LAPPEENRANTA-LAHTI UNIVERSITY OF TECHNOLOGY LUT
School of Engineering Science
Industrial Engineering and Management
Master's Thesis

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TOWARDS A PERFORMANCE MEASUREMENT FRAMEWORK FOR ENTERPRISE SERVICE MANAGEMENT

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ABSTRACT

Lappeenranta-Lahti University of Technology LUT
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Towards a Performance Measurement Framework for Enterprise Service Management

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Organizations apply Service Management processes and tools outside IT to HR, Finance, Legal, Facility, and other functions. This phenomenon has recently been labeled as ESM. It comprises the activities for managing the Enterprise Services' lifecycles to deliver value to users and enable business. Organizations need to measure and manage the performance of ESM activities to ensure satisfactory internal service quality. This study aimed to propose a framework for ESM performance measurement for answering this need.

A sequential mixed-method approach was used for building the proposal. A literature review was conducted to gather knowledge on performance measurement in organizational and IT Service Management (ITSM) contexts. Literature related to the ITSM context was used due to the similarity with ESM and due to the scarce research literature associated with ESM. The literature review provided input for designing a survey used to gather information on ESM and ESM measurement practices in organizations. The survey was used for creating an initial proposal. Workshops with two Finnish case companies, a retail company, and a university were used to build the final proposal.

The findings suggested that ESM activities should be measured using a multidimensional approach that emphasizes the measurement of business value instead of relying only on process-level metrics. However, process metrics can be used as one dimension amongst others. In addition to proposing a framework for ESM measurement, a process for deriving metrics was proposed for supporting organizations in implementing the proposed framework.

Measuring and managing the performance of ESM is essential for ensuring high internal service quality, which has in previous studies been found to impact employee satisfaction and customer satisfaction, which in turn has been found to affect financial performance. By measuring ESM from the business perspective, organizations can ensure that the ESM activities are aligned with business objectives.

SAMMANDRAG

Lappeenranta-Lahti University of Technology LUT
School of Engineering Science
Tuotantotalouden koulutusohjelma

Jonne Kauko

Towards a Performance Measurement Framework for Enterprise Service Management

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Nyckelord: Enterprise Service Management, ESM, Prestandamätningssystem

Organisationer tillämppar tjänsterhanteringsprocesser och verktyg utanför IT på HR, ekonomi, juridik, anläggningsförvaltning och andra funktioner. Detta fenomen har nyligen fått namnet Enterprise Service Management (ESM). ESM omfattar tjänstehanteringsaktiviteter för att leverera värde till anställda och att möjliggöra företagsverksamhet. Organisationer måste mäta och leda utförandet av ESM-aktiviteter, för att säkerställa en tillfrädsställande nivå av intern servicekvalitet. För att svara på detta behov, syftade denna forskning att föreslå en model för ESM-prestandamätning.

Denna forskning kombinerade kvantitativa och kvalitativa forskningsmetoder för att bygga modellen. En litteraturgranskning genomfördes för att samla kunskap om prestandamätning gällande organisationer i överlag och IT-tjänstehantering (ITSM). Litteratur gällande ITSM användes p.g.a. att ingen litteratur gällande prestandamätning i ESM-sammanhanget hittades. Litteraturgranskningen erbjöd information för att utforma en undersökning som användes för att skapa den första versionen av modellen. Workshops med två finska organisationer, en detaljhandelskedja och ett universitet, utfördes för att skapa den slutliga modellen.

Enligt forskningens resultat bör prestanda gällande ESM mätas med en flerdimensionell modell, som betonar affärsvärde i stället för att endast förlita sig på mätvärden på processnivå. Processmått kan dock användas som en dimension bland andra. Förutom att föreslå en modell för ESM-mätning skapades en process för att härleda mått för att stödja organisationer i genomförandet av den föreslagna modellen.

Att mäta och hantera prestanda gällande ESM är viktigt för att säkerställa hög intern servicekvalitet, vilket i tidigare studier har visat sig påverka anställdas nöjdhet och kundnöjdhet, vilket i sin tur har befunnits påverka ekonomisk prestanda. Genom att mäta ESM ur affärsperspektivet kan organisationer se till att ESM-aktiviteterna är anpassade till affärsmålen.

FOREWORDS

As this long but rewarding thesis project is soon over, I would like to thank all of you who have supported me during the project. This study would not have been possible without the support and cooperation provided by Efecte Plc. Support was received in various forms and included the possibility to allocate worktime for the project, getting access to data, getting support for finding and involving participants in the study, support and sparring for planning, amongst others. I want to give special thanks to CEO Niilo Fredrikson and COO Steffan Schumacher for their support and encouraging ideas. Also, I want to thank Efecte Plc. as a company for providing me a supportive environment and a chance to develop solutions in cooperation with its customer organizations freely.

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Helsinki, 11th June 2021
Jonne Kauko

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ABBREVIATIONS

IT	Information Technology
IS	Information System
ITSM	Information Technology Service Management
ESM	Enterprise Service Management
ITIL	Information Technology Infrastructure Library
PI	Performance indicator
KPI	Key performance indicator
PM	Performance measure
PMS	Performance measurement system
BSC	Balanced Scorecard (Kaplan & Norton 1992)
IPMS	Dynamic Integrated Performance Measurement System
SaaS	Software as a Service
MCS	Management Control System
I&O	Infrastructure & Operations
AI	Artificial Intelligence
ML	Machine Learning

1 INTRODUCTION

IT Service Management (ITSM) practices have been adopted extensively since the end of the last millennium. During the last years, practices, processes, and tools familiar from the ITSM context have started spreading from the IT functions to non-IT functions to manage the non-IT services in a systematic and standardized manner, as organizations have been used to in the IT context. The phenomenon of managing internal non-IT services in organizations is usually called Enterprise Service Management (ESM). This study aims to propose a framework for ESM performance measurement by using a sequential mixed-method approach that combines findings from a survey and workshops with case companies.

The remainder of this chapter is structured as follows: The following background chapter presents how ESM relates to organizational performance and why performance measurement of ESM is essential. Next, the objectives and scope of the study are presented, after which the research questions and the execution of the study are described. After that, a definition for ESM is proposed. Finally, the structure of the report is presented.

1.1 Background

It has been recognized that organizations have two kinds of customers: internal and external (Hauser et al., 1996). It has also been found that high-quality internal services increase service quality, customer satisfaction, and organizational performance (Bellou & Andronikidis 2008, 950; Khawaja et al. 2016 335; Chi & Gursoy 2009, 251-252; Loveman cited in Gilbert, 2000). Approaches for measuring and managing internal service quality exists (Hauser et al., 1996; Gilbert, 2000). However, since ESM activities concern the design, implementation, operation, and improvement of Enterprise Services, that the internal functions provide, it is essential to measure the performance of ESM. In some organizations, the delivery of Enterprise Services may account for a significant part of the support function's work. Consider for example the HR function: several specialists or even several teams can work primarily with delivering HR services to employees. Ineffective service management activities related to these services may negatively impact the internal service quality, which may have far-reaching consequences.

Based on the author's experiences from ESM implementations, there has been a lack of well-defined and motivated measures and no clear ways of deriving metrics for ESM. The need for service management measurement has also been recognized in the ITSM context (Lahtela et al. 2010, 125). While performance measurement frameworks exist dedicatedly for ITSM (Gacenga 2013; Marcos et al., 2012; McNaughton et al., 2010), the author of the present study could not find any approaches for the ESM context. It is unclear whether the ITSM approaches or parts of them could be used for the ESM context.

Overall, ESM seems like a new concept. During the last few years, the concept seems to have become more common. However, publications related to it are scarce, not even to mention the scarcity of academic literature around the concept. Due to the lack of academic literature specific to ESM, literature regarding ITSM performance measurement is used as the theoretical basis of this study, combined with performance measurement theories. This study contributes to the scarce research literature on ESM performance measurement by proposing a framework for ESM measurement, including a process for deriving metrics and implementing the framework. Performance measurement of ESM is essential for ensuring the provision of high-quality Enterprise Services.

1.2 Objectives and scope of the study

This study aims to propose a framework for measuring ESM performance. For proposing the framework, the study strives to establish knowledge on how ESM performance can be measured and whether performance measurement practices from the ITSM context can be leveraged. Additionally, the study aims to explore and propose ways to derive ESM metrics based on business objectives. An indirect, long-term aim is to allow organizations to improve their ESM performance by providing means to measure it.

The scope of the study is limited to developing the framework and validating it by interviewing stakeholders from the case organizations. The proposed framework is not implemented at the case companies due to the schedule and limited resources. Though, to

encourage the organizations to implement the framework, implementation is planned at the workshops.

1.3 Research questions

A set of research questions were defined to guide the research and support building the proposal. The research questions of this study are presented in figure 1 below. Each research question has an associated goal – these are mapped in table 1.

