sourcing project is essential to its success. The central objective of sourcing governance is to develop and act upon organizational structures, processes, and responsibilities to successfully manage the interdependencies and ensure that the value for money is delivered. In addition, Delen (2004) states that in order to be able to have successful sourcing governance it is necessary that at least their internal organizational governance is organized in an excellent way.

Alborz et al. (2003) provide arguments for the necessity of sourcing governance. They claim that governance includes factors that influence success of sourcing. These factors are senior management support, management structure and the organization of appropriate processes and procedures. Senior management plays a role in communicating the reasons for sourcing throughout the organization and in putting in place appropriate management structures and resources. Senior management provides the strategic direction and supports the governance structure. A well-planned management structure allows client and provider organizations to manage their operational activities, monitor the IT service, and measure the performance of the IT service.

#### Relationship management

The significance of strong relationships are recognized in four out of seven papers. The relationship factor is defined by Alborz et al. (2003) as "a combination of interactions and **behaviors between parties**". Relationship management facilitates dialogue, establishes understanding, trust, and cooperation among the client and the provider (Feeny & Willcocks, 1998). In addition, relationship development can provide the opportunity for improving the performance and competitive advantage (Jennings, 1997).

#### Performance management

Performance management or monitoring is recognized as a success factor in five out of eight papers, since it is significant to hold the provider to the SLAs. Monitoring depends mainly on the contract and in particular on the SLAs defined in the contract. If performance management is poorly conducted it can be destructive for a sourcing project (Alborz e.a., 2003), as objective may not be achieved.

Monitoring the performance and quality of the IT services provides both the client and the service provider with information which is used to verify success. This information includes among other things, achievement of objectives, appeared discrepancies and controls that need to be in place. For the provider monitoring provides a means to assess client satisfaction and to identify what needs to be improved (Alborz e.a., 2003).

Feeny and Willcocks (2006) exclusively define service provider development as a core IS capability. They define this as "identifying the potential added value of IT service suppliers." This factor is concerned with the long-term potential for providers to add value, creating the

win-win situations in which the provider increases its profits by providing services that increase business value.

#### Contract management

Feeny and Willcocks (1998) define contract facilitation as "ensuring the success of existing contracts for IT services". Furthermore, they identify that the objective is to ensure that problems and conflicts are resolved fairly within the (mostly) long-term relationships.

The influence of contract management on success is recognized by Alborz (2003). Sources of dissatisfaction with the contract include among other things, the underestimation of time and the skills needed for effectively managing the contracts. In addition, Delen (2004) identifies communication about the contract as an important factor in order to overcome difficulties due to unaligned expectations about the contract.

#### Knowledge management

Retaining knowledge in the organization is commonly accepted as an important success factor in sourcing projects (Cohen & Young, 2006). However, most literature identified does not define this factor as a critical success factor. Furthermore, outsourcing is known for difficulties with knowledge management, since knowledge is transferred simultaneously with the IT service to the service provider. Knowledge management is required to manage the outgoing knowledge in case the IT service is in sourced or sourced to another service provider. If not, the knowledge may be disappeared from the client organization forever, which is will impact cost-effectiveness.

Knowledge sharing demonstrates trust and trust implies commitment. In addition, lack of knowledge sharing has a negative influence on the relation between the client and the provider (Alborz e.a., 2003). Therefore, it can be stated that knowledge sharing is an important factor in relation management. Knowledge management requires investment both from the client and the provider.

#### Review sourcing decisions

Sourcing decisions are mostly long term in their implication and during the contract the context may change. Therefore, reviewing of the decision need to be conducted and consequently developed or revised (Jennings, 1997). Changes in the environment, technology development and organizational learning cause the context change. The need to review the sourcing decision is triggered by among other things, performance management, contract management, relationship management and demand from business trigger.

#### 3.3 Cost-effectiveness

In order to organize for cost-effective IT procurement several factors need to be considered. These factors are explained here in order to emphasize the critical value of these factors for the cost-effectiveness aspect of this research. Recall, that cost-effectiveness entails both cost-based and value-based procurement. Cost-based factors include:

- Understanding the market: Know what is available for what price in the marketplace. In addition know what the service provider is capable of and to what costs.
- Total cost of ownership: TCO includes fully investigation of the total costs and these include also costs for operations, maintenance, transition, human and organizational. Furthermore, understanding the risks is important such that these can be mitigated or anticipated and no additional costs arise after the deal is closed (Willcocks, 1994).
- Contract development: All objectives need to be enclosed in the contract and SLAs need to be embedded, to make sure that no surprise appears after the contract is signed. In order to be cost-effective, the contract needs to be developed in a flexible way. A flexible contract entails that it can adapt to context changes.

The above cost-based factors contribute to overcome that planned costs do not exceed expectations in the post-contract phase. Value-based factors include:

- Sourcing strategy, understanding the need and enterprise architecture alignment: Maximum value is created when the IT service fully fits to the business strategy and the information needs of the business. Therefore, it is important to know and understand the need of the business and align this with the business strategy and enterprise architecture in order to create maximum value.
- Performance management: Willcocks (1994) states that there is a significant correlation between control and measurement of the IT service and effectiveness using the IT service. Only by evaluating and controlling of an IT service, the added value can be raised to a higher level. However, the evaluation and control of the added value is complicated by the time-scale of the benefits, the difference in value due to dissimilar objectives and uses for the IS and the difficulty to manage the intangible benefits. Therefore, measures need to be formulated; this is explored in Section 3.4. Performance management also includes service provider development. Performance management entails to control the provider in such a way that it promotes and develops the provider to add value to the business. The selection of the service provider is vital in order to be sure the provider is able to add maximum value.
- Sourcing governance: Organizational structures, processes and responsibilities need to be in place in order to ensure that the value is actually obtained.
- Review sourcing decision: Context change may lead to a situation that it is impossible to
  realize maximum value in a procurement project. In similar situations, with the aim of
  gaining maximum value the sourcing decision should be reviewed and adapted accordingly.

Concluding, several factors need to be taken into consideration to guarantee cost-effective IT procurement. These factors are for cost-based: understanding the market, TCO and contract development. For the value-based: sourcing strategy, understanding the need and enterprise architecture alignment, performance management, sourcing governance and review sourcing decision. These factors are highly influencing cost-effectiveness.

#### 3.4 Evaluation criteria

In order to evaluate an IT procurement attempt, measures for success of IT procurement need to be defined in advance. Several reasons can be identified for evaluating procurement

attempts (Van Weele, 1997). Two are worth mentioning here. First, measurement of procurement results lead to better procurement decisions. As soon as the cause of anomaly is identified, it can be anticipated on in a forthcoming project and additionally, the anomaly can be diminished. Second, it facilitates the procurement strategy, as trends can be analyzed and anticipated on. In the post contract phase, evaluation is identified as an important mean to steer on value adding capabilities (Allen & Chandrashekar, 2000).

The identified factors can be classified on four levels of explicitness: financial, quantifiable, measurable and observable (Ward & Peppard, 1996). Obviously, it is preferred that the factors are financial or at least quantifiable for evaluation purposes to avoid measurement bias and to be able to assess cost effectiveness.

#### IT outsourcing evaluation criteria

Lacity and Willcocks (1996) state that successful IT sourcing is subject to several factors. Initially, these factors can be explicited as provided in Table 3. The factors are classified on explicitness according to the least explicitness possible.

Factor	Explicitness	Financial	Quantifiable	Measurable	Observable
Cost savings or cost control		<			
Service levels are maintained or improved				<	
Satisfaction user management					1
Client provider disputes					1
Responsiveness and attentiveness of provider					$\checkmark$
Objectives are achieved					1
Contract gets renewed					$\checkmark$

Tuble 3:11 procurement evaluation factors (Lacity e.o., 1996; Ward & Doniel, 2006)

#### Cost-effectiveness evaluation criteria

One specific evaluation factor and important to describe here specifically is cost-effectiveness. As cost effectiveness is a vital component of the research question it needs to be evaluated in order to be classified successful. As cost effectiveness includes both cost based and value based procurement it is a combined factor and is incorporated in several evaluation factors. Cost based procurement corresponds to 'Cost savings and cost control'. Value based procurement entails the value adding capacity of the procurement and is found in 'Service levels are maintained or improved'. Other factors not included in the evaluation criteria of Lacity and Willcocks are identified from general procurement literature (Telgen & Sitar, 2001) and are provided in Table 4.

Factor	Explicitness	Financial	Quantifiable	Measurable	Observable
Better contracts					<
Improved procurement efficiency				1	
Customer satisfaction (quality and service)				1	
Cooperation with provider (relationship)					×

Table 4: Cost-effectiveness evaluation criteria (Telgen & Situr, 2001)

The above measures can applied to evaluate best practices. However, as can be seen is that there are few factors that are financial or quantifiable. Therefore, using these measures for evaluation of the framework is difficult. These measures can only be used after they are operationalized. However, this is to time consuming for this research project and therefore out of scope.

### 3.5 Chapter summary

The objective of this chapter was to answer the second research questions as provided in Section 2.4: Which functions, factors and processes for cost effective IT procurement can be distinguished in literature?

- Which functions for the organization of IT procurement can be distinguished?
- What is the most logical distribution of the factors and processes in categories?
- How can a framework be constructed from these functions, factors and processes?

Furthermore, this chapter provided a more elaborate answer to the first research question: How is the IT procurement organized in an organization?

In order provide a more elaborate answer to the first research question. An analysis of the IT procurement organization is conducted. First, the nine-square model is extended with an IT supply function. This function orchestrates the service providers and the delivery and monitoring of the IT service. This initial conceptual framework is used for the positioning of the practices that are identified in the last part of this research.

The key factors for IT procurement are identified and these factors are classified according the pre-contract, contract and post-contract classification. Next, the factors specifically influencing cost effectiveness are illustrated. These factors are for cost based: understanding the market, TCO and contract development. For the value based: sourcing strategy, understanding the need and enterprise architecture alignment, performance management, sourcing governance and review sourcing decision.

Finally, evaluation factors are identified which can be used to validate the conceptual framework in a later stage of the research.
# 4 Case studies

Foremost, the case study research is conducted to confirm and complement theory identified in Chapter 3 with the findings from practice. The findings from this field study are employed to identify the main focus areas for IT procurement, which are used to develop the conceptual framework for the purpose of this research.

This chapter provides the results of the case studies. The approach of research is multiple-case study research. The case studies are conducted according to the research approach identified in Section 2.3. First, the case studies are briefly introduced in Section 4.1. Next, the results are provided and analyzed in Section 4.2 till 4.5.

## 4.1 Methodology

The key factors and the initial framework identified in the literature review are operationalized as the basis for the case study research. The operationalization is conducted by formulating questions for each part of the literature reviewed. A case study protocol is developed, that includes a small introduction on the research, the objective of the interviews and the questionnaire including an explanation of the concepts. Two questionnaires are designed for the case study protocol, both for client organizations and service providers. Appendix A provides these questionnaires.

The case study protocol is followed as the general process of the case study research. The organizations are visited at their location and the questionnaire is applied as guidance for conducting the interview. The interviews are conducted on a voluntary basis and the interviews last one or one and a half hour. For this purpose the interviewees are provided with the definition of the scope of this research and important concepts are explained according to the protocol, though the interpretation of the interviewees may vary form case to case. Mostly, the main questions are asked and only when needed sub questions are raised in order to let the interviewee speak autonomously in order to prevent bias.

During the interviews notes and recordings are made and the outcome of the interview is reported afterwards using the notes and recorded material. Subsequently, in order to validate the minutes, the interviewees are provided with the minutes of the interview by email. This results in feedback, which is input for the final minutes. The minutes are only available in the confidential version of this thesis in Appendix B, for the reason that the interviewees are not willing to share the confidential information.

As part of the case study protocol an analysis strategy and a corresponding reporting strategy is considered. In order to make a comparison among the organizations, the analysis strategy used is cross-case analysis. For the reporting of the case studies each section is devoted to a separate cross-case topic and the information from the individual cases is dispersed throughout each section (Yin, 2003). There are instances where interviewees had nothing to add on specific topics, in which case logically nothing has been included in the reporting.

In order to introduce the results from the case study research, information about the individual cases is presented. The detailed descriptions of the cases are only available in the confidential version of the thesis in Appendix B. Nevertheless, all interview minutes are assessed in this chapter, applying pseudonyms to indicate the particular organization.

In advance it needs to be emphasized that all numbers displayed in the tables and figures in this chapter have uncertain statistical implication, as the outcomes and the numbers are statistically insignificant. Therefore, it is not possible to generalize from these situations. However, as this study is exploratory of nature, the objective is to analytically generalize from the results, not statistical generalization (Yin, 2003).

### Case study organizations

In general, the scope of the interviews is IT procurement, more specific cost-effective procurement concerning outsourcing of non-commodities. The cases are selected according to the criteria that have been set in Section 2.3. Analysis of the size of the organizations is only provided confidential version of this thesis in Appendix B. The following four client organizations and two service providers are interviewed:

- Client organization A is a Dutch regional governmental organization. Two employees are interviewed. Interviewee 1 is the IT manager. Interviewee 2 is contract manager for IT outsourcing contracts within the procurement department. The IT service is outsourced by a European tender to provider A.
- Client organization B is a Dutch local governmental organization. Two employees are interviewed. Interviewee 1 is responsible for IT procurement. Interviewee 2 is the responsible IT manager for IT outsourcing contracts.
- Client organization C is a large Dutch insurance and banking organization. The interviewee is the chief procurement officer of the procurement department.
- Client organization D is a large Dutch food manufacturing organization. The interviewee is the procurement manager of group IT and responsible for IT outsourcing contracts.
- Service provider A is a large international IT service provider. The interviewee is account executive. The organization is service provider for amongst others client organization A.
- Service provider B is a large international IT service provider. The interviewee is the client director. The organization is service provider for amongst others semi-governmental organizations.