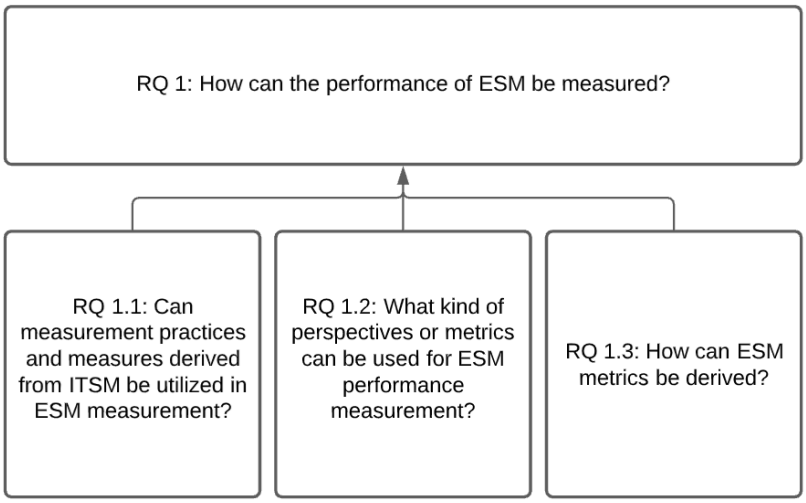

Figure 1. Research questions of the study

The main research question (RQ 1) of the study is "*How can the performance of ESM be measured?"* The main objective is to propose a framework for measuring Enterprise Service Management. Three sub-questions (RQ 1.1…1.3) were asked to support building an answer to the main research question. The first sub-question (RQ 1.1), "*Can measurement practices and measures derived from ITSM be utilized in ESM measurement?*" was asked since the study aims to utilize practices from the ITSM context due to its similarity with ESM. Regardless of the similarity between ESM and ITSM, the fit of ITSM measurement practices in the ESM context must be analyzed. All research questions, objectives, and corresponding literature sections are presented in table 1 below.

Table 1. Research questions, objectives and corresponding theory sections

#	Research question	Objective
RQ 1	How can the performance of ESM be measured?	1. To propose a framework for measuring Enterprise Service Management
RQ 1.1	Can measurement practices and measures derived from ITSM be utilized in ESM measurement?	2. To gather information on ITSM measurement practices from literature, analyze them and apply them to the proposed framework if appropriate.
RQ 1.2	What kind of perspectives or metrics can be used for ESM performance measurement?	3. To identify how ESM performance should be measured.
RQ 1.3	How can ESM metrics be derived?	4. To provide an approach for deriving ESM metrics based on business objectives.

1.4 Execution of the study

This chapter describes how the study is executed and discusses the methodological choices. The underlying philosophical assumptions and the research questions guided the selection of research methods and strategies. Methodological options can be divided into mono method and multiple method studies. Mono method studies use either a quantitative or qualitative method. Multiple method studies can be split further into multi-method and mixed methods studies. Multi-method studies use more than one qualitative or quantitative data technique but do not mix the two. Research methods can also be mixed, and the methods can be combined in various ways. (Saunders et al. 2015, 167-171; Hirsjärvi and Hurme 2015, 30-31)

A sequential mixed-method approach comprising a survey and workshops was seen as the most suitable method for building answers to the research questions. A survey was used for several purposes. First, it allowed gathering standardized data from a sizeable population, as suggested by Saunders et al. (2015, 181). Secondly, it was used to trigger and inspire the empirical phase of the study. Third, it had a complementary purpose: it was used for supporting the process of building an initial proposal by providing information on ESM

measurement practices. However, it was also used for proving a broader view of ESM and ESM measurement since it expanded the view to a greater number of organizations.

The study was designed according to the research model proposed by Hirsjärvi & Hurme (2015, 14). Figure 2 below provides a high-level description of how the study was executed.

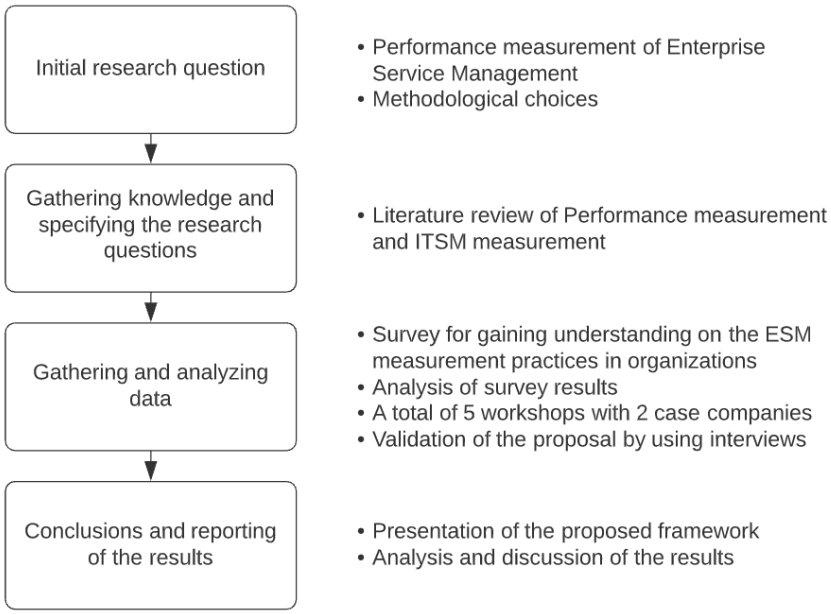

Figure 2. Overview of the study based on the model proposed by Hirsjärvi & Hurme (2015, 14)

First, initial research questions were defined, and while knowledge was gathered, the research questions were specified in greater detail. Literature on performance measurement and ITSM performance measurement was reviewed to gather knowledge for designing the survey, preparing an initial proposal, and preparing the workshops. The research literature was also used for building the final proposal. A survey was used for preparing an initial proposal, which was then developed further in the workshops with the case companies. After developing the proposal, it was validated by using an interview. Finally, the results were analyzed and discussed.

The research questions are linked to literature review chapters via the objectives. The literature review chapters are then linked to the workshop topics. Figure 3 below illustrates the linkages.

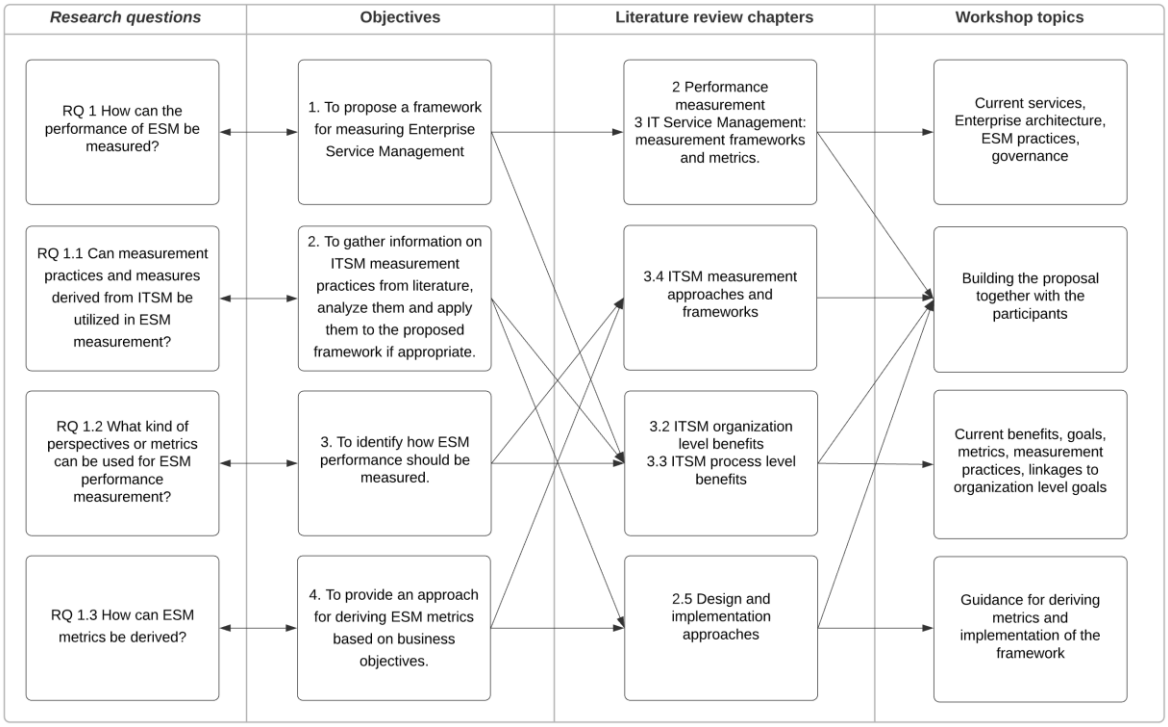

Figure 3. Linkages between the research questions, objectives, theory chapters, and workshop topics.

1.5 Definitions

Established definitions for ESM do not seem to exist. Some tool vendors, such as BMC, have defined ESM by stating that it is about applying ITSM practices to other areas of an organization: "*Enterprise systems management is the practice of applying IT service management to other areas of an enterprise or organization with the purpose of improving performance, efficiency, and service delivery.*" (Watts, 2020). While this describes ESM well, an independent definition that does not directly refer to ITSM is proposed below. The proposed definition is used when building the measurement framework with the participating organizations. Working with one definition provides clarity and points direction as the ESM concept may be interpreted in various ways due its novelty. ITSM definitions shown in table 2 below are used for deriving the definition.

Table 2. ITSM definitions

Source	Definition
FitSM (2016, 7)	"*Entirety of activities performed by an IT service provider to plan, deliver, operate and control IT services offered to customers*"

White (2019, 1)	"*IT service management (ITSM) is a set of policies, processes and procedures for managing the implementation, improvement and support of customer-oriented IT services."*
Axelos (n.d.)	"*ITSM positions IT services as the key means of delivering and obtaining value, where an internal or external IT service provider works with business customers, at the same time taking responsibility for the associated costs and risks. ITSM works across the whole lifecycle of a service, from the original strategy, through design, transition and into live operation.*"

Since ESM activities aim to manage the enterprise services provided by non-IT-functions in order to deliver value and enable business, the following definition is proposed for ESM:

> *ESM comprises the activities for managing the enterprise services' lifecycles from strategic planning and design through implementation, operation, support, and improvement to deliver value to users and enable business.*

"Typical use cases involving ITSM-like processes include obtaining an access badge, booking a meeting room or a desk, obtaining an attestation of employment, hiring a car, closing financial statements, or ordering spare parts, furniture, or other supplies." (Bryan, Garnier & Co 2021, 11)

1.6 Structure of the report

The report consists of 8 main chapters. After the introduction, chapters 2, 3 are dedicated to the literature review on relevant topics for building the proposal. The conceptual framing of the study is described in chapter 4. Chapter 5 describes the methodological choices. Chapter 6 presents the survey results, workshop results and describes the process for developing the proposal. Chapter 7 analyzes and discusses the results and provides directions for further research. Finally, in chapter 8, the report is concluded. An input/output model of the report is presented in figure 4 below. The model presents the inputs and outputs related to each chapter of the report.

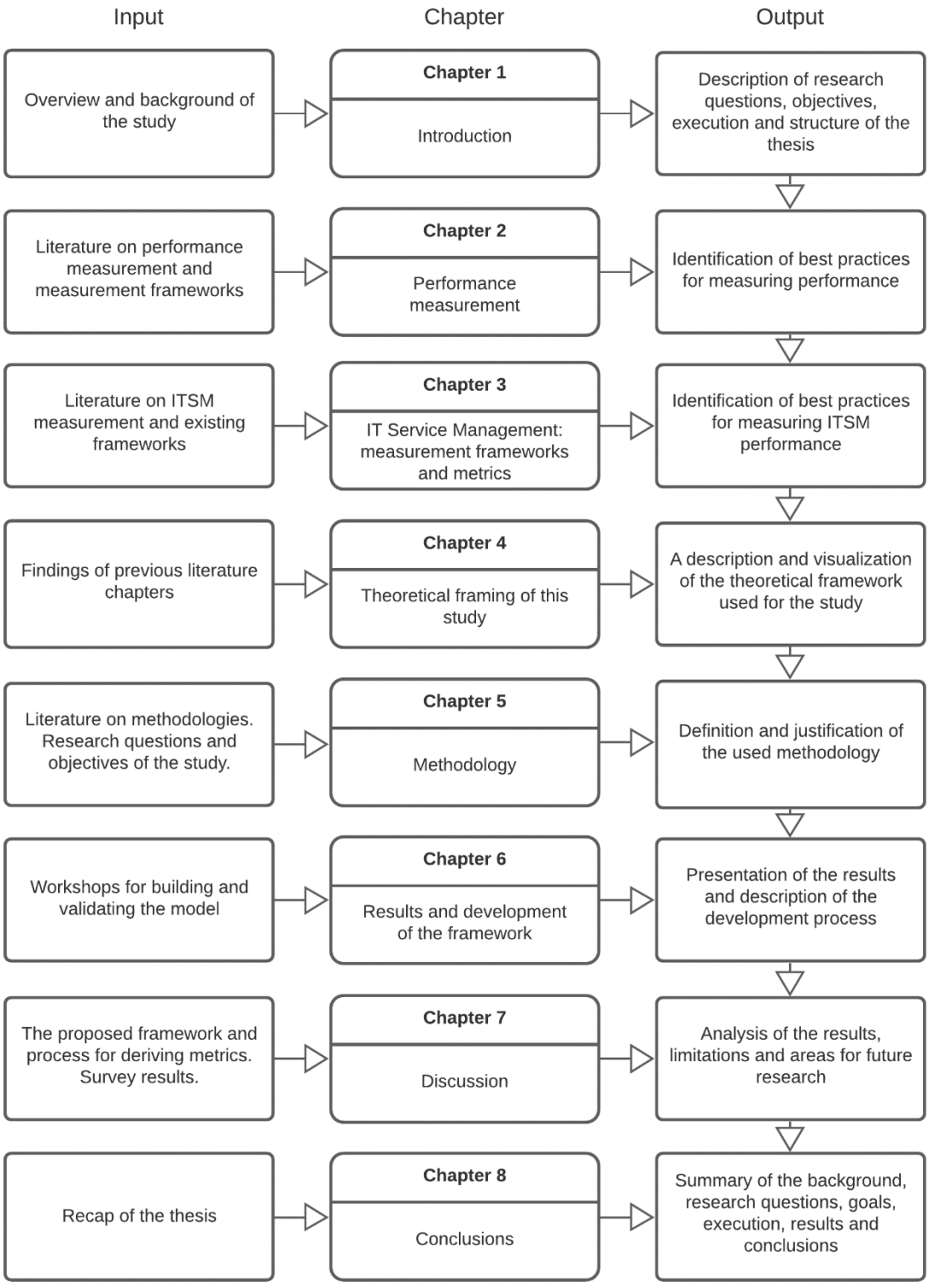

Figure 4. Input/output model of the study

2 PERFORMANCE MEASUREMENT

This chapter provides an overview of performance measurement literature and aims to identify best practice on performance measurement to support building the proposal. First, definitions and an overview of performance measurement are provided. Second, the managerial purposes for measuring performance are discussed. Next, best practice on performance measurement is presented. Finally, existing performance measurement systems are discussed, and finally, design and implementation approaches are reviewed.

2.1 Definitions and overview of performance measurement

The commonly used phrase stated by Kaplan & Norton (1992), "What you measure is what you get," seems to be supported by empirical findings – at least if one would assume companies have been measuring the right things. According to research, companies that measure their performance achieve better business results and perform better (e.g., Bititci 2004; Kasie & Belay 2013; Micheli & Mura, 2015). While competing during the past decades in complex and continuously changing environments, companies have recognized a need for measuring performance to enable continuous improvement and control business processes by monitoring and understanding firm performances (Taticchi et al. 2010, 4; Ducq et al. 2019, 5026-5028). *Performance* can be defined as the ability of an object to produce results in a dimension in relation to a target (Laitinen 2002, 66). According to Ducq et al. (2019, 5029), performance is linked to strategic objectives sought to be achieved and to the results of actions or operations.

According to Neely et al. (1995, 80), a *performance measure* can be defined as "a metric used to quantify the efficiency and/or effectiveness of an action." In this context, measurement is the process of quantification, and action leads to performance. Therefore, *performance measurement* can be conceptualized as the process of quantifying the efficiency and effectiveness of action. Measurement provides a means of capturing performance data that can be used to inform decision-making. Performance measures also have behavioral impacts – systems, including humans, respond to performance measures by adjusting their behavior (Neely et al. 2005b, 1228; Neely et al. 1997, 1132).

Performance measures should be positioned in a strategic context (e.g., Neely et al. 1995, 83; Anguinis 2009, 03; Kaplan & Norton 1996a, 10). For reaching strategic goals and moving towards the organization's vision, it is required that employees' activities and outputs be in line with the organization's goals, which in turn are derived from the strategy and vision. Since *performance management systems* link the organization's goals to individual goals, it helps organizations to reach strategic objectives. Organizations' goals are linked to individual goals and behaviors by *performance management systems* as they communicate the types of behaviors and results that are valued and rewarded. This leads to employees' understanding of the organization's culture and values (Anguinis et al. 2011, 505). In other words, *performance management systems* create a direct link between the organization's goals and employee's individual performance. (Anguinis 2009, 3; Anguinis 2011, 505; Neely et al. 1995, 83).

The concept of performance measurement has evolved during the past decades. Many of today's performance measurement systems include multiple dimensions (Ducq et al. 2019, 5042). Dimensions can be seen as perspectives, e.g., as the four perspectives of customer, internal, innovation & learning, and financial, as proposed by Kaplan and Norton (1992). This has not always been the case. In the mid-19th century, performance was synonymous with productivity and profitability since demand exceeded supply (Ducq et al. 2019, 5026). The concept of performance was linked to minimizing production costs (Doumeingts et al. 1995, 4). The customer perspective, amongst others, was not considered until demand and supply were balanced, and competition was increased from 1950 to 1980. During this period, customers became increasingly demanding – this forced companies to innovate and modernize their production means to design and carry out new products. This led to the requirement to consider other dimensions of performance, such as quality, time, and flexibility. (Ducq et al. 2019, 5026). The Balanced Scorecard framework, introduced in 1992, emphasizes this: it represents a balance between multiple perspectives. External measures for shareholders and customers are included, and internal measures for critical business processes, innovation, and learning and growth (Kaplan, Robert S., Norton 1996a, 10). The balanced scorecard is discussed in chapter 2.5 Performance measurement systems.