### Governmental versus private organizations

Two cases considered governmental organizations and two considered private organizations. Three important differences between these two organization types are observed during the interviews. First, as was also identified during the literature review, governmental organizations are legally liable to pursue the European public procurement regulations for procurement attempts. The European public procurement regulations restrain the organization in their employment of the IT procurement process.

The second observation entails that central government enforces direction and governmental organizations are bound to follow the direction. For example client A indicates that they were bound to reduce personnel by means of outsourcing their IT. This enforcement restrains them in selecting alternatives for outsourcing.

Third, both governmental organizations indicate that they do not use specific IT procurement best practices, like the eSCM model or ISPL for their procurement efforts. Moreover, these

governmental organizations are unacquainted to these best practices. Whereas, the private organizations indicate to at least have knowledge about best practices and client C indicates they use their own best practices framework. These differences do not seem to influence what this research tries to accomplish. However, these differences will be taken into account during this research.

## 4.2 Conceptual framework

To find support for the conceptual framework identified in Chapter 3, the IT demand function and the IT supply function are assessed during the case study research. The organizations interviewed indicate how their IT procurement is organized according to the conceptual framework and issues they observe are explained.

### IT demand

All organizations appear to have dissimilar demand organizations and only have to a limited degree assigned roles and responsibilities to this function. In the organization of client B, the demand for IT is historically organized in the business itself as a decentralized organization. They indicate that a transition to a more central organization of the IT demand is started. In order to be able to achieve this transition they have set up one central demand function.

Client A organizes their demand on operational and tactical level. On operational level, the demand manager is responsible for the technical interests. Next, the tactical level is covered by a steering committee. The steering committee is a temporary organization and consists of the IT manager, the demand manager, the operations manager and the account manager from the service provider. They indicate that the strategic level is not addressed. Client A is aware the operational and tactical level need to be properly organized before the strategic level can be addressed effectively. Therefore, it is observed that the tactical and strategic levels are not addressed for client A, at least not for the standing demand organization. As a temporary organization is arranged to care for the tactical level and the strategic level is ignored.

Client C uses a demand-supply model for one large outsourcing contract. They indicate this central approach makes it easier to take organization wide decisions. However, client C acknowledges they do not have one uniform demand organization for all contracts. Different contracts have different arrangement of their demand organization. Lack of uniform demand organization causes difficulties for central sourcing. Furthermore, they denote that their procurement function has a large role in the demand organization. They indicate that early involvement of the procurement function is vital since this increases added value is further explained in Section 4.3.

Client D acknowledges they have not exhaustively organized their IT demand function throughout their organization. Their IT director and their business process director currently manage the demand from the business. These roles reflect on what the business needs are and search for available solutions.

Summarizing, an organization-wide IT demand function is understood to be vital for effective IT procurement. However, it can be observed from the interviews that the demand organization is not well developed in all cases. This underdevelopment is expressed in use of temporary organizations to cope with unusual issues. The operational processes for the IT demand function are more advanced in contrast to the tactical and strategic level.

Furthermore, it is observed that the IT demand function is not consistently employed throughout the organization.

### IT supply

All organizations seem to have poorly formulated structures and responsibilities for their IT supply function. Client A and B indicate they have a supply organization for their main IT outsourcing contract. However, both acknowledge they have no uniform supply organization for all contracts. Client D indicates practices concerning supply, like management and monitoring of the provider are organized by their contract management function in a hardly structured manner. They acknowledge not having organized an IT supply function.

In contrast to the large role the procurement function of client C has in the IT demand organization, client C admits this function has a minor role in the IT supply function. Client C has an IT supply function specifically for the main outsourcing contract. For the other contracts no formal IT supply function exists and is this managed by the procurement function. They explain that a large contract, like the main outsourcing contract requires an IT supply function. In contrast to small contracts that often need less control.

Client C admits their IT supply organization is rather immature and therefore it is not meaningful to source on a higher maturity level. Therefore, their solution is to shift from outsourcing to hiring. Hiring brings the advantage that the IT supply function is simplified fundamentally. Given that the SLAs are less complicated, hiring needs less control and monitoring.

Summarizing, the IT supply function is not or poorly organized for the interviewed organizations. The procurement function is involved to a less extent or none existing in the IT supply function.

## 4.3 **Cost-effectiveness**

The literature review in Chapter 3 shows that cost savings is generally the main intend for outsourcing and therefore costs are the main focus during the IT procurement process. It appeared that the second aspect of cost-effectiveness, value creation, is only to limited extent incorporated in the process. The results from the case study research are described for both aspects of cost-effectiveness to illustrate cost-effective IT procurement in practice.

### Costs

Although cost savings is often the immediate cause for outsourcing projects, all organizations interviewed indicate these savings are frequently not satisfactory achieved. Reasons provided by the interviewees for not achieving cost objectives are an inaccurate business case, the nature of non-commodities, the phase of the contract, application of cost control and whether the cost objective is pursued in the contract or not.

First, client D indicates the cost objective itself may be the reason for not achieving the estimated cost savings, as the objective may originate from inaccurate assumptions or is based on incorrect data. Therefore, Client D states that awareness and focus on the definition of the objectives is needed by conducting a profound business case.

Client D states difficulties in achieving cost savings appear from the non-commodity nature of outsourcing projects. Since costs for non-commodities are more difficult to anticipate and therefore more unpredictable than the costs for commodities. In contrast, they state that procurement of commodities generally does deliver the expected cost savings.

Client D explains that the achievement of the cost savings is influenced by the phase the contract is in. The phase of the contract influences to what extent the cost savings are obtained. This indication results from the tendency that cost savings often do not appear immediately. Client D explains the cost savings are mostly observed to the end of a long-term contract. Provider B makes clear that this tendency appears because in the last phase of the contract the pressure is increased to actually achieve the cost savings.

It appears from an example from client D that cost control is an important aspect when considering cost savings. Formerly, client D did not have control over prolongation of the contracts and costs were paid instantly. Currently, contract management has an important role to control the costs. Instead of just paying all costs, they inform the business and the business reconsiders the actual need for prolongation of the contract.

Client C acknowledges that cost objectives are not unambiguously stated in the contract. They observe improvements in other segments, where cost-effectiveness is achieved by stating objectives for cost-effectiveness explicit in the contract. They propose to make the service provider accountable for both cost savings and value creation.

### Value creation

From the interviews it appeared that value creation is often not addressed by the client organizations. First, issues from practice considering value creation are assessed and next propositions for improvement are provided.

The interviewees indicate lack of value creation emerges especially from not achieving their objectives during the post-contract phase. Several reasons are provided by the organizations interviewed. First, client C indicates this results from unclear and dissimilar organizational sourcing objectives for the business, demand and the procurement function. They have different vision for organizational sourcing altogether.

Second, client C adds that their organization is more adjusted to the perspective of costs than the perspective of value. They indicate that business in general is mostly cost-focused. So even if the objectives are well defined they are not established due to focus on costs.

Third, all client organizations suggest they address their objectives mostly on the operational level. They indicate that generally the objectives on a strategic level are not addressed. As can be seen in Figure 8, when in the post-contract phase objectives are not achieved, it is assumed the problem lies in the contract. However, they should go back to the strategy and objectives formulation, since the objectives originate here.



Figure 8: IT procurement process

Finally, client C acknowledges that during the post-contract phase the original objectives change and are implicitly replaced by more accurate objectives. Because these objectives are solely implicit and not included in the contract, client C indicates it is unlikely these are achieved.

Next, several propositions for improvement are identified from the case studies. Client A indicates that the contribution of the service provider to the objectives is not addressed. They propose a temporary steering function that supports and controls the service providers in order to achieve the agreed objectives.

Both providers interviewed add that however they are contractually obliged to proactively add value client organizations, they do not utilize this opportunity for value creation. Two reasons are provided by provider A that clarifies this inconsistency. First, client organizations have not anticipated the extra costs accompanying these innovative initiatives. Second, the added value is not directly observable or the initiatives cannot be attributed to direct cost savings. Therefore, client organizations do not see the direct added value.

Innovation is frequently stated in the interviews as a means for adding value. Arrangements for innovation and pro-activity concerning innovation need to be established in the contract. Client D expresses innovation in their contracts as technological improvement and continuous improvement.

Next, from a market perspective two possible ways for value creation appeared from the interviews. First, client A suggests that the innovative capacity of the market can be addressed. They denote that instead of asking for specific solutions, only the functionality is specified to the market. Functional demand leads to more innovative and inexpensive service.

The second approach for value creation from a market perspective, mentioned by client C, is monitoring of developments in the market. Monitoring of the market denotes determining which technology developments are found in the market and what other organizations are doing in this area. Furthermore, this is the possibility to search for high quality solutions available in the market. Client C adds that the IT function knows best what is available in the market and is capable to translate the needs from the business. Client D shifts this responsibility onto the architecture function. They both explain that developments are too fast for the procurement function to keep up with.

Next, client C suggests that early involvement of the procurement function leads to higher total added value. They indicate that the IT portfolio management holds an important role in this. By registering all IT procurement projects in the organization, they enable the procurement function to get early involved in the projects. Client C indicates that the procurement function can provide value to these projects with their expertise on a tactical level.

Besides, the abovementioned means for value creation, client C suggests focus on risk management and corporate social responsibility can be considered to address costeffectiveness. Risk management tries to diminish risks and additional costs and corporate social responsibility may increase business value by choosing for sustainability. Provider A adds that another possible solution is found in collaboration between their service providers. Stimulating service providers to effectively cooperate with each other may lead to increased business value. Summarizing, from the case study research appeared that in order to achieve costeffectiveness an organization needs to concentrate on both costs and value creation. Costs savings are only achieved when based on a valid business case and when the TCO is determined. It needs to be acknowledged and anticipated that the nature of non-commodities may lead to difficulties in determining the TCO and accurate objectives. Cost control and monitoring is needed to actually achieve these. Cost-effectiveness is further influenced by stating the objectives in the contract and making the providers accountable for achieving these objectives. Value creation requires focus on realizing accurate objectives (even when these objectives change), on motivating innovation and on early involvement of the procurement function.

## 4.4 Key factors

The literature review provides key factors for successful IT procurement. The purpose of analyzing the key factors from the literature review is to determine which key factors are addressed in practice and to complement the key factors with additional factors identified from the interviews. The interviewees appear to agree on these key factors. Though, not all client organizations have adopted these key factors to the full extent.

The interviewees are asked to indicate the factors that are addressed during the IT procurement process. Furthermore, they are asked to specify the importance of these key factors. These results are analyzed separately and compared in order to draw conclusions on the usefulness and applicability of the key factors.

### Absence key factors

During the interviews became apparent that the approach chosen for the interviews is unsuitable for assessment of the quality of the addressed factors. Indicating a key factor is addressed, demonstrates little about the elaborateness or the quality (e.g. addressing only the basic ideas behind a key factor or addressing a factor unsatisfactory). This bias appeared from **interviewees'** explanation in reference to a specific addressed key factor. For example, some interviewees added that specific key factors are poorly or insignificantly addressed.

Keeping the above observation in mind, the significant difference between client A and the other client organizations in Table 5 can be explained. It appears from the interviews with client A that they honestly indicated they address a factor unsatisfactory.

In contrast to the above assumption made above, the indication of not having addressed a factor is evidence that it is actually not dealt with. This indication is therefore of more value than the knowledge that specific factors are supposedly addressed. Table 5 is therefore only analyzed for the absence of factors.

Phase	Factor	Client A	Client B	Client C	Client D	Absence
	1: Phasing of process	4	4	4	\$	0
Pre contract	2: Sourcing strategy	x	x	1	x	3
	3: Understanding market	x	×	4	\$	2
	4: Understanding need	×	4	4	>	1
	5: Enterprise architecture alignment	×	4	×	>	2
Contract	6: Contract development (incl. SLAs)	ð	2	1	*	0
	7: Define roles	1	4	4	>	0
	8: Total cost of ownership	x	*	x	×,	2
Post contract	9: Sourcing governance	×	ð	4	4	1
	10: Relationships management	×	ð	1	*	1
	11: Performance management	4	4	4	×	1
	12: Contract management	ð	ð	1	1	0
	13: Knowledge management	×	4	4	1	1
	14: Review sourcing decisions	×	4	1	1	1

Tuble 5: Presence and obsence of key factors

Reading Table 5 and including the before mentioned observation that the quality of the addressed factors is not guaranteed, it can be stated that overall the key factors are only moderately addressed by the client organizations. In addition, Section 4.2 illustrates that clients organize their demand supply for IT procurement in a quite ad hoc manner. Keeping in mind that these key factors for successful IT procurement are identified from literature it can be concluded that the above statement suggests that IT procurement practices of the researched client organizations are rather undeveloped.

#### Importance key factors

Both client organizations and providers have rated the importance of the specific key factors on a Likert scale from 1 (not important) to 5 (very important). The outcome is provided in Figure 9. The figure displays the average rate of importance of both the client organizations and the service providers.



#### Figure 9: Comparison importance key factors

However, the average rate has little value as the figures are statistically insignificant. The figure provides an indication that both client organizations and providers share a similar vision on the importance of specific factors. This conclusion can be drawn, since the difference is zero or one point.

Service provider A adds three key factors involved with contract development that they consider important. First, provider A states that innovation needs to be included in the contract. Since, innovation needs to be stimulated in order to be more cost-effective. This factor is also observed in the Section 4.3. Second, provider A figures that retransitioning of the IT service needs to be included in the contract. After the contract ends there often appear non anticipated costs and therefore cost-effectiveness is reduced. Finally, dialogue in the contracting phase is of vital importance according to provider A.

### Analysis key factors

In order to analyze the overall value of these key factors they are plotted in Figure 10. On the x-axis the average importance of the specific key factor and on the y-axis the number of client organizations that have not addressed the factor are displayed. The numbers displayed in the figure refer to the specific factors.