A *performance management system* can be considered as a management control system (MCS). MCS's are management systems for directing employee behavior. MCS consists of management controls, which are "systems, rules, practices, values and other activities management put in place to direct employee behavior." (Malmi, Brown 2008, 290) Malmi and Brown (2008, 292) have defined a conceptual framework for describing MCS's as a package. The framework's typology includes five types of controls: planning, cybernetic, reward, and compensation, administrative and cultural controls. Performance management systems, either financial, non-financial, or hybrid systems, can be defined as cybernetic MCS's. Cybernetic MCS's have five characteristics: 1) measures that enable quantification of an underlying phenomenon, activity, or system, 2) standards of performance or targets to be met, 3) feedback process that enables comparison of the outcome of the activities with the standard, 4) variance analysis arising from the feedback process and 5) ability to modify the behavior or underlying activities. (Malmi, Brown 2008, 292-293)

Overall, performance measurement systems contribute to *performance management* actions, which are methods of translating plans into results (Cokin 2004, 66). According to Anguinis (2009, 2), performance management is a "…continuous process of identifying, measuring, and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization". In other words, performance management and the models, frameworks, and systems (performance management systems) supporting the actions aim to support management by helping to manage business performance. This is achieved by converting data from internal and external performance measurement information sources and by communicating the data to managers at all levels of organizations for enabling improving operational efficiency through effective decision-making processes and continuous improvement (Rantanen and Pekkola 2014, 24; Taticchi et al. 2010, 9)

From a broader point of view, performance measurement can be seen as part of performance management practices (Smith & Bitichi 2017, 1222), which "describes the methodologies, metrics, processes, software tools and systems to manage the performance of an organization" (Cokin 2004, 66). For measuring performance, companies use *performance measurement systems* (PMS), which can be described as coherent systems consisting of specific performance metrics, which are used for measuring performance (the efficiency and

effectiveness of actions) e.g., for controlling enterprises and their business processes in complex and constantly changing environments. (Neely et al. 2005b, 1229; Ducq et al. 2019, 5026)

As key concepts related to performance measurement and management have been discussed in general, the managerial purposes for performance measurement are discussed in more detail below.

2.2 Managerial purposes for performance measurement

According to Behn (2013, 586), measuring performance is not an end itself, since "after all, neither the act of measuring performance nor the resulting data accomplishes anything itself". This statement can be discussed since Neely (1997, 1132) writes that there is a widespread recognition that performance measures have a behavioral impact. Therefore, if performance is measured and assuming that employees know about it, just the act of measuring may communicate the importance of the topic, which may affect behavior. Although, performance measures should be included in the so-called closed management loop and should have an explicit purpose and a relation to business objectives (Neely 1997, 1148). According to Behn (2003, 588), the actual purpose of performance measurement is to improve performance. In addition to the primary purpose, Behn (2003, 588-592) has defined additional seven purposes, which are means for improving performance. Behn's list of purposes has been designed for public administration managers but could also be applied to a commercial context. Meyer (2003, 30-31) and the OGC (2007a, 77) have defined slightly different classifications of purposes. Behn's, Meyer's, and OGC's purposes for measuring performance are mapped into table 6 below. All the purposes are not exactly similar, but those with similarities have been mapped on the same rows in the table.

Table 3. Purposes for performance measurement

Purposes according to Behn (2003)	**Purposes according to Meyer (2003, 30-31)**	**Purposes according to OGC (2007a, 77)**
Evaluate	Compare Look back	Validate

Control	Roll up Cascade down	Direct
Budget	Look ahead	
Motivate	Motivate	
Promote	-	
Celebrate	-	
Learn	-	
Improve	-	Intervene
-	Compensate	
-	-	Justify

A common and sometimes assumed purpose of performance measurement is the evaluation of performance. Assessment of performance is usually one reason for measuring, although it is not always explicitly stated. Even though the purpose would not explicitly be to evaluate, this possibility is always implicit. Behn (2003, 589). Meyer's (2003, 30-31) purposes "Compare" and "Look back" and OGC's "Validate" are related. With "Validate", OGC (2007a, 77) means validating whether the strategy and vision are supported. Comparison of performance between functions or business units usually applies in large or highly organized companies.

The purpose of controlling stems from the industrial age which was characterized by an engineering mentality and a controlling management style. Also, since traditional measurement systems originates from the finance function, the systems have a control bias (Kaplan and Norton 1992, 79). This was the case during the industrial age. However, the purpose of controlling remains – it is still very rarely stated, but a genuine purpose of performance measurement, according to Behn 2003, 589). Meyer's purposes of cascading down and rolling up goals and measures in an organization could be seen as means for controlling the organization. Of course, translating strategy to action is necessarily not the same as the traditional idea of controlling by giving prescribed tasks to employees and monitoring performance against the tasks.

The purpose of budgeting has multiple different meanings. Budgets may be planned around performance targets or actual historical performance data. Performance measures can also be used for rewarding some units or functions with extra funds. Though budgets are crude tools for improving performance, since cutting a unit's budget may just worsen existing sub-optimal performance. (Behn 2003, 590). Meyer's (2003, 30-31) purpose of looking ahead can be seen as partially related to budgeting.

According to Behn (2003, 590), performance measures have proven useful, especially for motivational purposes. Establishing performance goals grabs employee's attention, and the valuable feedback received from the measures concentrates on employee's efforts on reaching the targets.

The purpose of promoting is mainly related to communicating and proving a public agency's or program's value (Behn 2003, 591). The same purpose could also be applied in a commercial context, especially in large organizations with several units, departments, projects, or programs. In addition to the primary purpose (improving performance) and the purposes presented above, Behn's list of purposes for performance measurement includes yet two items: celebrating success and learning. Organizations need to celebrate success since such rituals motivate and give a sense of individual and collective relevance. The link of celebrating success to improving performance is the most indirect of Behn's purposes since it affects through the other purposes. Celebration, for instance, may motivate to improve further in the next month, quarter, or year. The final purpose, learning, may be combined with the celebration of success. A formal presentation by those who produced the exceptional achievement, instead of a party, can celebrate their triumph and provides others the opportunity to learn how they could achieve similar performance. (Behn 2003, 591)

As it appears from the sections above, there are several different purposes for measuring performance. According to Behn (2003, 586), "no single measure is appropriate for all eight purposes", and therefore managers need to think about the managerial purposes to be achieved, for selecting appropriate performance measures. In the next chapter, performance and performance measures will be discussed in the next sub-chapter.

2.3 Performance and performance measures

For building a performance management system, it is essential to understand what performance consists of. In Laitinen's (2002, 78) Dynamic Integrated Performance Measurement System, performance is inspected as a causal chain, which starts from production factors that generate revenues, which eventually translates to external performance. This leads to a distinction between external and internal performance and between financial and non-financial dimensions. Table 3 below lists the factors behind internal performance and assigns the factors to dimensions according to Laitinen (2002, 77).

Table 4. Factors behind internal performance according to Laitinen (2002, 77)

#	**Internal factor**	**Dimension**
1	Cost of production factors	Financial
2	Production factors	Non-financial
3	Activities	Financial and non-financial
4	Products	Non-financial
5	Revenue	Financial

The internal factors presented in table 3 above leads potentially to external performance, which consists of competitiveness and financial performance. Competitiveness can be viewed from the financial and non-financial dimensions. (Laitinen 2002, 78). This distinction between financial and non-financial drivers seems similar to the leading and lagging indicators discussed by Kaplan & Norton (1996a, 150). Leading indicators are performance drivers, that describe how the outcomes (lagging indicators) are to be achieved. Both the drivers of performance (non-financial, leading indicators), and the outcomes (financial, lagging indicators) need to be inspected to be able to see whether operational improvement are translated to outcomes, financial performance.

As stated earlier, performance can be defined according to Laitinen (2002, 66) as the ability of an object to produce results in a dimension in relation to a target, which is a quite technical and straightforward definition. However, performance can also be inspected from other perspectives, such as human resources or behavioral perspectives. Anguinis (2013, 88)

inspects performance from a behavioral point of view. He states that "Performance is about behavior or what employees do, not about what employees produce or the outcomes of their work," but, at the same time, reminds us that performance measurement systems usually include measures of behaviors and results. This is because all behaviors cannot be measured, and therefore, performance measurement systems do include measures for the results that indirectly measure the behaviors. Thus, some measures work as proxies for the actual behaviors. (Anguinis 2013, 88-89)

Behaviors labeled as "performance" are evaluative and multidimensional. Performance being evaluative means that the behavior can be judged as positive, neutral, or negative for individual and organizational effectiveness. The multidimensional aspect of performance means that performance consist usually of many behaviors that combined affect how organizational goals are achieved. (Anguinis 2013, 88) When discussing performance from a behavioral perspective, also the determinants of performance should be mentioned. When considering the factors that cause employees to perform – or not to perform, according to Anguinis (2013, 89), three factors should be taken into account: 1) declarative knowledge, 2) procedural knowledge, and 3) motivation. Declarative knowledge is about the facts, principles, and goals. In contrast, procedural knowledge is a combination of knowing what to do and how to do it, including cognitive, physical, perceptual, motor, and interpersonal skills. Finally, motivation consists of three types of choices: 1) the choice to expend effort, 2) the choice of level of effort, and 3) the choice of persisting in the expenditure of the chosen effort and the level of it. Anguinis (2013, 89) argues that the determinants presented above have a multiplicative relationship to performance:

Performance = Declarative knowledge * Procedural knowledge * Motivation

Therefore, all determinants must be present for an individual or organization to perform. For example, an employee with adequate knowledge of the facts that knows what to do could perform well, but without motivation, the employee's performance would be inadequate. In addition to the three determinants of performance, HR practices and the work environment can affect employees' performance. These insights lead to the importance of understanding the determinants of performance in specific situations, such as when managing performance

issues. In the example of an employee with low motivation, actions such as training regarding the facts and procedures would not necessarily be the key to improving the employee's performance. (Anguinis 2013, 89-90)

Anguinis (2013, 91-92) classifies individual and organizational performance into two separate dimensions: task performance and contextual performance. Task performance is related to the activities that "…transform raw materials into the goods and services that are produced by the organization," and "activities that help with the transformation process by replenishing the supply of raw materials, distributing its finished products or providing important planning, coordination, supervising, or staff functions that enable the organization to function effectively and efficiently". Even though of a quite physical product-centric view, the point is clear – task performance is related to "hard" actions required for running the business. Contextual performance, on the other hand, are behaviors that "contribute to the organization's effectiveness by providing a good environment in which task performance can occur". Examples of behaviors like these would be helping and cooperating with others, following organizational rules and procedures, persisting with enthusiasm, and exerting extra effort as necessary to complete one's own tasks successfully, and endorsing, supporting, and defending organizational objectives. Both dimensions presented above should be considered in performance management systems since emphasizing and measuring just one dimension would not lead to desirable performance, especially nowadays when the global competition raises the level of effort required of employees. The competition also sets high requirements on customer service. Due to these reasons, contextual performance aspects should be included in performance management systems in addition to the task performance aspects. (Anguinis 2013, 91-94)

As we now have discussed performance in general, let us continue with performance measurements, the indicators used for measuring performance. Measuring and managing performance requires setting goals or targets since when returning to Laitinen's (2002, 66) definition, performance is the ability of an object to produce results in a dimension in relation to a target. Also, according to Anguinis (2014, 73), "goals provide the basis for performance measurement because they allow for a comparison of what needs to be achieved versus what each unit, group, and individual is achieving."

Doran (1981, 36) has presented a way to formulate meaningful objectives: the SMART objectives. This acronym consists of the following items, presented in table 4 below.

Table 5. SMART goals by Doran (1981, 36)

#	Criteria	Description
1	Specific	Target a specific area for improvement
2	Measurable	Quantify or at least suggest an indicator of progress
3	Assignable	Specify who will do it
4	Realistic	State what results can be realistically achieved, given available resources
5	Time-related	Specify when the result(s) can be achieved

Even though the SMART acronym guides towards formulating meaningful objectives, according to Doran (1981, 36), an organization's all objectives do not need to be in line with all these criteria. Also, all objectives on all levels of management do not have to be quantified, since in some situations, one can lose the benefits of abstract goals while attempting to quantify the objective. It must be noted that the SMART goals framework is quite general. Neely et al. (1997) have designed a framework, the "Performance measure record sheet," for defining performance measures for supporting performance measurement in an organizational context. The "Performance measure record sheet" asks relevant questions for evaluating or defining the performance measures themselves. The content of the sheet, including descriptions, is presented in table 5 below.

Table 6. The performance measure record sheet (Neely et al. 1997, 1138)

#	Item	Description
1	Title	The title of the measure. The title should explain what the measure is and why it is important.
2	Purpose	The rationale underlying the measure.
3	Relates to	The business objectives that the measure relates to.
4	Target	An explicit target, which specifies the level of performance to be achieved including a timescale for achieving it.

5	Formula	The formula should explain the way how the performance is measured. The behavioral effects of the formula should be considered.
6	Frequency	The frequency with which performance should be recorded and reported is a function of the importance of the measure and the volume of data available.
7	Who measures?	The person who is to collect and report the data should be identified.
8	Source of data	The source of the raw data should be specified. The importance of this question lies in the fact that a consistent source of data is vital if performance is to be compared over time.
9	Who acts on the data?	The person who is to act on the data should be identified.
10	What do they do?	Description on the management process that will be followed should performance appear to be either acceptable or unacceptable.
11	Notes and comments	Other notes and comments related to the performance measure.

Doran's and Neely et al.'s criteria for goals and performance measures seem to complement each other. Neely et al.'s criteria for performance measures are indeed more comprehensive, since they are designed for performance measurement purposes, whereas Doran's criteria are more general. Neely's criteria seem to align with Doran's, even though Neely et al. did not use the SMART goals criteria based on the list of references. The SMART goals criteria include the consideration of realisticness, which is probably a reasonable consideration for setting targets for performance measures (item 4 in table 5 above). Neely et al.'s performance measurement record sheet guides to define the purpose of each measurement. "If a measure has no purpose, then one can question whether it should be introduced." (Neely et al. 1997, 1136) Next, the different types of performance measurement systems will be discussed to understand their structure.

2.4 Types of Performance measurement systems

A variety of performance measurement approaches has been introduced since the 1990s, when performance measurement became common. For instance, Ducq et al. (2018, 5029-5038) recognized 60 performance measurement approaches and compared them regarding their architecture and characteristics. Not all of them are necessarily performance measurement systems, but Ducq et al.'s (2018) study still show the wide variety of available approaches related to performance measurement.

Neely et al. (2003, 129-134) introduced the concept of Third-generation performance measurement systems and classified the existing measurement systems into two generations. Characteristics and examples of systems are presented in table 7 below.

Table 7. Performance measurement systems classified by generation (Neely et al., 2003)

Generation	Characteristics	Examples of frameworks
1st	"Balanced measurement systems"	-Balanced Scorecard (Kaplan & Norton, 1996) -Performance Prism (Neely et al., 2002) -Skandia's Navigator (Edvinsson & Marlone, 1997).
2nd	"Mapping of flows and transformations"	-Strategy maps (Kaplan & Norton, 2000) -Success and risk maps (Neely et al., 2002) -IC-Navigator model (Roos et al., 1997; Chatzkel, 2002).
3rd	"Linking Financial to Non-Financial"	-

The first generation of performance measurement systems arose from the general criticism related to usage of only financial measures generated by traditional accounting systems, and therefore emphasizes measurement of multiple dimensions of performance. The second-generation systems provide means to visualize the linkages between intangible assets and business value. Being a new concept, there were not yet any examples of third generation

systems, but Neely et al. (2003, 132) described that the generation requires organizations to link non-financial and intangible dimensions of organizational performance and the cash flow consequence of these.

In addition to classifying the systems per generation, they can also be classified per their type. Ducq et al.'s (2018, 5039) study distinguished two non-exclusive types of performance measurement system architectures: structural architectures and procedural architectures. Structural architectures "…are similar to frameworks and present structured models specifying predetermined areas and dimensions of performance without any processes to guide the users in the choice of the PIs to be retained in the fields considered" (Ducq et al. 2018, 5039). Examples of structural architectures are the SMART pyramid by Lynch and Cross and the Supply Chain Operations Reference (SCOR) by Supply Chain Council. Opposed to the structural architectures, the procedural architectures provide well defined steps for developing performance measurement systems. An example of this would be the ECOGRAI method by Doumeingts et al. from 1995. (Ducq et al. 2018, 5039)

Two of the compared approaches, the dynamic measurement system by Laitinen (2002) and the Balanced Scorecard (Kaplan and Norton, 1992), are discussed later in this chapter. One other approach not included in Ducq et al.'s study, the IT BSC is also discussed below.

2.4.1 The Balanced Scorecard

The Balanced Scorecard (BSC), introduced in 1992 by Kaplan and Norton (1992), is a strategic performance management system. As early as in the year 2000, Neely et al. (2000, 1122), stated that the balanced scorecard is "Undoubtedly one of the most widely recognized performance measurement frameworks of today…". This is supported by Pantano et al. (2006, 5), while adding that the BSC has been the least criticized broader performance measurement system.

The BSC emphasizes the importance of considering both non-financial and financial measures. Also, if used as a strategic management system, it addresses the traditional management systems' inability to link a company's long-term strategy with its short-term

actions by providing a balanced approach for performance management. It brings together "many of the seemingly disparate elements of a company's competitive agenda" (Kaplan & Norton, 1992) by considering four perspectives: the customer perspective, the financial perspective, the internal business perspective, and the innovation and learning perspective. By allowing managers to inspect important operational measures together, the BSC guards against suboptimization but also limits the number of measures. (Kaplan & Norton, 1992). According to Neely et al. (2000, 1122), the balanced scorecard's feature of creating explicit links between the different dimensions of business performance "…is arguably one of the greatest strengths of Kaplan and Norton's balanced scorecard".