Figure 10: Plot key foctors

The first observation in Figure 10 is that all factors but one are considered to be important as they are situated in the blue square. The factor that is rated as less important is 'Review sourcing decision' (no. 14).

The purple oval in Figure 10 indicates the key factors that have high to rather high importance. In contrast to the importance assigned to these factors they are not addressed in two or three of the client organizations. The first example is the factor 'Sourcing strategy' (no. 2), in contrast to the high importance given to this factor, three organizations lack a clearly defined sourcing strategy. Secondly, in contradiction to the rather high importance that is assigned to 'Total cost of ownership' (no. 8), two organizations lack addressing TCO. In third place, 'Understanding the market' (no. 3) and 'Enterprise architecture alignment' (no. 5) have a rather high importance and two client organizations indicate to not address these key factors.

Summarizing, despite that several factors are not addressed by the client organizations, the interviewees admit the high importance of all but one factor. It can be concluded that both literature and practice agree on the significance of these factors. Therefore, these factors need to be considered for the development of the conceptual framework.

## 4.5 Identified issues

Several additional issues are discovered during the case study research. In this section these issues are explained. Issues appear from the decentralized IT procurement, the IT procurement process, the nature of non-commodities outsourcing, issues relating to governance, not assessing the strategic sourcing, the dependence on the service provider and issues concerning evaluation.

### Decentralized IT procurement

Both client A and B acknowledge their IT procurement is traditionally organized decentralized. Dutch legislation requires more centralized IT procurement. Therefore, both organizations are

experiencing a transition from a decentralized to a more hybrid organization of IT procurement. Client C indicates they also have a hybrid IT procurement organization.

Client D is a decentralized organization and therefore when procuring centrally difficulties occur frequently. The businesses are not convinced easily and the demand function constantly needs to prove the central procured IT service is superior. Both client C and D indicate a decentralized organization is problematic as there are often unclear agreements on how central IT procurement is organized.

From these acknowledgements it can be observed that all client organizations interviewed have hybrid or even decentralized IT procurement. A decentralized or even hybrid procurement organization becomes an issue when organizations lack clear structures and processes on centralized IT procurement. As is found in the literature review it is advisable to improve cost-effectiveness by properly organizing centralized IT procurement.

### IT procurement process

The governmental organizations (client A and B) indicate they are committed to follow the process imposed by the European public procurement legislation. Furthermore, client C indicates they exploit an equivalent IT procurement process that is customized specifically for their organization. In contrast, client D acknowledged the IT procurement process is not fully employed in their organization.

In order to analyze the degree of contribution of the procurement function in the procurement process, the presence of the procurement function of all client organizations is plotted. This plot is realized using the descriptions and statements from the interviews. The involvement of the procurement function is depicted in Figure 11.



Figure 11: Involvement procurement function

The procurement function in client A holds a supporting role for the business in the procurement process. The business specifies their demand supported by the IT function. Next, IT procurement is to a limited degree involved during the selection phase and commonly involved during the contracting phase. Moreover, the ordering and monitoring is conducted by the business and IT itself.

Client B's procurement function is involved in defining the selection criteria and the procurement function provides for existing or new providers in the selection phase. The

contracting phase the role of the procurement function is represented. Furthermore, the business and IT are responsible for the monitoring and the relationship with the service provider.

The procurement function in client C is typically involved in the pre-contract phase and during the contract phase. From the post-contract phase after the service is ordered it is taken over by the contract management function that is the responsibility of both the IT function and the business. Client C indicates that the earlier the procurement function is involved, the more value can be added by the procurement function.

In the pre-contract phase, the business and IT function from client D are responsible. During the contract phase the procurement function is involved for its expertise on contracting. The post-contract phase is the responsibility of the business function. More specific the business provides for contract management and monitoring.

Summarizing, it can be observed from the interviews that the essence of the procurement process is pursued in the client organizations. However, as can be observed from Figure 11 the procurement function is not represented in all sub processes. Therefore, the procurement function is not able to provide their expertise in order to add maximum value. The conclusion that can be drawn from this observation is that the procurement function is only represented in the contract phase and to a less extent in the pre-contract phase. Furthermore, the procurement function is underrepresented in the post-contract phase.

### Non-commodities

Before the interviewees are provided with the research definition of non-commodities, they are asked for their view on the concept. The interviews provided several different views on the definition of commodities and non-commodities and different approaches for IT procurement of non-commodities.

Client B does not differentiate between commodity procurement and non-commodity procurement. They define non-commodities as IT services with high impact on core business. Non-commodities are procured in their organization with the same approach as commodities. However, non-commodities are mostly procured by the businesses themselves and the procurement function is not involved.

The definition client C applies for a commodity is: services that are standardized for operational excellence. They define non-commodities as customized services. Therefore, they group hiring, office automation, data management and telecom as commodities. Since, these services foremost need to deliver quality. Furthermore, they indicate that buying commodities involves benefits like lower costs and proved quality.

Moreover, client D defines non-commodities as services which have high impact to the organization. They see packaged systems as a non-commodity as it has high impact to the business where it is implemented. On the other side they group hiring of consultants to commodities just as client C.

From the interviews can be observed that the organizations have different views on the definition of commodities and non-commodities. It appears that two classifications are used for distinguishing commodities and non-commodities. First, it is defined as the differentiation between standardized IT services and customized IT services. The second definition used is IT

services for non-critical versus core business processes. The first view may cause the organizations to ignore the risks that accompany non-commodity procurement.

### Sourcing governance

Sourcing governance is defined in this research as the structures, processes, roles and responsibilities that are defined in order to support the sourced service and the accompanying strategy and objectives. Client A indicates their governance structure including the established responsibilities change often after the contract is signed. Furthermore, client C acknowledges the responsibilities are often vaguely defined and occasionally overlap. Especially in case of turnover in managing functions this needs constant attention, as the responsibilities are defined in employees' heads.

From the interviews it appeared that the approach of establishing the roles and responsibilities is different for every client organization. Client B defines their responsibilities according to existing financial functions. For client D these are defined by the business and is the procurement function only facilitating.

Client C provides an example of how responsibilities are established. In their central approach the responsibilities are arranged as follows: the business is responsible for the functional requirements and the IT demand function is responsible for the technical interpretation. In their governance model the procurement function is responsible for category planning on the strategic level, supporting of the procurement process on the tactical level and management of the **procurement process on the operational level**. **Client C's contract managers within** the IT supply function are responsible for all processes considering contract management. Moreover, within the IT supply function, the service managers are responsible for the direct relation with the provider and the achievement of the SLAs.

For the organizations interviewed the governance structure is mostly included in the contract and the governance structure consists of processes, structures and roles and responsibilities. However, as is observed it can be concluded that the establishment of these roles and responsibilities is often unclear and may be subject to change during the contract phase. Therefore, besides contract development and sourcing governance, contract management is important.

### Sourcing strategy

Three out of four organizations interviewed indicate they do not have an explicit organizational sourcing strategy. Client A indicates this sourcing strategy is implicit embedded in their strategy for general procurement. Client D indicates to have an implicit organizational sourcing strategy, which entails that they outsource everything they do worse than the market. Moreover, client B's sourcing strategy is none existing, though client B acknowledges IT procurement should be addressed on a strategic level in order to be able to centralize their IT procurement.

Having a defined sourcing strategy, client C is an exception compared to the other client organizations. As this organization attempts to address the strategic level by having a organizational sourcing strategy formulated and actively dispersing this sourcing strategy throughout the organization. They base their sourcing strategy on the business strategy. This results into outsourcing of all non-core components of the organization and for what a mature

market exists. Client C recognizes that it is difficult to differentiate between core and non-core and states that this is mainly an issue for the IT field; in other segments this is not seen. They attribute this to the fact that IT influences the primary processes of the business.

Summarizing, three organizations indicate they have an incomplete sourcing strategy or even a sourcing strategy that is not formalized. Furthermore, these organizations acknowledge they do not address the strategic level. The regarding client organizations indicate this has to do with their overall immaturity for IT procurement. Therefore, from the interview results it can be concluded that IT procurement is poorly organized on the strategic level.

### Dependence on service provider

Client C observes that when sourcing an IT service, knowledge is transferred together with the service to the service provider. Therefore, knowledge disappears from the client organization and dependence of the service provider grows. When the contract ends and the service is insourced or sourced to another provider, difficulties may appear. Therefore, client C indicates that knowledge management is vital to diminish dependence on the service provider.

Dependence on the service provider also finds its origin in the high dependence on the service itself. Client A acknowledges dependence particularly arises when regarding non-commodities, since the impact is high if the service fails. Client C agrees, by stating that the dependence of service providers is lower when considering commodities. Their reasoning is that commodities affect core business to a smaller extent. When considering non-commodity procurement the dependence is much higher.

An unequal relationship may lead to dependence on the provider. In case of procuring a minor quantity in respect to the total the provider is offering to all clients, it is harder to demand high quality. Client A indicates it may be beneficial to combine demand with several other governmental organizations, in order to lower dependence on the provider.

Client C proposes risk management to minimize the impact of dependence. Minimizing the risks can be achieved by assessment of operational risks, by means of building a sound business case prior to selection in the pre-contract phase. This should include at least assessment of the reliability and the financial health of the provider. Next, client D proposes to start negotiation prepared and anticipate on the possibility of dependence. Client C adds that measures to prevent dependence need to be emphasized in the contract. These measures are used for the contract management in order to minimize this issue.

Dependence on the service provider is unavoidable when outsourcing IT. The issues and risks that appear include knowledge loss, dependence on the service and unbalanced relationship between client and provider. To minimize the impact of this issue it advisable to anticipate and counteract the risks.

### Evaluation

The results of the case study research indicate that the criteria for evaluation of an IT procurement project are typically described in the governance structure of the contract. However, one remarkable observation is that a total evaluation of the IT procurement processes and the accompanying contract is generally not performed. One of the reasons provided by client B is that evaluating in an early stage of the contract most certainly has a

negative influence on the relationship with the provider. For that reason evaluation is deferred until the contract expires.

Client D indicates that time is also an issue. Lack of time causes neglecting provider and contract evaluation. Occasionally, project management of the specific outsourcing project does the evaluation. Though, the results of the evaluation are not communicated to all stakeholders. From the interviews appears that growing awareness about the need for evaluation is evolving and most organizations indicate they will perform an evaluation in the near future.

In contrast to the fact that overall evaluation is generally not performed, all organizations indicate they perform monthly performance evaluation. This is done by monitoring the metrics according to the SLAs defined in the contract and communicating this to their providers. In order to direct the service provider penalty clauses are designed to enforce performance. However, clients indicate that penalty clauses are mostly not executed. Instead, improvement is agreed on or even compensation is offered in the form of extra work or innovation at the cost of the provider.

The interviewees are asked to indicate which evaluation criteria are used for overall evaluation of an IT procurement contract. An overview of the percentages of the assessed factors is provided in Figure 12.



#### Figure 12: Evaluation criteria

The main observation from Figure 12 is that client organizations and providers have a different perception of the criteria for evaluation. As can be seen the bars for the service providers show a different pattern compared to the bars of the client. First, this is seen in the observation that providers do not rate 'Cost savings or cost control' as important. Provider B illustrates this by stating that this criterion provides only a random indication of the total costs.

The second observation from Figure 12 is illustrated by an example from provider B. Provider B indicates that the relationship between the client and the provider should be valued as more important than maintaining the service levels. Provider B believes that clients weigh the criterion 'Service levels are maintained or improved' as more important, as providers are continuous evaluated on the SLAs. Their reasoning is that it is essential to be aware of each other's issues, as this leads to less discussion about payments and prolongation of the contract.

Another observation from the interviews is that proactiveness is a criterion that is used in three out of four client organizations. Service provider B indicates that however they are aware this criterion is used, they diagnose that client organizations cannot instantly implement proactive innovations and innovative opportunities are often postponed.

Concluding, the expectations and the perceptions of the evaluation factors are different for clients and providers. These criteria need to be clearly communicated and managed in order to be sure that service providers are aware on which criteria service providers are judged. This will lead to less confusion and ultimately cost-effectiveness will increase.

## 4.6 Chapter summary

The objective of this chapter was to answer the fourth research question as provided in Section 2.4: Which factors and issues for IT procurement can be derived from the case studies?

- Which factors and issues come across in daily IT procurement?
- Which factors do the case studies organizations propose?
- Which roles and responsibilities are used in daily procurement of IT?

From the case studies is observed that the demand organization is often not uniformly organized for every contract. Furthermore, it is observed that the tactical and strategic levels are poorly addressed. Especially concerning the standing organization these levels is not organized. A temporary organization is arranged to care for the tactical level and the strategic level is mostly not addressed. In addition, the supply function is often not formally organized.

From the case study research appears that in order to achieve cost-effectiveness an organization needs to concentrate on both costs and value creation. Issues concerning not achieving savings appear from an invalid business case and the nature of non-commodities. Furthermore, the savings appear typically not until the end of the contract and cost control needs to be applied. Value creation requires focus on realizing the actual objectives (even when these are changing), focus on motivating innovation and focus on early involvement of the procurement function.

Processes related to the key factors are not thoroughly addressed in client organizations. It is observed that these organizations are not steering on these key factors. However they indicate the importance of addressing these factors is high. In addition, it can be concluded that the key factors identified from the literature review and the results from practice considering these factors indicate these factors need to be addressed for successful IT procurement.