The balanced scorecard can not only be used as a performance measurement system – it can also be used as a tool for strategic management and performance management. It guides on linking long-term strategic objectives with short-term actions by introducing four new management processes. The first process, "translating the vision," "helps managers to build a consensus around the organization's vision and strategy" (Kaplan & Norton 1996b, 75). The second process – "communicating and linking" – helps the management to communicate and link the strategy to departmental and individual objectives. The third process – "business planning" – focuses on integrating the business and financial plans. The fourth and last process – "feedback and learning" – is a feedback process that enables strategic learning by evaluating the strategy in light of the short-term results from different perspectives. (Kaplan & Norton 1996b, 75-79)

Kaplan & Norton have expanded the Balanced scorecard framework by introducing the Strategy map concept. It is based on the idea of linking the balanced scorecard objectives based on cause-and-effect relationships, discussed in Kaplan & Norton (1996a 148-152, 1996b; 2000; 2004). The purpose of the Strategy map is to support the planning and communication of how intangible assets will be converted into tangible outcomes based on the organization's business strategy and goals. Because of this, Neely et al. (2003, 13) classify the Strategy map into the second generation of performance measurement frameworks. It is worth noting that Kaplan & Norton advertises their BSC and Strategy map frameworks not just as measurements framework but as management systems (Kaplan & Norton 1996a, 8).

Even though the BSC framework is profusely praised by its authors, it has also received criticism. Pantano et al. (2006, 6) has summarized the major claims and counterclaims on the BSC. Examples of this are the discussion on whether people/employees, regulators and competitors are included or not and how the causal relationships are considered in the BSC. It seems that the introduction of the Strategy map addresses the criticism related to the lack of causal relationships. Next, two BSC-based approaches to the IT-measurement context are discussed.

2.4.2 IT Balanced scorecard

The balanced scorecard framework has been applied also to the IT context. The need for linking IT measures to corporate strategy has arisen from the number of unsuccessful IT-projects and initiatives, which have caused tremendous costs (Addo et al., 2004). At least two different approaches have been introduced. These two approaches are reviewed briefly in the remainder of this chapter.

Van Grembergen (2000) has proposed a framework for supporting the Business/IT alignment by adapting the traditional BSC by Kaplan & Norton (1992, 1996a, 1996b) to an IT context. Van Grembergen's framework includes a standard IT BSC and a cascade of BSC's for more explicit linkages between IT and Business. The standard IT BSC includes 4 perspectives, which are mapped to corresponding traditional BSC (Kaplan & Norton, 1992) perspectives in table 8 below.

Table 8. IT BSC and BSC perspectives (Van Grembergen, 2000; Kaplan & Norton, 1992)

IT BSC perspective (Van Grembergen, 2000)	**BSC perspective (Kaplan & Norton, 1992; 1996a)**
Future orientation	Innovation and learning
Operational excellence	Internal processes
User orientation	Customer
Business contribution	Financial

The perspectives shown in table 8 above represent cause-and-effect relationships that may ultimately lead to enhanced support of business processes by the IT. Van Grembergen (2000) describes the relationships in the following manner: “if IT employee’s expertise is improved (future orientation), then this may result in a better quality of developed systems (operational excellence), then this may meet better user expectations (user orientation), then this may enhance the support of business processes (business contribution).”

For creating more explicit links between IT and Business, Van Grembergen’s (2000) framework includes cascaded scorecards that link the IT measures to business measures. In addition to the standard IT BSC, the framework includes three IT scorecards: IT Operational BSC, IT Development BSC, and IT Strategic BSC. The relationships between these scorecards and the business BSC are illustrated in figure 5 below.

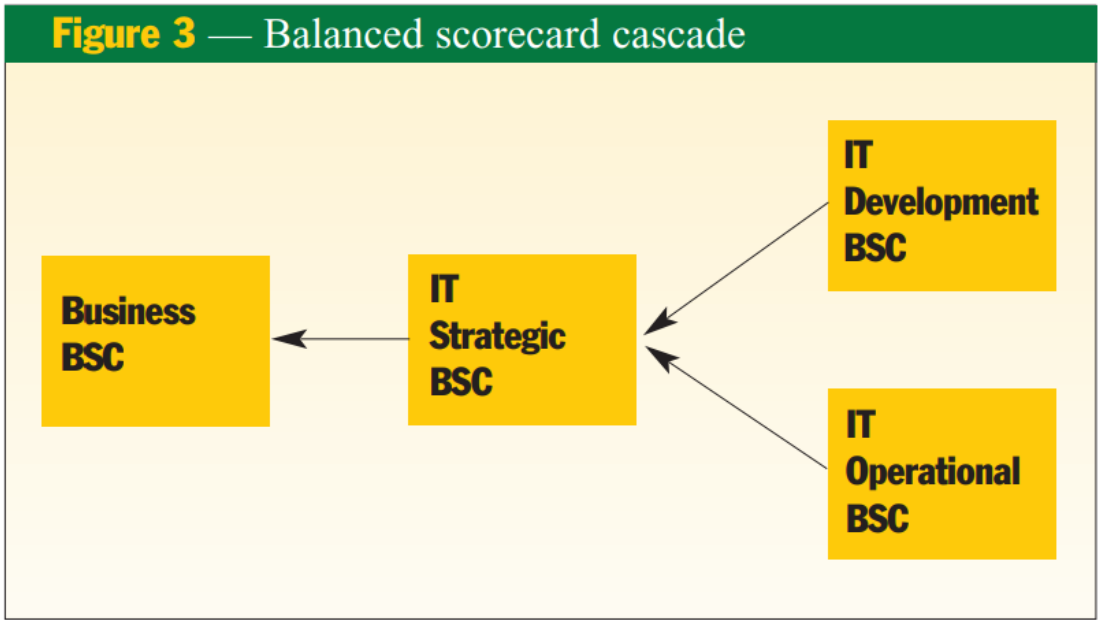

Figure 5. Balanced scorecard cascade by Van Grembergen (2000)

As shown in figure 5 above, the IT Development BSC and the IT Operational BSC are enablers for the IT Strategic BSC, which is an enabler for the Business BSC. This cascaded set of BSC’s provides a linked set of measures that helps to align IT with the business strategy. Additionally, it helps to demonstrate how business value is created through IT. Van

Grembergen's article presenting the framework does not include specific measures to be used in the BSC's (since they are case-specific) but includes guidelines such as:

> "Very essential is that within an IT BSC the cause-and-effect relationships are established and the connections between the two types of measures, outcome measures and performance drivers, are clarified. A well built IT scorecard needs a good mix of these two types of measures." (Van Grembergen, 2000)

Here, with the performance drivers and outcome measures, Van Grembergen refers to the leading and lagging indicators, respectively, discussed, e.g., by Kaplan & Norton (1996a, 150).

Addo et al. (2004) have introduced an alternative approach for measuring IT and linking it to business strategy by adapting Kaplan & Norton's BSC framework. The cause-and-effect relationships in Addo et al.'s (2004) framework remind of Van Grembergen's (2000) framework: the internal IT capabilities affect the internal processes, which in turn affect the value creation for internal users. The internal users can create value for the external customers, leading to increased IT shareholder value and corporate profitability value. Addo et al.'s framework is illustrated in figure 6 below.

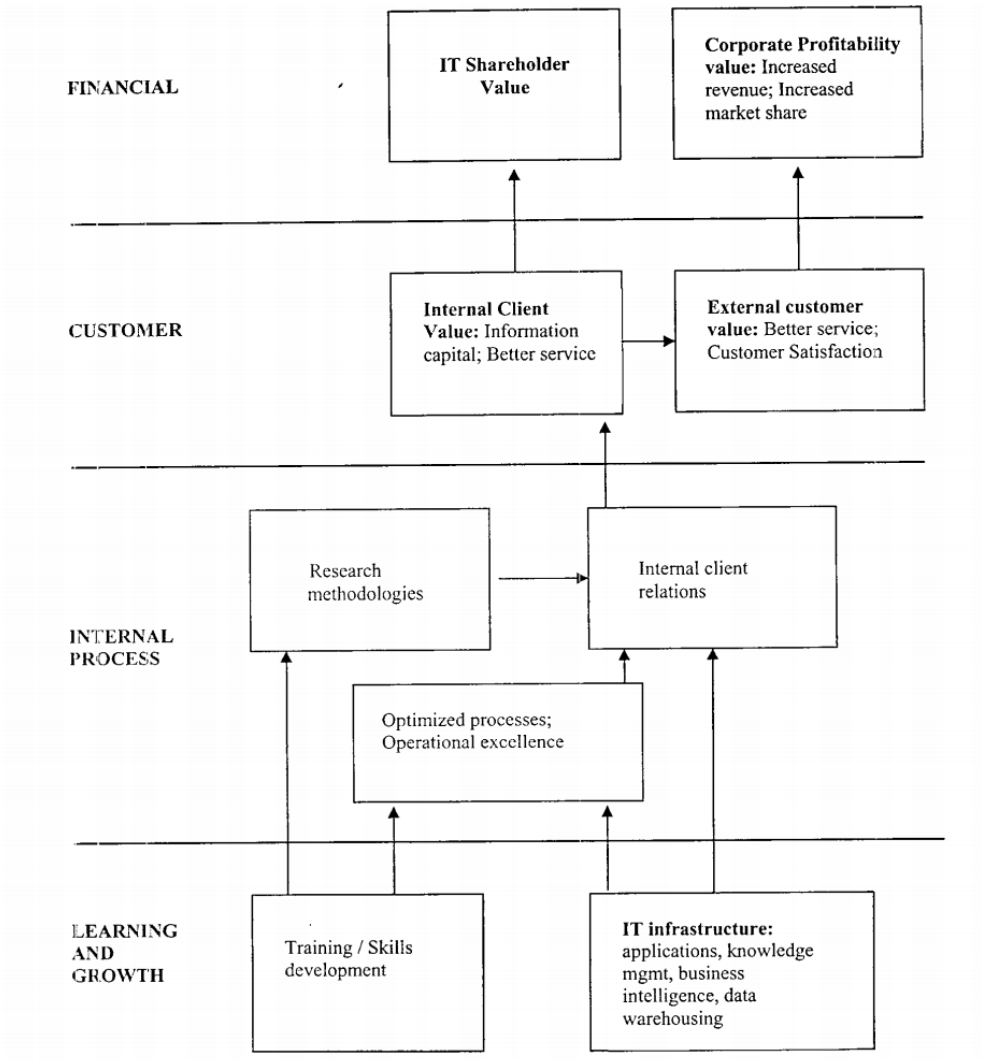

Figure 6. Cause-and-effect relationships of Addo et al.'s (2004, 223) BSC for IT

As seen from the figure 6 above, Addo et al.'s (2004, 223) cause-and-effect relationships remind of Van Grembergen's (2000), but adds some details:

- the Learning and growth perspective also includes a component for "IT infrastructure."
- the Internal processes perspective includes "Research methodologies" and "Internal client relations" in addition to "Optimized processes; Operational excellence."

Opposed to Van Grembergen's framework, Addo et al.'s framework provide examples of goals and measures for each perspective. The authors emphasize that IT departments that undertake a balanced scorecard initiative do not have to use the examples – "each IT

department will have to develop and customize its own scorecard" (Addo et al. 2004, 224). The examples include several goals and measures for each perspective.

2.5 Design and implementation approaches

According to the findings made by Bourne et al. (2003, 16), implementing a performance measurement system may be a lengthy and challenging initiative to undertake. To contribute to the understanding of factors influencing the success or failure of performance measurement initiatives, Bourne et al. (2003) have proposed a categorization of performance measurement design processes. Based on their literature review, two distinct dimensions that form a matrix of categories were proposed: the underlying procedure and the underlying approach. The procedures are classified into the 'needs led,' 'audit led,' and 'model led' procedures. The approaches include the 'consultant led' approach and the 'facilitator led approach.'

The difference between a performance measurement system implementation process and a performance measurement design approach may be good to acknowledge when discussing the design and implementation of performance measures. Some authors have proposed implementation processes that strive to ensure a successful performance measurement system implementation (e.g., Kaplan & Norton 1996a, 279; Laitinen cited in Tenhunen 2001, 69-70), while some authors have proposed approaches for designing performance measures that are or are not supported by implementation processes. The authors of the frameworks discussed in the chapters above have suggested processes for implementing their frameworks. These are reviewed briefly in the next paragraphs.

In their summary of performance measurement design approaches, Bourne et al., (2003, 17) found many different approaches that are based on the BSC framework that are at least partially designed or influenced by Kaplan & Norton. The implementation process presented in their 1996 book is discussed here. Kaplan & Norton's (1996a, 279) implementation process is seeming to be intended for large organizations with multiple business units, and the process is quite lengthy and heavy. It guides to form an executive team and focuses deeply on forming and aligning the company-level and business unit-level scorecards. The

process considers the stakeholders required for implementing the management system and proposes a timeline for the implementation (26 months). Kaplan & Norton's process does not seem to be very scalable – a lighter and faster process would be required for smaller organizations, that do not consist of multiple business units.

Laitinen (cited in Tenhunen 2001, 69-70) has proposed a simpler process for implementing his Dynamic performance measurement system. It shares some common steps with Kaplan & Norton's process (e.g., clarifying the strategy, communication with employees), but does include other steps, such as "recognizing the need for a performance measurement system and selection of the framework", "engaging the management" and "continuous improvement of the measurement system". Since Laitinen's process is simpler and more straightforward than Kaplan & Norton's, it could be better suitable for smaller organizations and could be executed in a shorter time.

As the topic of performance measurement has been discussed based on definitions, managerial purposes, and as few frameworks have been reviewed, the literature review moves on to performance measurement in the IT Service Management context.

3 IT SERVICE MANAGEMENT: MEASUREMENT FRAMEWORKS AND METRICS

Due to the similarity of Enterprise service management (ESM) and IT Service Management (ITSM), and due to the lack of literature focusing on ESM performance measurement, ITSM performance measurement literature is reviewed in this chapter. This aims to gather information on ITSM performance measurement for adapting it to ESM, for building the proposal. First, the ITSM concept is presented briefly. The next subchapters discuss ITSM performance measurement approaches and frameworks, benefits, metrics, and measurement challenges.

3.1 Definitions and performance implications of ITSM

IT Service Management (ITSM) are the activities that "enables an organization to maximize business value from the use of information technology" (Axelos, n.d.). ITSM helps to manage and implement quality IT services and considers the whole lifecycle of IT services, from planning the strategy, through design and transition into live operation. ITSM delivers value to customers and users by providing IT services while being responsible of the associated risks and costs. This is achieved by utilizing certain practices or processes and principles, such as continual improvement. (Axelos, n.d.) These claims presented above, are stated by the owner of the ITIL framework. Therefore, the claims should be inspected with caution. Although, the claims regarding ITSM's ability to deliver value have received some support from academics. For instance, according to Gacenga (2013, i), "…some organisations implementing ITSM initiatives have reported realisation of benefits in cost savings and standardisations in delivery of IT service."

Over 90% of companies are estimated to use ITSM frameworks while ITIL is the de-facto ITSM framework (Marrone & Kolbe 2010, 363; Hochstein 2005, 80). Several other frameworks and standards are guiding for managing IT services. Figure 7 below by Jäntti et al. (2013, 2) illustrates some of them.

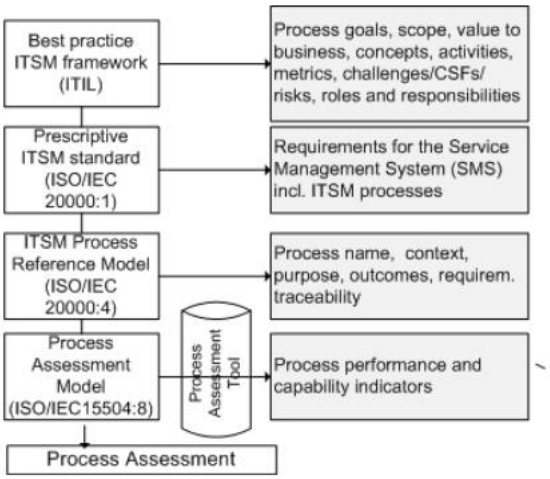

Figure 7. Some IT Service Management process frameworks and standard as illustrated by Jäntti et al. (2013, 2)

There is a multitude of management and process frameworks that have been applied to the ITSM context in addition to the ITIL framework and the standards seen in figure 7 above. Cater-Steel et al. (2009a, 5) have categorized these to "IT Service Management frameworks", "Proprietary frameworks," and "Other frameworks." Proprietary frameworks include the HP ITSM, Microsoft MOF, IBM SMSL, and the Internally developed ITSM framework. The Other frameworks category includes frameworks that are not necessarily specific to ITSM. Newer models and frameworks not included in Cater-Steel et al. (2009a), such as FITS, VeriSM, and IT4IT touch the same area.

The ISO/IEC 20000 standard is the only international standard for Service Management (Cos & Casadesus 2013, 413), which "…is based upon several fundamental principles that must permeate through the service management system" (Clifford, 2010). While ITIL is a guide consisting of a group of practices, the ISO/IEC 20000 standard is a certifiable and auditable definition of a service management system (Cos & Casadesus 2013, 418). The ISO/IEC 20000 standard was initially designed for IT Services but can be used by any business that provides managed services to its customers (Cos & Casadesus 2013, 435; Clifford 2010, 13). The ISO/IEC 20000 standard is compatible with CMMI (IT-palvelunhallintajärjestelmien sertifiointi (ISO/IEC 20000))

Marrone and Kolbe (2009; 2010) have studied the ITIL benefits and the IT executives' perception on the ITIL benefits and Business-IT alignment. Their findings show that ITIL provides benefits at operational level and contributes to strategic positioning by improving the Business-IT alignment. It was also found that the Business-IT alignment increases throughout the implementation of ITIL especially in the later stages of the implementation. ITIL also contributes to a greater control of IT processes which allow IT to respond to the environmental uncertainty faced by the business. (Marrone & Kolbe 2009, 375-376) As ITIL is one of the frameworks for ITSM, empirical findings, such as findings related to benefits and the usage of metrics in ITIL initiatives, are relevant when inspecting the ITSM domain: ITIL practices are ITSM practices.