Several additional issues are discovered during the case study research, which need to be addressed in the conceptual framework for cost-effectiveness IT procurement:

- All client organizations interviewed have a hybrid or even a decentralized organization for their IT procurement. This may appear as an issue which influences cost-effectiveness when structures and processes for centralized procurement are not clearly formulated.
- The IT procurement process is pursued in the client organizations. However, the procurement function is mostly only involved during the contracting phase. This is considered an issue, since the earlier the procurement function is involved the more value is created by their procurement expertise.
- Organizations tend to have different views on non-commodity procurement and the nature of non-commodity procurement. This may lead to inaccurate objectives and strategy for the sourcing initiatives, since non-commodities generally involve more risk. This influences cost-effectiveness as risks are ignored that may cause unanticipated costs.
- The organizations' sourcing strategy is non existing or implicit available. Despite the high importance given to this factor.
- The establishment of the structures and roles and responsibilities is often unclear and is subject to change during the post-contract phase.
- Dependence of the service provider is unavoidable. There are some aspects to consider the approach for this issue. These aspects include knowledge loss, dependence on the service and unbalanced relationship between client and provider.
- Client organizations and providers have a different perception of the criteria for evaluation. Obviously, different views will lead to difficulties in achieving the objectives and cost-savings.

In conclusion, evidence for the initial conceptual framework is found. This includes the applicability of the IT demand and IT supply function and the support for the key factors for IT procurement success. In combination with the issues found, this provides leads for further development of the conceptual framework in Chapter 6.

# 5 Analysis of models

Existing models provide as a starting point for further development of the conceptual framework. Several best practice models are available for optimizing the processes for IT procurement in organizations. The purpose of these models is to provide leads to holistically implement these processes in order to be able to conduct optimal and successful IT procurement. However, these models often require a vast amount of time and money to develop throughout the organization, since the models are significantly extensive.

This chapter attempts to answer which best practices for IT procurement can be identified from capability models and libraries for IT procurement. In order to answer this question, the four models that have been proposed in Section 2.2 are studied. For each of the four models, eSCM-CL, CMMI-ACQ, IPCM and ISPL, the purpose and structure are assessed in respectively Section 5.2, 5.3, 5.4 and 5.5. Finally, a comparison is provided by evaluating the strengths and weaknesses of the models in Section 5.6. From this comparison, the most suitable models are selected, these models provide the best practices for the conceptual model in Chapter 6.

## 5.1 Assessment criteria

In order to support the key factors and the issues for IT procurement, the practices used for the composition of the conceptual framework are required to satisfy a number of criteria. These criteria are applied for the assessment of the potential models. These three criteria are chosen to cover the whole spectrum of cost-effective IT procurement. The assessment of the models for the development of the conceptual framework is based on the following criteria:

- Support for the whole IT procurement process
- Support for governance and organizational sourcing strategy
- Support for cost-effectiveness: both cost-based and value-based

## 5.2 eSCM-CL

The eSourcing Capability Model for Client organizations (eSCM-CL) is developed by the IT Services Qualification Center at Carnegie Mellon University and a group of independent organizations (Hefley & Loesche, 2004). The model is a best practices capability model with two purposes: to support client organizations in order to help them to improve their capabilities required for the IT procurement process (sourcing life-cycle) and provide client organizations with objective means for evaluating these capabilities. The objective of this model is to enable client organizations to develop and improve their ability to acquire high quality IT services by providing best practices.

The immediate cause for developing the eSCM model can be traced back to several critical issues for sourcing experienced in practice (Hefley, Loesche, Khera, & Al Siegel, 2005). These issues include: the cost of outsourcing exceed expectations, the outsourcing objectives do not meet the expectations and the need for renegotiation of sourcing contracts and reevaluation of the service providers. The eSCM model is developed to support client organizations to measure and enhance the business value of the sourcing relationships, while minimizing costs and risks. As the eSCM model supports enhancing business value and minimizing costs it can be stated that this model is contributing to cost-effective IT procurement.



Figure 13: eSCM-CL (Hefley & Loesche, 2004)

### Capability levels

This model has five capability levels; these involve the level of maturity (or quality) of the client when implementing the practices in their organization. The capability levels are denoted on the z-axis in Figure 13. In order to arrive at a particular level, all practices of that level and all practices from the lower level(s) need to be implemented.

The objective of this research is not to evaluate the maturity, as the purpose of these levels is. In contrast, the objective is to develop a concise and comprehensive list of recommendations that satisfy the key factors and main issues for IT procurement. Therefore, the description of these levels are only provides understanding of the structure of the eSCM model. This applies for all models that are described in this chapter.

**Capability Level 1:** This level includes client organizations that perform sourcing. Some may have almost none of the practices of the eSCM model implemented. Other client organizations have several of the practices implemented, including some at Capability Level 3 and 4. Because these client organizations have not completely implemented all of the Level 2 practices these client organizations are expected to fail their sourcing attempt.

**Capability Level 2:** This level includes client organizations that have formalized procedures for consistently managing sourcing. However, these procedures are not implemented consistently across the whole organization.

**Capability Level 3:** Client organizations have formalized procedures implemented across the whole organizations and the organization's objective is to continuously improve their sourcing capabilities.

**Capability Level 4:** Client organizations attempt to innovate and customize their approach in order to add value to the sourcing management activities.

**Capability Level 5:** In order to accomplish this level, client organizations are required to demonstrate ongoing excellence by successfully implementing Level 2, 3 and 4 for two years.

#### Categories

The eSCM-CL model is developed for the whole sourcing life-cycle (Hefley e.a., 2005). The sourcing life-cycle is divided into ongoing, analysis, initiation, delivery and completion. These phases are denoted on the y-axis in Figure 13 and are illustrated in Figure 14.



Figure 14: eSCM life-cycle (Hefley & Loesche, 2004)

**Ongoing practices** represent the management functions that are achieved throughout the entire life-cycle. These practices are either applicable for one sourced service or for the organization as a whole.

**Analysis practices** focus on the capabilities needed to analyze operations and functions to identify what and how services, processes, or functions can potentially be sourced.

**Initiation practices** embody the capabilities essential to effectively prepare for managing the sourced services. These practices include: preparing for service selection, evaluating service providers, preparing for negotiation, establishing agreements and transferring the service.

**Delivery practices** focus on monitoring the service provider's delivery capabilities. This includes: monitoring service provider performance, monitoring changes, management of finances and agreements and business value analysis.

**Completion practices** focus on the capabilities necessary to effectively end a sourced service in the last part of the sourcing life-cycle. This includes mainly transfer back of resources and critical knowledge to the client organization or other service provider.

Figure 15 illustrates that the phases of the eSCM life-cycle are similar to the phases of the IT procurement process. The analysis phase is involves practices that support the strategic procurement process. Next, the initiation phase encompasses practices are corresponding to the specifying, selection, contracting and ordering phase. The delivery phase involves practices corresponding to the monitoring phase and the completion phase of the eSCM life-cycle entails practices for the after care phase of the IT procurement process. Furthermore, the

ongoing practices provide governance and strategic practices that are applied for the whole IT procurement process.

Objectives	Strategy	Specifying	Selecting	Contracting	Ordering	Monitoring	After care
< An	alysis 🕨	•	In	ltiation	•	De ivery	Completion

Figure 15: Comparison eSCM life-cycle with IT procurement process

It appears that the eSCM model supports the whole IT procurement process, including governance and strategic sourcing. Therefore, the first and second criterion from Section 5.1 is satisfied.

# 5.3 CMMI-ACQ

The CMMI-ACQ model includes acquisition best practices. The CMMI model is developed by a team from industry, government, and the Software Engineering Institute (SEI) for the application of process improvement in the acquisition of IT products and services (Team, 2007). The CMMI-ACQ, v1.2 model is a collection of Process Areas (PAs) that is based on other CMMI models. A Process Area is defined in CMMI-ACQ as: A cluster of related practices in an area that, when implemented collectively, satisfies a set of goals considered important for making improvement in that area.

The purpose of this model is to provide guidance for the application of PAs for the client organization. The focus of the PAs in the model is on activities for initiating and managing the acquisition of IT services that meet the needs of the client. The model describes the processes of the client, while providers offer services useful to the processes addressed in the model.

### Maturity levels

Besides five maturity levels the model has five capability levels. Maturity levels are used to characterize organizational improvement relative to a set of PAs, and capability levels characterize organizational improvement relative to an individual PA. A maturity level is achieved when all of the PAs are satisfied up to that level. We address here only the maturity levels to make comparison with the eSCM model possible.

**Maturity Level 1:** Processes are usually ad hoc, chaotic and usually take place in an unstable environment. Organizations acquire products and services, but they frequently exceed the budget and schedule. Organizations have a tendency to be overcommitted, abandon their processes in a time of crisis and are unable to repeat their successes.

**Maturity Level 2:** Projects establish the foundation for an organization to become an effective acquirer of needed capabilities by institutionalizing basic project management and provider management practices. Projects, processes, work products and services are managed and planned in accordance with policies. The existing practices are maintained during a crisis.

**Maturity Level 3:** Defined processes are used for managing projects and providers. These processes are well defined and understood and are described in standards, procedures, tools and methods and these are improved over time. These standard processes are used to establish consistency across the organization. Projects establish their defined processes by

tailoring the organization's standard processes. The need for early detection of risk is of importance due to the complexity of the projects.

**Maturity Level 4:** Projects establish quantitative objectives for quality and process performance and use them as criteria in managing processes. Quality and process performance is managed throughout the process.

**Maturity Level 5:** Continuous improvement of the processes based on a quantitative understanding and through incremental and innovative process and technology improvements. The organization is concerned with addressing common causes of process variation and changing the process to improve process performance and to achieve established quantitative process improvement objectives.

### Categories

Process areas (PAs) are organized into four categories: process management, project management, acquisition, and support. These categories emphasize the key relationships that exist among the process areas.

The **process management** category contains PAs that address activities related to establishing, executing, and transitioning an acquisition project.

The **project management** category PAs contain the cross-project activities related to defining, planning, deploying, implementing, monitoring, controlling, appraising, measuring, and improving processes.

The **acquisition** category PAs focus on practices specific to acquisition. This category addresses, but is not limited to: acquisition requirements development, acquisition technical management, and provider agreement development.

The **support** category PAs cover the activities that support acquisition and address processes that are used in the context of performing processes. The support PAs address acquisition project processes and may address processes which apply more generally to the organization.

Figure 15 illustrates how the categories of the CMMI-ACQ model relate to the IT procurement process. The acquisition category supports the specific procurement phases and the project management category support this by project management practices. Furthermore, the support and process management practices provide supporting practices for the whole IT procurement process.



Figure 16: Comparison CMMI-ACQ categories with IT procurement process

It appears that the CMMI-ACQ model does not support the whole IT procurement process. Especially, the after care phase is underexposed. The model lacks governance and organizational strategic sourcing practices. Therefore, the first and second criterion from Section 5.1 is satisfied.

## 5.4 IPCM

The ICT Procurement Capability Model (IPCM) is a process reference model (DNV, 2005). IPCM is used by ICT procuring organizations and it is intended for three purposes:

- Maturity: Provide understanding of the maturity of the organization and its strengths and weaknesses.
- Risk management: By comparing the organizations processes to the IPCM model and identifying processes that are not in place.
- Process improvement: Improve the processes where needed.

The IPCM model is the result of a research project with several major Norwegian organizations. IPCM is composed of three categories: governance, operational and initial procurement Key Process Areas (KPAs, are comparable to the PAs of the CMMI-ACQ model).

IPCM is risk based such that each KPA represents a collection of risks that is prevented by implementing the KPA. Not counteracting one of the risks can influence the service TCO and therefore its cost-effectiveness, as these risks may cause unanticipated long term costs.



Figure 17: IPCM (DNV, 2005)

### Capability levels

IPCM has three capability levels, which are tightly coupled to the categories of the model.

**Capability Level 1:** This level determines the capabilities in an IT procurement project. It encompasses the arrangements to handle a single IT procurement project using the processes from the *initial procurement* category.

**Capability Level 2:** This level provides the supporting processes from the *operational* category. Achieving this level helps to deliver a low TCO and influences cost-effectiveness accordingly.

Capability Level 3: This level involves the processes in the governance category.

### Categories

The IPCM model has three categories, which are tightly coupled to the capability levels as provided in the before. These categories are initial procurement, operational and governance.

The KPAs within the initial procurement category have a sequential relationship. These KPAs are provided for acquisition of services. The goal of the initial procurement category is to help a project deliver a low TCO.

The KPAs within the **operational** category operate in parallel. These are available for operating and maintaining the service. The goal of this category is to support procurement projects to deliver a lower TCO than can be achieved with the KPAs of the initial procurement category alone. Furthermore, the KPAs emphasize functions significant to projects and support to set objectives for corporate functions.

The **governance** category provides three KPAs at the strategic level. These are provided for ongoing practices for the whole project. The objectives are to formulate a sourcing strategy, help to focus the whole organization into one direction and help to understand need for other supporting models.

Figure 18 illustrates how the categories of the IPCM model relate to the IT procurement process. The initial procurement category supports the specific IT procurement phases with the business needs practice till the operational delivery practice. The operational category provides practice that provides supporting practices for the whole IT procurement process. Furthermore, the governance category provides practices for organizational strategy, governance and customer relations.



Figure 18: Comparison IPCM categories with IT procurement process

It appears that the IPCM model does not support the whole IT procurement process. Especially, the after care phase is underexposed. The model provides support governance and organizational strategic sourcing practices. Therefore, the only the second criterion from Section 5.1 is satisfied.

## 5.5 ISPL

The Information Service Procurement Library (ISPL) is a European best-practice method for tendering and delivering IT projects and services. It is used by both client and provider organizations, and in both the public and private sectors. ISPL provide support to establish a professional relationship between the client and the service provider. It provides best practice outsourcing strategy, supports contracting and delivery planning and covers monitoring during the delivery phase (Verhoef e.a., 2004). In contrast to the other models, this library does not attempt to support maturity or capability assessment.

### Phases of a procurement

Within the ISPL library an acquisition can be subdivided in several procurements. The process is provided in Figure 19. The requirements for the IT procurement are formulated during the acquisition initiation phase and are documented in the acquisition plan. The procurement process consists of three sub processes: tendering, contract monitoring and contract completion.

**Tendering:** The main goals of this phase are formulating the request for quotation, selecting a quotation and a service provider agreeing on the contract that includes the deliverables and the mutual responsibilities.

**Contract monitoring:** This involves monitoring of the delivery of the service according to the contract using predefined performance indicators. During this phase the responsibility from the client shifts from directing to managing.

**Contract completion:** This involves the termination of the procurement contract.



Figure 19: ISPL acquisition-procurement process

Figure 20 illustrates how the phases of the procurement of the ISPL library relate to the IT procurement process. As illustrated it only provides practices from the specifying to the after care phase.



Figure 20: Comparison ISPL with the IT procurement process

It appears that the ISPL library does not support the whole IT procurement process. The model lacks governance, organizational strategic sourcing practices and the strategic IT procurement process.

## 5.6 Comparison

The aforementioned models primarily provide best practices for IT procurement. The client organization can adopt these practices and improve their processes, in order to conduct better procurement of IT services. Since, all models have a similar purpose, a comparison provides for an evaluation of the models. The models are assessed according to the criteria in Section 5.1 and the strengths and weaknesses. The model that best serves the purpose of this research is chosen and applied for the construction of the conceptual framework in Chapter 6.

### eSCM-CL

The advantages of eSCM include the open standard nature as it is freely available and the independent environment in which it is developed. As has been illustrated in Figure 15 the model provides practices for the whole IT procurement process. Section 5.2 explained that the model is developed to address both aspects of cost-effectiveness and it includes practices for governance and organizational strategic sourcing.

Besides these advantages, the main disadvantage is that the model is rather complex and it takes years before level 5 is achieved. Concluding, considering the criteria, the eSCM model is considered an appropriate model.

### CMMI-ACQ

One main advantage of the CMMI-ACQ model is that from level 3, risk management is emphasized. This leads to another advantage: risk management implies better determination of the TCO, since incorporating risks provides a better view on the costs. Neglecting these risks may cause unanticipated long term costs.

Several disadvantages can be distinguished for the CMMI-ACQ model. The first disadvantage entails that practices are exhaustively detailed in an overwhelming document and it takes several years for organizations to develop the skills. Second, the CMMI-ACQ does not provide practices for the whole IT procurement process, as has been illustrated in Figure 16. Third, this model does not support development of an organizational sourcing strategy and it lacks specific governance practices.

### IPCM

The main advantage of IPCM is that the aim is to achieve the lowest achievable TCO for the procurement of an IT service. Therefore, IPCM adds to the cost-effectiveness perspective of

this research. Next, the focus on risk management, organizational sourcing strategy and governance are advantages.

Another, factor is that the KPAs are described on a higher level. This can be considered both as a disadvantage, as well as an advantage. It may cause difficulties when interpreting the KPAs. However, in contrast to other models it is less complicated and therefore easier to comprehend.

### ISPL

A disadvantage of ISPL is that it is a relatively complex framework that lacks a strategic approach. In contrast, the advantages of this library include that it is complete for its purpose and it is often used in practice (Van Bon & Verheijen, 2006). A disadvantage is that ISPL is intended for the operational level and the tactical and strategic level are not included. In addition, the practices are relatively fixed and it is not designed to be adapted for a particular organization. Finally, it is observed that ISPL lacks governance and strategy altogether. Therefore, ISPL is considered less desirable for the purpose of this research.

The criteria that have been provided in Section 5.1 for evaluating the specific models in are assessed and illustrated in Table 6.

Гасtor	Model	eSCM	CMIMI-ACQ	IPCM	ISPL
Support for whole IT procurement process		Ś,	×	×	×
Governance		Ś,	×	٨,	×
Organizational strategic sourcing		ė,	×	¢,	×
Cost effectiveness		2	1	2	x

Table 6: Criteria

Considering the assessment of the criteria in this table it can be concluded that the eSCM model is best satisfying these criteria. Therefore, considering the additional strengths of each model and the satisfied criteria, the eSCM model is chosen as the most suitable model for the selection of best practices for the conceptual framework.

## 5.7 Chapter summary

The objective of this chapter was to answer the fourth research question as provided in Section 2.4: Which best practices for IT procurement can be identified from capability models and libraries for IT procurement?

- Which best practices are proposed by eSCM?
- Which best practices are proposed by CMMI-ACQ?
- Which best practices are proposed by IPCM?
- Which best practices are proposed by ISPL?

In this chapter four best practices models have been assessed. A best practice model is considered as a collection of processes for best practice IT procurement. This chapter provided a high level view on the practices of all models.

Considering the eSCM model, it appears that the practices cover the whole IT procurement process. In addition, the organizational strategic sourcing and governance practices are included.

The CMMI-ACQ model includes project management practices and a specific set of practices for IT procurement. However, this model does not cover the whole IT procurement process and lacks organizational sourcing and governance practices.

The IPCM model does not cover the whole IT procurement process. However, it supports organizational sourcing and governance.

The ISPL model provides practices on the operational level. Furthermore, it does not support organizational sourcing and governance.

The comparison of the four models provides evidence that the eSCM model is the most suitable model for the purpose of this research. Considering, the eSCM model is the only model that satisfies all criteria.

# 6 Development of the framework

The objective of this research is to develop a practical framework for managing the key factors and the main issues that influence cost-effective procurement of non-commodity IT services. This chapter introduces the development of the conceptual framework. The results from the literature study and the case studies provide the basis for constructing this framework.

This chapter presents the composition of the framework applying the existing best practices. First, the approach for constructing the conceptual framework is specified in Section 6.1. Second, cluster analysis is used to find the main focus areas for this research in Section 6.2. Third, the best practices models are assessed for practices that support the main focus areas in Section 6.3. This approach results in a comprehensive and straightforward framework of recommendations for implementing cost-effective IT procurement.

## 6.1 Development approach

The approach for identifying the practices that need to be included in the conceptual framework is illustrated in Figure 21 and is based on two aspects:

- The identification of the main focus areas is based on the key factors and the issues identified in the results of the case studies (Chapter 4). The selection of these focus areas is conducted in Section 6.2.
- The strengths of the best practice models are assessed (Chapter 5) and the best practices from the eSCM model are selected to support the identified focus areas. The selection of the best practices is found in Section 6.3.



Figure 21: Composition approach

## 6.2 Cluster analysis

This section introduces the main focus areas influencing cost-effective IT procurement. The purpose of defining a limited number of focus areas is to define an effective and comprehensive scope, which covers the complete spectrum of cost-effective IT procurement. Furthermore, the selection of the practices for the final conceptual framework in Section 6.3 is based on these focus areas. The focus areas cover all the previously identified issues and key factors.

The method of analysis to identify these focus areas is cluster analysis. Cluster analysis is commonly applied for assessing large amounts of information. The cluster analysis' objective is to determine related issues in order to identify the most important areas for cost-effective IT procurement. The motivation for selecting this approach is that it results in a comprehensive and concise list of focus areas rather than a vast amount of issues and key factors. Subsequently, the focus areas are validated by means of the key factors.

The approach for the cluster analysis is illustrated by applying four steps:

- 1 Map the issues on the conceptual framework in order to illustrate where these issues manifest.
- 2 Try to find relations between the issues:
  - a. Issues are generally related by a common factor. A relation is possible when an issue is either a consequence for or a cause of an common factor.
  - b. Often the clustering of the issues is straightforward, since the issues are literally clustered near each other.
- 3 Identify the common factor as a focus area.
- 4 Validate the focus area by means of the identified key factors.

The issues that have been emerged from the results of the case study research are mapped onto the conceptual framework in Figure 22 and are explained in this section. This figure illustrates where the issues arise and how they are related.



Figure 22: Cluster analysis

### Strategic sourcing

Strategic sourcing entails defining and exploiting organizational sourcing objectives and the corresponding organizational sourcing strategy. Strategic sourcing concentrates on the organization as a whole and not on one sourced service. From the literature review appeared that the organizational sourcing strategy should be derived from the business strategy. The sourcing strategy results in achievement of maximum business value (Cohen & Young, 2006). For this reason strategic sourcing highly influences cost-effectiveness. From this research appears that strategic sourcing supports amongst others the following issues: decentralized organization, lack of involvement of the procurement function, lack of a sourcing strategy, dissimilar sourcing objectives and dependence on the service provider, as illustrated in Figure 23.



Figure 23: Strategic sourcing, cluster analysis

From the results of the case study research it is observed that a decentralized organization leads to difficulties and lower cost-effectiveness when IT is aimed to be procured centrally. These difficulties appear when agreements for centralized procurement are not clearly formulated and accordingly are not embedded in the IT procurement processes. A decentralized organization implies businesses having their own profit and loss account. When IT is procured centrally, businesses require being involved at all times. Incorporating centralized procurement principles in the sourcing strategy will diminish this issue as the strategy will affect the policies and procedures on tactical and operational level accordingly. Higher cost-effectiveness is achieved as effective centralized IT procurement benefits from economies of scale.

The need for focus on strategic sourcing is found in the issue that the business, the demand and the procurement function have dissimilar views on the organizational sourcing objectives. From the case studies appeared that these organizational sourcing objectives are often not properly formalized and communicated across the organization. However, from the literature review is learned that the sourcing strategy should be aligned with these objectives. Therefore, it is required that these are accurately defined and communicated across the organization.

Dependence of the service provider is an issue for the business. Dependence is an inherent risk, which is expressed in amongst others knowledge loss, as knowledge is transferred together with the sourced service. From the case studies appeared that dependence on the service provider is enhanced by an unequal relationship between the client organization and the service provider. Because of the non-commodity nature this risk highly impacts the business value and this impact affects cost-effectiveness. Therefore, the organization should assess this risk and include principles concerning dependence in the organizational sourcing strategy.

Not involving the procurement function is an issue found for the business, the demand function and the supply function. The results from the case studies indicate that the procurement function is insufficiently represented in the process. The representation of the procurement function is illustrated in Figure 11 in Section 4.5. The figure demonstrates that the procurement function is involved in the contracting phase for all interviewed client organizations. For the other phases the procurement function is involved to a limited degree. From the case study research appeared that early involvement of the procurement function leads to higher added value, as their expertise is exploited. Cohen and Young (2006) agree that the involvement of the procurement function is important for a successful sourcing.

From the analysis of the key factors in Section 4.4 appears that having a sourcing strategy is the number one key factor for successful IT procurement. The results of the case studies

showed that three out of four client organizations do not have a formalized organizational sourcing strategy. In contrast, both the client organizations and the service providers indicate that having a sourcing strategy is vital for successful IT procurement. The lack of organizational sourcing strategies and the issues that have their origins in the lack of a proper organizational sourcing strategy demonstrate that strategic sourcing should be accurately addressed. Therefore, strategic sourcing is identified as a main focus area.

### Objectives for a sourced service

Objectives for a sourced service are described as the definition of the purpose for a sourced IT service. These objectives are amongst others expressed in cost savings and improved performance. In contrast to the strategic sourcing focus area, this focus area concentrates on one sourced service. The definition of objectives supports to achieve lower TCO and maximum value. Since, the accurateness of defining these objectives is related to extent the actual objectives can be achieved. Not achieving these objectives is influenced by an inaccurate business case, not stating all objectives in the contract, the non-commodity nature of the sourced service, not organizing pro-activity, innovation and value creation, as illustrated in Figure 24.



Figure 24: Objectives for sourcing a service, cluster analysis

From the case study research is identified that incomplete budgeting of costs is an issue. Incomplete budgeting of costs is caused by difficulties constructing an accurate business case. An inaccurate business case has consequences for determining accurate objectives and the TCO. From both the case studies in Section 4.5 it is observed that difficulties in obtaining accurate figures lie in the nature of non-commodities. Obviously, it is unfeasible to achieve the actual objectives when the inaccurate objectives are applied and accordingly maximum value cannot be achieved. Furthermore, TCO is identified in Section 3.3 is a key factor influencing cost-effectiveness. In conclusion, the accurate definition of these objectives needs to be emphasized as cost-effectiveness is influenced.

Innovation is proposed in the case study research as a means for creating value and raising cost-effectiveness. It is observed that objectives like innovation and pro-activity are not always properly addressed because the formulated objectives do not reflect these. In addition, the objectives in general are often not unambiguously stated in the contract. A poorly defined contract results in not achieving maximum value from the sourced service. Furthermore, a recent study on outsourcing identified that a complete contract is a prerequisite for achieving the projected results (Handley & Benton, 2008).

From Figure 8 in Section 4.3 is observed that the objectives for a sourced service are used as input for setting the strategy for the service. This observation indicates that the significance of setting the right objectives is rather high. If the approach of the sourcing is based on the wrong

objectives, these inaccurate objectives will affect all sub processes from the IT procurement process, which will result in not achieving the desired outcome and results in low cost-effectiveness.

The before mentioned observations show the relation between the identified issues and the formulation of accurate objectives for the sourced service. For that reason particular attention needs to be given to the formulation of reliable and accurate objectives. It is observed that the TCO, innovation and pro-activity need special attention when formulating these objectives, since these factors are identified to influence cost-effectiveness.

### Demand-supply function

The demand-supply function has been introduced in Section 3.1 as the structures and roles and responsibilities for dealing with the demand from the business and the directing of the service provider for delivery of the IT service. As is observed from the case studies the demand-supply function is frequently not accurately organized. Proper organization of the demand-supply function supports to improve cost-effective IT procurement by understanding the demand from the business and translating IT demand in accurate objectives. Next, the supply function is responsible that these objectives are achieved. Achieving these accurate objectives for the business, results in increased business value.

Poor organization of the demand-supply function is expressed in an inconsistent demand and informal supply function. Furthermore, it is influenced by poor definition of roles and responsibilities and leads to poor knowledge about the market, difficulties when dealing with changing objectives, poor cost control and knowledge loss, as illustrated in Figure 25.



Figure 25: Demand-supply function, cluster analysis

Inconsistent organization of the demand function and foremost lack of a formal supply function are issues observed from the case study research. Roles and responsibilities need to be established for defining and supporting these functions. A proper demand-supply function is enabled by the definition of the roles and the responsibilities for this function.

Lack of information about the market is identified from the case study research as an important issue and from the literature review market information is identified as a key factor influencing cost-effectiveness. Market information is the responsibility of the demand function as assessment of the market provides information about market capabilities and supports in selecting a potential IT service and service provider.
In the supply function knowledge loss is identified as an issue. As was identified in the literature review, knowledge loss indirectly influences cost-effectiveness in case of sourcing to another service provider or transfer in house. Knowledge loss influences cost-effectiveness in two ways. First, additional costs need to be made to regain the outsourced knowledge. Second, crucial knowledge elements may be disappeared perpetually, which causes declining business value.

As is identified for the 'Objectives for a sourced service' focus area the accurate definition of cost objectives and general objectives is crucial. In addition to defining the right objectives, it is essential to set controls for actually achieving these objectives and increased cost-effectiveness. Lack of cost control is identified from the case study research as a cause of not achieving the cost objectives. It is even argued that costs are made unobserved. Therefore, the supply function needs to set controls for these objectives and act upon these controls for improvement in order to improve cost-effectiveness.

The supply function is responsible for achieving the objectives by monitoring and directing the service provider. It is observed from the case studies that objectives are changing during the post-contract phase. Therefore, it needs to be anticipated that objectives are changing after the contract is signed and options for change need to be possible such that maximum business value can be achieved. However, the fact that objectives may change does not imply that proper definition of these objectives is profitless.

The before mentioned observations show the relation between the identified issues and the importance of a formal demand-supply function. For that reason particular attention needs to be given to the formulation of roles and responsibilities. It is observed that market information, knowledge management and control over the achievement of the objectives need attention because these factors influence cost-effectiveness.

#### IT procurement function

The IT procurement function is defined as the function that is an expert on the specific practices involving the phases of the IT procurement process. From the case studies is observed that the procurement function is mostly only involved during the contracting phase and is therefore their expertise is not fully exploited, as illustrated in Figure 26.



Figure 26: IT procurement function, cluster analysis

The phasing of the IT procurement process is indicated as a key factor in the literature review and is indicated as fairly important in the case study research. Several sub processes are lacking the involvement of the procurement function. From the case study research appeared that the procurement function is not fully exploited in the demand function and the absence of the procurement function applies also for the supply function. The involvement of the procurement function is illustrated in Figure 11, in Section 4.5. This figure shows that the IT procurement function is mostly involved during the contract phase and to a less extent during the pre- and post-contract phase.

From the case study research it appears that the earlier the IT procurement function is involved the more value can be created. Since, their expertise on procurement is exploited to its full potential and cost-effectiveness is increases. In order to indicate the importance of this function for cost-effective IT procurement, it is proposed to complement the conceptual framework. The IT procurement function is positioned between the demand function and the supply function. Positioning the function in between illustrates the participation of this function both in the demand and the supply function.

The before mentioned observation shows the relation between the identified issue and the importance of the IT procurement function. For that reason particular attention needs to be given to the participation of this function in the demand-supply function in order to be able to increase cost-effectiveness.

#### Client-provider relation

The client-provider relation is defined as the relational processes between the client organization and the involved service provider. The issues involving this focus area are illustrated in Figure 27. These issues are situated on the tactical level as policies need to be established to manage these issues. Furthermore, these issues evolve between the supply function and the service provider.





It is assumed that both organizations want to gain maximum value from the shared relation. However, it is observed from the case studies that both the service providers and the client organizations indicate that it is difficult to fulfill the value-based part of cost-effectiveness. The client organizations indicate this difficulty is caused by service provider's lack of innovative and pro-active activities. In contrast, the service providers indicate they are pro-actively presenting innovative ideas to the client organizations. From the perspective of the service providers, the client organizations themselves are not able or willing to invest in these value adding activities. From the context of the interviews appears that lack of creation of business value evolves from relational difficulties, as they both hold each other responsible for not achieving objectives.

From the case study results appears that the service providers acknowledge the relation is considered even more important than achieving SLAs. A recent study on outsourcing success identified that proactive relationship management is positively influencing sourcing results (Handley & Benton, 2008). Furthermore, from the case studies appeared that dependence on the service provider is negatively influenced by an unequal relationship between the client organization and the service provider.

The before mentioned focus areas result in a framework with five main focus areas, which cover the complete spectrum of IT procurement, as illustrated in Figure 28.



Figure 28: Main focus areas

## 6.3 Framework construction

This section introduces a conceptual framework for pursuing cost-effective IT procurement. The framework covers the previously identified focus areas and their corresponding issues and factors. The framework's outcome consists of recommendations for implementing cost-effective IT procurement.

The theoretical foundation of the framework relies on Carnegie Mellon University's eSCM model (see Section 5.1 (Hyder, Heston, & Paulk, 2004)), because of its large empirical basis and great practical relevance. The eSCM model has been widely applied in practice. However, a significant drawback is the model's extensiveness, which impedes organization-wide implementation.

The relevance of the conceptual framework introduced in this section is twofold. First, the conceptual framework is based on the eSCM model. Best practices of the eSCM have been tested in real world contexts, and thus have great practical relevance. Second, the conceptual framework distinguishes five focus areas, which cover the complete spectrum of cost-effective IT procurement. The mapping of the practices onto the conceptual framework is depicted in Figure 29. Furthermore, a more elaborate description of the practices included in the framework is found in Appendix C.

The outcome is a concise list of recommendations. Consequently, the framework's comprehensive scope accounts for its effectiveness. In order to achieve this framework, the pareto principle (the *80/20 rule*) has been applied: 80% of the success is achieved by 20% of the effort. Following this principle, the model enables a straightforward implementation while demanding few resources. Hence, its ease of use and low cost result in an efficient framework.

Table 7 provides an overview of the focus areas and the assigned eSCM practices that support the issues. Furthermore, it provides a rationale for each practice chosen. The following sections provide for each focus area more elaborate reasoning and motivation for the contribution to cost-effectiveness.

Focus area	Issue	Practice	Rationale
Strategic sourcing	Dissimilar objectives	Sourcing objectives	Support for organizational
			sourcing objectives and basis for
			organizational sourcing strategy
	No sourcing strategy	Organizational sourcing	Support for organizational
		strategy	sourcing strategy
		Sourcing options	Determinant for organizational sourcing strategy
		Organizational sourcing	Determinant for organizational
		competency	sourcing strategy
		Sourcing policy	Implement sourcing strategy on
			tactical level
	Decentralized	Organizational sourcing	Incorporate strategy for
	organization	strategy	centralized procurement
		Sourcing policy	Implement centralized
			procurement on tactical level
	Not involving IT	Organizational sourcing	Incorporate strategy for
	procurement function	strategy	involving IT procurement
			function
		Organizational sourcing competency	Assess the competencies for the IT procurement function
		Sourcing policy	Implement involvement of IT
			procurement function on
			tactical level
	Dependence on the	Organizational sourcing	Incorporate strategy for
	service provider	strategy	dependence
		Sourcing policy	Implement strategy on
			dependence on tactical level
Objectives for a sourced service	Inaccurate business case	Business case	Need for an accurate business case
	Objectives not stated in	Define SLAs and measures	Need for proper defined
	the contract		objectives in the contract
	Non-commodity nature	Business case	Assessment of costs and
			benefits
	Pro-activity not organized	Define SLAs and measures	Incorporate pro-activity
	Innovation not organized	Define SLAs and measures	Incorporate innovation
	Value creation not	Define SLAs and measures	Incorporate value creation
	organized		
Demand-supply	No uniform demand	Define roles	Need for defined roles for the
function	function		demand function
	No formal supply function	Define roles	Need for defined roles for the
			demand function
		Service provider	Need for formal supply function
		management	
		Performance monitoring	Need for formal supply function
	Poor definition of roles	Define roles	Need for proper definition of
	and responsibilities		roles and responsibilities
	Uninformed about the	Market information	Need for information about the
	market		market (informed procurement)
	Objectives change	Service provider	Orchestrate that changing
		management	objectives are achieved

	Lash of each control	Financial management	Need for control on costs	
	Lack of cost control	Financial management	Need for control on costs	
	Knowledge loss	Knowledge system	Need for knowledge retention	
IT procurement	IT procurement function	Defined sourcing	Need for defined processes for	
function	not fully exploited	processes	involvement of IT procurement	
			function	
Client-provider	Provider is not pro-active	Service provider	Need for focus on relationship	
relation		relationships	and communication	
	Client does not anticipate	Service provider	Need for focus on relationship	
	on innovation	relationships	and communication	

Table 7: Practices per main focus area

#### Strategic sourcing

Six practices are identified from the eSCM model in order to cover this main focus area. These practices include: Sourcing objectives, Organizational sourcing strategy, Organizational sourcing competency, Sourcing options, Sourcing policy and Defined sourcing processes.

Initially, to cover the call for organizational sourcing objectives, clear and uniform IT sourcing objectives need to be defined on which the organizational sourcing strategy can be based. Support for this activity is provided by the **Sourcing objectives** practice. This practice includes analyzing business and IT strategies, the market and organizational policies, on which the sourcing objectives need to be based. The consequence of developing organizational sourcing objectives is twofold. First, it will improve the formulation of the organizational sourcing strategy. Second, it will improve cost-effectiveness as it provides for a uniform perspective on IT sourcing in the whole organization.

Next, to cover the lack of an organizational sourcing strategy, a clear and uniform sourcing strategy needs to be defined. Support for this activity is provided on the strategic level by the **Organizational sourcing strategy** practice. This practice defines and aligns the sourcing strategy with existing business and IT strategies and the defined organizational sourcing objectives. The practice prescribes that the sourcing strategy should be based on market analysis and assessment of organizational capabilities. This approach will result in a deliberate sourcing strategy so maximum business value is achieved. As identified in the last section, attention needs to be given to centralized procurement, dependence on the service and involvement of the procurement function while accomplishing this practice.

To support the Organizational sourcing strategy practice it is required to know which skills and personnel are available in the organization, since this is a determinant for defining the sourcing strategy. The **Organizational sourcing competency** practice deals with this alignment, by ensuring that the organizational competencies support the sourcing activities. This practice is conducted by definition and management of the competencies focused on IT sourcing. The organizational competences and the organizational sourcing strategy is based on the organizational competences and the competencies, these competencies need to be attracted from outside or more extreme the sourcing will end in a failure. Either way misalignment between the sourcing strategy and organizational competencies results in lower cost-effectiveness.

The Organizational sourcing strategy practice prescribes the sourcing strategy should be based on market analysis and assessment of organizational capabilities. To reflect the right sourcing objectives and accordingly the right sourcing strategy, options for IT sourcing need to be identified. The **Sourcing options** practice supports analyzing sourcing options for potential sourcing opportunities. This practice includes analysis of the criticality of the business processes, assessment of the external provider market, deciding on the relevant types of sourcing relationships, and aligning sourcing decisions with performance and business needs. The consequence of assessing these sourcing options is that the organizational sourcing strategy is based on accurate sourcing opportunities. Assessment of the sourcing options will affect cost-effectiveness since an optimal organizational sourcing strategy is developed.

To assure strategic sourcing is continued on the tactical level, policies and sourcing processes need to reflect the organizational sourcing strategy and objectives. The **Sourcing policy** practice includes the organizational structures and processes required to manage the client's sourcing attempts.

#### Objectives for a sourced service

Two practices are identified from the eSCM model in order to cover this main focus area. These practices include: Business case and Define SLAs & measures.

The objectives for sourcing actions should be based on accurate data. The **Business case** practice proposes to include quantitative and qualitative measures to determine the full effect of the proposed sourcing action. Complete budgeting of costs includes also long term costs, such as knowledge management and coordination costs for managing the service providers and relationships. It is difficult to judge success and the TCO of a sourcing attempt if these long term costs are not quantified. In addition, qualitative data, like sourcing activities of competitors is also important. This practice affects cost-effectiveness as it supports to define accurate objectives and TCO.

The purpose of a Service Level Agreement (SLA) is that both the client and the service provider are aware about each other's expectations for the sourced service. These include also expectations for pro-activeness, innovation and value creation. From the case studies appeared different expectations is acknowledged as an important issue that needs to be resolved. The **Define SLAs & measures** practice ensures accountability for the service provider considering objectives of the service. Measures need to be established for the performance of all significant elements of the sourced service. These measures allow the service provider to meet the needs of the client and allow the client to ensure that the demand of the business is being met. Definition of the SLAs and measures is the first step in ensuring the objectives are achieved and therefore it affects cost-effectiveness.

The definition of the objectives and the SLAs is only meaningful when subsequently these are monitored. Monitoring is the second step in ensuring the objectives are achieved. Only then it is possible to really achieve the objectives for the sourced service. These two steps for achieving the objectives are covered in the *Demand-supply function* focus area.

#### Demand-supply function

Six practices are identified from the eSCM model in order to cover this main focus area. These practices include: Define roles, Market information, Knowledge system, Service provider management, Performance monitoring and Financial management.

The demand function and the supply function need to be organized uniformly. Uniform functions can be achieved by defining and assigning the right roles and responsibilities in order to support these functions. The **Define roles** practice supports the demand-supply function by assigning roles and responsibilities to the personnel based on appropriate personnel competencies. Defining roles and responsibilities will result in a properly defined demand-supply function.

In order to stay informed about the market, information about the service provider market needs to be analyzed. This analysis provides better understanding of the capabilities and trends in the market that can be used to meet business needs. The **Market information** practice takes an analytical approach to gather information about the service provider market. This practice requires activities that include researching of the market to identify a group of service providers who meet the organization's needs and researching the state of the market and technologies. The market information supports to choose the most cost-effective opportunity for the business needs.

Knowledge loss is identified as an issue considering sourcing an IT service. Knowledge loss is covered by managing knowledge for the service and implementing the **Knowledge system** practice. A system is proposed that allows the organization to control, maintain and easily access sourcing information, since knowledge for the sourced service is easily available. Knowledge management will increase cost-effectiveness when the sourced service is transferred in-house or to another service provider.

Next, in order to really achieve the objectives defined for the sourced service, performance management is needed. Only by monitoring and performance management, the objectives and SLAs are achieved. Performance management is covered by the **Performance monitoring** practice. This practice tries to establish and implement procedures to monitor and verify that service levels are achieved. The practice supports cost-effectiveness as it aims to optimize the cost of monitoring and achieving the objectives at minimum costs.

In addition, cost control is identified as an issue. Therefore, cost control needs to be emphasized to assure that cost savings are realized. Cost control is supported by the **Financial management** practice. This practice is responsible for managing and monitoring the financial control for the contract. Accordingly, financial management will result in improved cost-effectiveness as costs are controlled.

The objective of the **Service provider management** practice is to manage service providers in order to support the client organization's sourcing objectives. This practice recognizes that having effective relationships with service providers helps the sourcing organization expand its capabilities and respond to the issue of business' changing objectives and demands. Furthermore, this practice emphasizes the importance of the client-provider relation, which adds to the proposition of *the client-provider relation* focus area. This practice includes monitoring of service providers tasks and disputes concerning the relation and periodically review the performance.

#### IT procurement function

As has been observed from the case studies, early involvement influences value creation and accordingly improves cost-effectiveness. This focus area is proposed as a separate focus area with the intention to emphasize the importance of the *IT procurement function* focus area. In

order to illustrate the significance of this function, the IT procurement function is added to the framework in Figure 29. The objective of a specific IT procurement function is that this function includes both procurement expertise as well as expertise for IT.

This focus area is supported by the **Defined sourcing processes** practice. This practice prescribes alignment of processes with the sourcing objectives and strategy. These processes need to be effectively organized in order to be sure that processes reflect the sourcing strategy. In the *Strategic sourcing* focus area has been stated that the strategy needs to reflect the involvement of the IT procurement function. These sourcing processes reflect the involvement of the IT procurement function.

#### Client-provider relation

The above mentioned practices are proposed for successful and cost-effective sourcing. However, as was observed from the case studies relational difficulties can counteract these practices. Furthermore, as is stated before relationship management is influencing outsourcing results. Relational difficulties need to be diminished by applying relationship management. Therefore, the *client-provider relation* focus area is supported by the **Service provider relationships** practice. This practice involves establishing and implementing procedures to manage the service provider relationships. Management of the relationship will result in a healthier relationship with reduced resistance. Whereby, reduced resistance will help to achieve maximum business value.

In conclusion, this section provides 15 practices that are identified to support the five focus areas. These practices serve as recommendations for cost-effective IT procurement for non-commodity outsourcing. Figure 29 illustrates these 15 practices.



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## 6.4 Chapter summary

The objective of this chapter was to answer the fifth research question as provided in Section 2.4: How can the factors and issues derived from the case studies be aligned with the conceptual framework and the best practices from the capability models?

Furthermore, this chapter answered the sixth research question: What are the consequences of the conceptual framework for the cost-effectiveness of IT procurement?

This chapter provides cluster analysis of the key factors and issues from the results of the case study research. This analysis resulted in five main focus areas for IT procurement. These focus areas include: strategic sourcing, sourcing objective, demand-supply function, IT procurement function and client-provider relationship. These focus areas are supported by 15 eSCM practices.

The *Strategic sourcing* focus area includes the definition of the organizational sourcing objectives. From these objectives, the organizational sourcing strategy is developed. Furthermore, the sourcing competencies need to be assessed, in order be sure the organization has the right competencies available for the sourcing attempts. Next, the sourcing options are assessed in order to base the sourcing strategy on the sourcing opportunities. To assure this focus area is continued on the tactical level, a sourcing policy need to be defined.

The *Demand-supply function* focus area includes the definition of roles and responsibilities that are required to support the demand function and the supply function. To assure the market is

properly assessed the Market information practice is used. In order to be sure knowledge is managed, a knowledge system is used. The Service provider management practice and the Performance monitoring practice are proposed to ensure the defined and changing objectives are achieved.

To support the *Objectives for sourcing* focus area, the Business case practice is proposed. This practice emphasizes that an accurate business case is needed in order to define accurate objectives for the sourcing attempt. The objectives need to be translated in SLAs and measures for assessment of the achievement of these objectives.

The *IT procurement function* focus area is supported by proper definition of the sourcing processes, which specifically includes the involvement of the procurement function. The definition of the processes and involvement of the procurement function is already covered in the Strategic sourcing focus area. However, to emphasize the importance of the IT procurement function this focus area is explicitly included in the framework as a separate function. The objective of a specific IT procurement function is that this function includes both procurement expertise and expertise for IT.

The *Client-provider relation* focus area is identified, as neglecting the relation between the client organization and the service provider may diminish the above main focus areas. This focus area is supported by relationship management.

## 7 Conclusions and recommendations

This chapter provides the discussion and the conclusions that can be drawn from the research conducted in this thesis. The results from the literature review and the case studies have consequences for this research on cost-effective IT procurement. A discussion on validity and reliability examines the level of generalizability and consistency of the research's findings. Furthermore, the implications for theory as well as practice are provided. This chapter finishes with suggestions for future research on the topic and related issues.

## 7.1 Conclusion

The two main topics covered in this thesis are IT procurement and cost-effectiveness. IT procurement is defined in this research as the process of sourcing of an IT service to (a) service provider(s) by a client organization. Cost-effectiveness includes both cost savings as well as creating business value.

The objective of this research is to define a framework of recommendations for cost-effective IT procurement of non-commodity outsourcing. In the previous chapters answers are provided to the sub-questions derived from the main research question. This section provides the conclusions for these sub-questions in order to answer the main research question:

How is the IT procurement for non-commodity outsourcing organized most cost-effectively?

A conceptual framework is developed from the literature review. The nine-square model is applied as the foundation for this framework. From the literature review is identified that difficulties appear at the monitoring and directing of the service provider. In order to cover this deficiency a specific IT supply function is introduced in the initial conceptual framework. The conceptual framework consists of the business operations function, the IT demand function, the IT supply function and the service provider function. The framework illustrates the processes between these functions that flow through the organization on strategic, tactical and operational level.

Key factors for IT procurement are identified by a profound literature review. These key factors for successful IT procurement are classified for the three phases of the IT procurement process; the pre-contract phase, contract phase and the post-contract phase. The pre-contract phase includes phasing of the procurement process, having an organizational sourcing strategy, understanding the market, understanding the need and alignment of the IT service with the enterprise architecture. For the contract phase the development of the contract including formulation of the service level agreements, definition of the roles and responsibilities and total cost of ownership are identified. The post-contract phase covers sourcing governance, relationship management, performance management, contract management, knowledge management and reviewing of sourcing decisions. In addition, these key factors are assessed for their influence on cost-effectiveness.

In order to measure success and cost-effectiveness of the conceptual framework, criteria for evaluation of successful and cost-effective IT procurement are identified. However, it is recognized that these criteria need to be operationalized in order to apply them for measuring success and cost-effectiveness. Therefore, these criteria are not further applied for quantification of success and cost-effectiveness.

A field study is used to confirm the theoretical framework and complement theory with observations from practice. Multiple-case study research is applied as the research method and interviews are conducted at four client organizations and two service providers. The results are analyzed thoroughly and resulted in verified key factors and additional issues.

Four best practices models are distinguished which support successful IT procurement. These include eSCM, CMMI-ACQ, IPCM and ISPL. These models are assessed and compared according to their individual strengths and weaknesses. From this perspective the eSCM model is recognized as the most advantageous. This model is chosen, since it is the only model that is analyzed that supports the whole IT procurement process and includes practices for governance and organizational strategic sourcing.

The results from the case studies and the literature review are analyzed in order to come to the main findings of this research. Cluster analysis is applied to illustrate the relations between the issues. The conclusion drawn from this analysis is summarized into five main focus areas for cost-effective IT procurement of non-commodity outsourcing:

- 1 Strategic sourcing includes the definition of the organizational sourcing objectives and strategy. Strategic sourcing is supported by assessment of sourcing options and organizational competencies. To assure that this focus area is continued on the tactical level a sourcing policy needs to be defined.
- 2 Clear and validated definition of objectives for a sourcing needs to be promoted. First, the definition of objectives needs to be conducted in realistic and comprehensive way using an accurate business case. Second, accurate SLAs and measures need to be defined.
- 3 The demand-supply function needs to be supported by proper definition of roles and responsibilities. It needs to be assured the market is properly addressed, a knowledge system is used and the cost savings and defined and changing objectives are achieved.
- 4 In order to add value the IT procurement function needs to be supported by proper definition of the sourcing processes. Early involvement of IT procurement will increase cost-effectiveness. This function needs to have expertise for both procurement and IT.
- 5 Focusing on a healthy client-provider relationship is necessary as neglecting the relation between the client organization and the service provider may diminish the above focus areas. This focus area is supported by relationship management.

In addition, a concise list of recommendations is provided, which covers the five focus areas for cost-effective IT procurement of non-commodity outsourcing. These recommendations are provided in the form of 15 eSCM practices and these are illustrated in the conceptual framework (depicted in Figure 30). This framework enables a straightforward implementation at low effort with maximum result. In principle, this framework of recommendations provides the answer to the main research question.



## 7.2 Discussion

The external validity of this research has been attempted to raise by scoping the case study research. The scope of the research was non-commodity outsourcing in large, both public and private organizations. Therefore, the outcome of the case study research can only be generalized to these organizations. When more case studies were conducted the value of this research would have been higher. Since, more case studies would have raised the generalizability of the conclusions. In order to further raise the external validity of this research, a more heterogeneous population should been drawn from. For example, additional types of IT procurements may be considered.

Construct validity has been raised by establishing a chain of evidence from the information obtained from the case studies and the literature review. The chain of evidence has been constructed from these two sources of evidence and in addition perspectives of both client organizations and service providers have been included. These sources of evidence have been corroborated and inconsistencies were assessed. In order to increase the construct validity other sources of evidence may be researched. For example, outsourcing contracts or evaluation documentation may be considered.

The reliability has been covered by employment of a case study protocol and developing case study minutes from the interview. After the interview, the case study minutes have been examined and approved by the interviewees. Though, subsequently to the interviews appeared that the phrasing of one question was not accurately operationalized and

formulated for the purpose of this research. As a result, the question did not measure what it was intended for. The reliability bias is partly resolved by reversing the answer as was described in Section 4.4.

Since, the interviewing is done on a voluntary basis it is observed that the case study organizations were not sharing particular information that is potential harmful to the organization. This bias has been attempted to diminish by anonymous processing of the results in the public version of this thesis. Still, it appeared that the case study organizations were not willing to share failures and disputes they are experiencing. Furthermore, some organizations refused to share figures considering IT spending of the organization. For this reason it has been **impossible to evaluate the organizations' spending on IT sourcing**.

## 7.3 Implications for theory and practice

Two significant implications for theory are identified from the outcomes of this research. Five focus areas for cost-effective IT procurement of non-commodity outsourcing are proposed. In particular this research emphasizes the significance of the IT procurement function focus area. Furthermore, the conceptual framework proposes a concise and comprehensive list of best practices that cover the whole scope of cost-effective IT procurement. These implications are valuable extensions to theory as they provide a comprehensive perspective on cost-effective IT procurement.

Three implications for practice are identified from the outcome of this research. This research explored the best practices for cost-effective IT procurement. The conceptual framework is composed of an established best practice model. Furthermore, the selection of these best practices for the conceptual framework is based on the focus areas identified from practice. For these reasons the relevance for practice is assured.

The second implication for practice comprehends the cost-effective approach for IT procurement. Since, the conceptual framework has been designed to emphasize the importance of business value creation, employment of the conceptual framework has implications for cost-effectiveness. The implication for practice is that client organizations can improve their IT procurement.

Lastly, this research proposed a comprehensive and concise framework. This framework is developed based on the *80/20* rule. Therefore, organizations can achieve 80% of the success by 20% of the effort by implementing this framework. Instead of spending an additional 80% of effort, attempting to achieve the last 20% of success. Because of its ease of use and low cost, this framework is efficiently implemented. The implication for practice is that less time and money is required to improve their cost-effectiveness concerning IT procurement.

## 7.4 Recommendations for further research

To conclude this chapter five future research suggestions on this topic are provided. The first recommendation for future research is identified from the discussion on the external validity of this research. The scope of the research was non-commodity outsourcing in both public and private organizations. In order to raise the external validity of this research it is proposed to conduct more case studies considering a broader spectrum. It may be perfectly possible the framework is applicable for commodity IT procurement and ranges further than outsourcing.

However, to be more confident the framework is applicable for a broader spectrum, this needs to be further researched.

Second, the criteria for evaluation of cost-effectiveness have been identified in the literature review. Further research is necessary, in order to be able to measure the contribution of the conceptual framework to cost-effectiveness using these criteria. One approach of research is to identify specific quantifiable measures for the identified criteria. These measures can be used for evaluation of the conceptual framework when it is used in practice.

The third proposition for further research is closely related to the preceding suggestion. It involves testing the framework in practice. In order to be able to test the framework, the measures need to be further developed as has been proposed in the second suggestion for further research. In conclusion, a quantitative study is proposed following this qualitative study.

This research studied four IT procurement best practices frameworks. These frameworks are applied as the basis for the development of the framework. It may be possible to analyze the applicability of other capability models (e.g. CMMI or ISO) and projects management models (e.g. PRINCE2) that are often already in use, are suitable to use as a basis for developing the conceptual framework (most likely with minor extensions). Therefore, the fourth proposition is to assess the possibilities concerning other models.

Finally, this research emphasized the processes and functions for IT procurement. Minor consideration was on the roles and responsibilities involved with these functions and processes. It would be useful to assign these to the practices that are identified for the focus areas. Therefore, further research is necessary on the identification and applicability of roles and responsibilities.

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# **Appendix A: Questionnaires**

## **Client organization**

This appendix provides the questionnaire as is used for the interviews with the cases study client organizations. The questionnaire is provided in an interview to the representative of the client organization. As little as possible is explained during the questioning, such that bias is avoided. Initially, the interviewee is asked to answer as a representative of the company and not as much for himself. Furthermore, the representative is asked to keep a specific (finished) project in mind while answering the questions.

The questionnaire is administered and therefore provide here in Dutch. The interview is recorded for recalling purpose.

#### Achtergrond

1. Welk type IT service koopt u in (grootte van project, datacenter, kantoorautomatisering, etc.? Beschouwt u dit als een commodity of non-commodity en waarom?

In het verdere interview beschouw ik non-commodities outsourcing/outtasking, inclusief kantoorautomatisering.

- 2. a Welke service providers zijn betrokken, naast [service provider]?
  - b Zijn er bij andere inkoopprojecten nog andere service providers betrokken?
- 3. a Wat zijn de belangrijkste redenen om deze IT service in te kopen?
  - b Sluiten deze redenen aan op de bedrijfsdoelstellingen?
  - c Zijn deze doelen behaald?

#### Succesfactoren

- 4. a Welke belangrijke factoren heeft u van tevoren vastgesteld om succes van het project te waarborgen?
  - b Zijn de onderstaande succesfactoren voor inkoop van te voren geadresseerd?
  - c Kunt u de geadresseerde succesfactoren voor inkoop waarderen op belangrijkheid; 5 heeft de hoogste prioriteit en 1 de laagste.

Succesfactoren	Geadresseerd?	Waardering
Vaststellen van sourcing strategy gebaseerd op		
business strategy		
Governance		
Manage relatie met service providers		
Opstellen evaluatie criteria		
Verkennen en begrip van de markt		
Juiste team samenstellen		
Enterprise architecture en IT service alignment		
Begrip van de wensen van de business		
Fasering van het IT inkoopproces		
Regisseren van de service providers		
Total cost of ownership		
Aandacht voor contracteren		
Definitie van rollen and verantwoordelijkheden		
Herbeoordelen van inkoopbeslissingen		

#### IT organisatie

- 5. a Hoe wordt de vraag naar IT vanuit de business georganiseerd?
- 6. a Hoe wordt de service provider aangestuurd?
  - b Is daar iemand verantwoordelijk voor gesteld?
  - c Wat is uw rol hierin?
  - d Is er op deze aansturingkosten geanticipeerd?
- 7. a Hoe is de regie van de verschillende andere service providers georganiseerd?
  - b Is daar iemand verantwoordelijk voor gesteld?
  - c Wat is uw rol hierin?
  - d Hoe wordt de afhankelijkheid van de leverancier voor uw organisatie voorkomen of verminderd?

#### Governance

- 8. Hoe is de governance/sturing van IT inkoop georganiseerd?
- 9. Hoe wordt de bijdrage van de IT inkoop aan de bedrijfsstrategie en -doelstellingen gewaarborgd?
- 10.a Hoe wordt de bijdrage van de leverancier aan de vraag naar IT vanuit de business gewaarborgd?
  - b Worden rollen en verantwoordelijkheden vastgelegd binnen de organisatie?

c Hoe worden de rollen en verantwoordelijkheden vastgelegd?

#### Evaluatie

- 11. Hoe wordt het creëren van waarde tijdens een inkoopproject gewaarborgd?
- 12.a Hoe wordt de performance van een inkoopproject beoordeeld?
  - b Hoe is de evaluatie van een inkoopproject georganiseerd?
  - c Wie zijn hierbij betrokken?
  - d Wat is uw rol hierin?
- 13. Welke van de onderstaande criteria worden gehanteerd tijdens de evaluatie van een IT service aankoop?

Factor	
Sneller inkooptraject	
Kostenreductie	
Service levels	
Tevredenheid management	
Behaalde doelen	
Verbeterde contracten	
Het contract wordt verlengd	
Kwaliteit en service	
Samenwerking met leverancier	
Cliënt – provider onenigheid	
Behulpzaamheid en oplettendheid service provider	

## Service provider

This appendix provides the questionnaire as is used for the interviews with the cases study provider organizations. The questionnaire is provided in an interview to the representative of the organization. As little as possible is explained during the questioning, such that bias is avoided. Initial, the interviewee is asked to answer as a representative of the company and not as much for himself. Furthermore, the representative is asked to keep a specific (finished) project in mind while answering the questions.

The questionnaire is administered and therefore provide here in Dutch. The interview is recorded for recalling purpose.

#### Achtergrond

1. Welk type IT service levert u [cliënt] (grootte van project, datacenter, kantoorautomatisering, etc.)? Beschouwt u dit als een commodity of non-commodity en waarom?

In het verdere interview beschouw ik non-commodities outsourcing/outtasking, inclusief kantoorautomatisering.

- 2. a Wat zijn volgens u de belangrijkste redenen waarom [cliënt] gekozen heeft voor deze samenwerking?
  - b Hoe wordt bij de opstellen van de doelen van dit project rekening gehouden met de bedrijfsdoelstellingen van [cliënt]?
  - c Zijn deze doelen behaald?

#### Succesfactoren

- 3. a Welke van de onderstaande succesfactoren voor inkoop zijn van belang voor [client] en dienen volgens u te worden geadresseerd?
  - b Kunt u de geadresseerde succesfactoren voor inkoop waarderen op belangrijkheid, 5 heeft de hoogste prioriteit en 1 de laagste.

Succesfactoren	Adresseren	Waardering
Vaststellen van sourcing strategy gebaseerd op		
business strategy		
Governance		
Manage relatie met service providers		
Opstellen evaluatie criteria		
Verkennen en begrip van de markt		
Juiste team samenstellen		
Enterprise architecture en IT service alignment		
Begrip van de wensen van de business		
Fasering van het IT inkoopproces		
Regisseren van de service providers		
Total cost of ownership		
Aandacht voor contracteren		
Definitie van rollen and verantwoordelijkheden		
Herbeoordelen van inkoopbeslissingen		

#### IT organisatie

- 4. Hoe wordt de vraag naar IT vanuit [cliënt] georganiseerd?
- 5. a Hoe wordt het project vanuit [cliënt] aangestuurd?
  - b Is er in uw organisatie iemand verantwoordelijk voor gesteld?
  - c Wat is uw rol hierin?

#### Governance

- 6. Hoe is de governance van het project georganiseerd?
- 7. a Hoe wordt de bijdrage van het project aan de bedrijfsstrategie van [client] gewaarborgd?
  - b Worden rollen en verantwoordelijkheden vastgelegd binnen de organisatie?
  - c Hoe worden de rollen en verantwoordelijkheden vastgelegd?

#### Evaluatie

- 8. Hoe wordt het creëren van waarde tijdens een project gewaarborgd?
- 9. a Hoe wordt de performance van een inkoopproject beoordeeld door [client]?
  - b Hoe is de evaluatie van het project georganiseerd?
  - c Wie zijn hierbij betrokken?
  - d Wat is uw rol hierin?

#### 10. Welke van de onderstaande criteria worden gehanteerd tijdens de evaluatie?

Factor	
Sneller inkooptraject	
Kostenreductie	
Service levels	
Tevredenheid management	
Behaalde doelen	
Verbeterde contracten	
Het contract wordt verlengd	
Kwaliteit en service	
Samenwerking met leverancier	
Cliënt – provider onenigheid	
Relatie cliënt - provider	

# Appendix B: Interview results (confidential)

# **Appendix C: Practices for the conceptual framework**

The practices described next are taken from the eSCM model (Hefley & Loesche, 2004; Hyder e.a., 2004).

## Strategic sourcing

#### Sourcing objectives and organizational sourcing strategy

Activities that need to be conducted to develop sourcing objectives include analyzing business and IT strategies, the market and organizational policies. In addition, sourcing objectives need be made measurable. This is done by involving all stakeholders and including business and strategic objectives. Next, these objectives need to be communicated and need to be periodically updated and recommunicated. Finally, achievement of the sourcing objectives needs to be monitored and actions need to be planned accordingly.

The 'Organizational Sourcing Strategy', engages the definition, communication and maintenance of the sourcing strategy. This practice provides support for developing and managing the sourcing strategy of the client organization.

The sourcing strategy needs to be aligned with business and IT strategies and sourcing objectives, and based on market analysis and assessment of organizational capabilities. Additional activities that need to be conducted include involvement of all stakeholders and analyzing of relevant sourcing constraints. Next, the sourcing strategy needs to be documented, communicated, periodically updated and recommunicated. Furthermore, senior management should support the implementation of the sourcing strategy.

#### Organizational sourcing competency

This practice provides support for identifying the required competencies related to sourcing, identification of competency gaps, document and maintain the competences and develop the competences among the organizations.

#### Sourcing options

This practice provides support for defining methods and criteria for analysis of potential sourcing opportunities. The sourcing options can be analyzed based on the objectives and criteria defined and the decision on further evaluation needs to be made and documented.

#### Sourcing policy

The 'Sourcing Policy' practice is provided in order to define and implement the organizational sourcing policy. This practice provides support for creating and maintaining the organizational sourcing policy that is aligned with existing organizational policies, sourcing strategy and sourcing objectives. Processes for managing sourcing in the organization need to be established by identifying types of sourcing, relationships and potential service providers and establish how sourcing opportunities are identified, evaluated and operationalized. Next, the sourcing policy needs to be documented and communicated to all stakeholders.

Moreover, the organization's sourcing functions need to be implemented by defining roles for these functions, defining management controls and ensuring senior management guidance.

Furthermore, service level management is included. This encompasses defining a process for establishing service levels and implementing service level measures for reporting purposes. These service levels are then used in the 'demand-supply function' focus area for monitoring and controlling.

## **Objectives for sourcing**

#### Business case

The 'Business case' practice enables to assess the full costs, benefits, and risks of the potential sourcing opportunity. The business case should reflect the objectives for considering the sourcing action, stakeholder analysis, potential sourcing options, anticipated benefits and barriers, estimates of the resources required, estimates for transfer of the service and risk analysis. After the business case is developed it needs to be validated, documented and communicated to all stakeholders.

#### Define SLAs and measures

The formal service level agreements and performance measures for the service need to be determined in order to be able to achieve the objectives. This is performed in a number of activities. The definition needs to be based on in house performance of the service and the identified objectives. The service levels need to be determined for both during transition and service delivery.

Next, performance metrics need to be defined in cooperation with all stakeholders, in order to be able to measure the achievement of the SLAs. These metrics should describe in measurable terms the type of service, scope and nature of the service required, the availability of the service, and the level of performance required. Additionally, a plan for service level reporting needs to be arranged. Service level achievement related penalties and rewards can be defined for levering the service provider to ensure achievement of the service provider. The service levels in service level agreements with the service provider need to be documented and adjusted as needed.

## **Demand-supply function**

#### Define roles

The key factor 'Define roles' supports the demand-supply function by assigning roles and responsibilities to the personnel based on appropriate personnel competencies. When the roles and responsibilities are defined these need to be communicated across the organization.

This practice comprises identifying competencies required to perform the defined roles, identifying gaps in competencies, identifying criteria for selecting personnel. This includes assigning a sourcing manager with the responsibility of supervising the sourcing relationship and assigning a sourcing management team.

#### Market information

In order to investigate the market, the practice 'Market information' is used. An analytical approach is taken to gather information about the service provider market and this information is actually used. This is performed for both current and prospective service providers. The analysis includes the service provider's industry market share, external delivery partners, and their existing clients. A service provider's service delivery capabilities can also be identified by understanding their competitive environment, including competitive advantage, business objectives, competitors, threats, and problems.

Understanding of the market requires activities that include identification of sources and types of market information needed to support organizational objectives, researching of the market **to identify a group of service providers who meet the organization's needs and researching the** state of the market and technologies.

#### Knowledge system

Knowledge loss is covered by the 'Knowledge System' practice. The practice supports in analyzing and using knowledge gained from sourcing activities. A system is proposed that allows the organization to control, maintain and easily access relevant information.

Activities that need to be performed for this practice include: identifying of information sources, identifying stakeholders of the information. Furthermore, the planning of establishing and maintaining the knowledge needs to be conducted and establishing an information communication strategy. The information needs to be collected, organized, reviewed and placed in the knowledge system. Next, the information needs to be communicated according to the information communication strategy.

#### Service provider management and performance monitoring

The 'Service provider management', is used to establish and implement procedures to manage service providers. The procedures that are associated with this practice include access provision to service providers for resources they need to meet client expectations, identification of points of contact, determination and definition of attributes of the relationship and performance that need to be monitored, monitoring of service providers tasks and accordingly take action, establish plans and take action for issues and disputes concerning the relation, maintaining records of performance and periodically review the relationship and performance.

The 'Performance monitoring' practice tries to establish and implement procedures to monitor and verify that service levels are being met. The activities associated with this practice include: determination of the measures for performance, monitor service delivery and service level metrics, use a performance reporting system to communicate service provider commitment and performance information, organize regular reviews of service provider performance, conduct periodic quality reviews with service providers, identify gaps and take corrective action if needed.

### **IT procurement**

#### Defined sourcing processes

The 'Defined sourcing processes' practice provides support for maintaining and documenting sourcing processes for the organization. The identification of the required processes needs to be based on the sourcing objectives, sourcing strategy and sourcing policy. Process owners and process users should define and improve the sourcing process and measures should be defined in order to be able to be performed consistently. Next, the sourcing processes and implementation plan need to be communicated to relevant stakeholders. Resolve identified nonconformance of processes, when for example IT procurement is not involved.

## **Client-provider relation**

#### Service provider relationships

The 'Service provider relationships' practice is used for defining and building a relationship management approach. This encompasses creating and coordinating plans for interactions, decision-making and handling of issues together with the service provider. The plan needs to be communicated to all stakeholders. Other activities in this practice are identifying contact persons from both the client organization and the service providers, monitoring the relationship and take action accordingly and periodically review the relationship.

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