In regards of benefits and performance measurement of ITSM, Marrone & Kolbe found that the usage of metrics increase as the maturity of the ITIL implementation increases. While the maturity and the usage of metrics increase, they also found that the business increasingly acknowledge the benefits provided by IT. (Marrone & Kolbe 2009, 376; 2010, 11) Even though ITSM metrics are used, according to the IT Service Management Benchmarking Report (2017), "fewer than half (41%) [of ITSM professionals] see a clear alignment between their current goals and the overall direction of the business." This is supported by Gacenga's (2013, 309) findings. His study found that service level and organizational level metrics for ITSM were uncommon – ITSM practitioners predominantly use process metrics to measure the performance of ITSM.

3.2 ITSM organizational level benefits

It is essential to understand what benefits are generated by ITSM in order to understand how ITSM should be measured. This chapter reviews the literature on organizational level ITSM benefits, while the next chapter ITSM process level benefits reviews the process level benefits. This distinction between organizational and process level benefits is based on how McNaughton et al. (2010, 222) and Gacenga (2013, 145-176) have categorized the ITSM benefits.

Gacenga (2013), Marrone & Kolbe (2010), Huang et al. (2011), and Hochstein et al. (2005) have studied ITSM-related benefits and have found that ITSM brings various benefits on operational and organizational levels. Marrone & Kolbe's (2010) findings are gathered from relevant research on ITSM and ITIL. Conveniently, Huang et al. (2011) and Gacenga (2013) have studied and summarized the benefits according to or close according to the perspectives introduced by Kaplan & Norton's (1996a, 1996b) balanced scorecard framework: customer, financial, internal business process, learning, and growth. Hochstein et al.'s (2005) study on Service-oriented IT management recognized three benefit categories from six case studies they conducted. Hochstein et al. use the general term "Service-oriented IT management to describe ITSM and views ITIL as a concretization of service-oriented IT management. The findings from Gacenga (2013), Marrone & Kolbe (2010), Huang et al. (2011) and Hochstein et al. (2005) were grouped into unified categories and aggregated into table 9 that summarizes the organizational level ITSM benefits.

Table 9. Summary of ITSM-related organizational level benefits based on Gacenga (2013), Marrone & Kolbe (2010), Huang et al. (2011), and Hochstein et al. (2015) findings.

BSC perspective	Benefit category	Gacenga, 2013	Marrone & Kolbe, 2010	Huang et al., 2011	Hochstein et al. (2005)
Customer perspective	Improved customer satisfaction	x	x	x	
	Improved working relationships between customers and IT	x			
	Client/service orientation of IT services				x
Financial perspective	Cost savings and improved cost-effectiveness	x		x	
	Improved return on investment		x	x	
	Improvement in sales growth			x	
	Financial contribution control		x		
Internal business process perspective	Cost justified IT infrastructure and IT services	x			
	Improvements in service quality or reduced defects and errors	x	x	x	x
	Improved business operations, support and business alignment	x			
	Improvements in flexibility and adaptability of services	x			
	Standardization of service		x		x
	Improvements in productivity, efficiency or resource usage	x		x	x
	Transparency and comparability through process documentation and process monitoring				x

Learning and growth perspective	Improvement in competency and training of employees			x	
	Improvements in job satisfaction	x			
	Improvement in organization culture			x	
	Morale of IT		x		

The four studies had common findings on the organizational level benefits: improved customer satisfaction, cost savings, improved cost-effectiveness, improved return on investment, improvements in service quality, reduced defects and improved productivity, amongst others.

Gacenga used a BSC-based but slightly adjusted taxonomy for categorizing the organization level ITSM benefits: Business, Financial, Internal business (which consist of Employee and Internal Improvement), and Innovation. Gacenga sought to identify the benefits at the organizational level and process level by a survey sent to itSMF Australia's members and received 211 usable responses (Gacenga 2013, 97). From the business perspective, the "Improved quality of business operations" was the most frequent response, with 34% of the responses from the business perspective. The "cost justified IT infrastructure and IT services" response gathered most responses (34%) from the financial perspective. In the employee perspective, the "improved visibility and reputation of the IT department" significantly gathered most responses (44%) while the "delivery of IT Service that underpin business processes" (37%) and "better information on current services" (34%) were the most common responses in the Innovation perspective. The internal improvement perspective had a quite even distribution between the responses, as the "improved communications and inter-team working" (21%), "process maturity benefits" (19%), and "improved metrics and management reporting" (17%) were the most responses.

Both Gacenga (2013) and Marrone & Kolbe (2010) summarized empirical studies on the organizational level along with the BSC perspectives. According to Gacenga's summary of other empirical studies, 53% of the organizational level benefits fall into the Internal business perspective, while the corresponding percentage in his study was 36%. The percentages for the other perspectives are as follows, with Gacenga's findings in parenthesis: Customer perspective 37% (23%), Financial perspective 7% (22%), and Innovation and learning 1% (18%). The sum of percentages does not reach 100 in either case for an unknown reason.

While the studies discussed above claim certain organizational level benefits of implementing or using ITSM, Marrone & Kolbe (2010, 365) reminds that according to Porter

(1996), sustainable competitive advantage requires not only operational efficiency brought by best practice but also strategic positioning. Porter's (1996, 61-65) reasonings include that best practice focusing on operational level improvements have become common, and by implementing them, no sustainable relative competitive advantage will be reached since companies are becoming increasingly similar. The best practice frameworks and tools for increasing operational efficiency are relatively easy to copy from competitors, and thus they will not bring a sustainable advantage. Therefore, no relative advantage is reached even though the operational efficiency improves. What makes the difference is a competitive strategy that implies a set of activities that deliver a unique mix of value.

To conclude, superior performance requires operational efficiency combined with a competitive strategy. (Porter 1996, 61-15) These thoughts point towards the IT-business alignment, which according to Marrone's and Kolbe's (2010, 375) findings, increases when the maturity of the ITIL implementation increases. Also, according to their study, while the maturity increases, the number of realized benefits increase, along with the usage of metrics and the acknowledgement of the benefits by the business. These findings suggest that ITIL not only provides various benefits at operational level but also contributes to the strategic positioning by improving the Business-IT alignment. In addition to improving the Business-IT alignment, ITIL also contributes to improved control of IT processes which allows IT to respond to the environmental uncertainty faced by the business (Marrone & Kolbe 2010, 375-376). Even though these findings specifically concern ITIL, it is relevant for the ITSM context since ITIL is the de-facto framework for ITSM (Marrone & Kolbe 2010, 363; Hochstein 2005, 80). Next, the operational level benefits will be discussed.

3.3 ITSM process level benefits

In addition to studying the organizational level benefits of ITSM, Gacenga (2013) has studied process level benefits of ITSM. Gacenga (2013) inspected the process level benefits by using a survey and grouped his study's findings according to the service constituent taxonomy of the former ITIL framework owner OGC: process, product, resources, and people. The service constituents were divided to ITSM process benefit categories. Gacenga's (2013, 153) findings are presented in table 10 below.

Table 10. ITSM process benefits according to Gacenga's (2013, 153) findings.

Service constituent	**ITSM process benefit category**	**Number of responses**
Process (240)	Process improvement	240
Product (167)	Service improvement	73
	System improvement	42
	System availability	33
	Value to the business	16
	Knowledge acquisition	3
Resources (121)	Cost management	32
	Control	30
	Resource management	30
	Risk management	19
	Compliance	9
	Governance	1
People (116)	Customer service	53
	Customer satisfaction	50
	Customer needs identification	13
	Total	644

Most of Gacenga's survey responses were related to the Process constituent in the form of process improvement. Based on the number of responses, other most notable process benefits for the other constituents were service improvement and system improvement (Product), cost management, control, and resource management (Resources), customer service, and customer satisfaction (People). No other studies addressing specifically the process level benefits of ITSM were discovered.

Next, ITSM metrics from research literature and industry sources are presented.

3.4 ITSM measurement approaches and frameworks

By conducting a keyword search from LUT University's Primo Library Discovery Service (https://lut.primo.exlibrisgroup.com/) and Google Scholar (https://scholar.google.com/), studies and other publications related to ITSM, measurement, and performance were searched for. The nine studies that were found were published between the years 2010 and 2016, which may indicate that ITSM performance measurement is a fairly new area of research and interest. For instance, Gacenga (2013, 28) mentioned "the scarcity of academic studies and academic publications on the subject area of performance measurement of ITSM", which indicates that there were few publications on the topic back then. The nine studies propose a variety of approaches of performance measurement related to ITSM, while some of them focus on ITSM evaluation and benefits. There are more or less complete and "expansive" frameworks (Gacenga, 2013; Marcos et al., 2012; McNaughton et al., 2010; Cronholm & Salomonson, 2014) and more focused frameworks (Puvvala et al., 2016; Lahtela et al., 2010) built for specific purposes. Gacenga et al. (2010) have made a literature study on ITSM benefits and performance measurement, while Marrone & Kolbe (2010) have studied the ITSM benefits, particularly how the implementation of ITIL impacts operational effectiveness and strategic positioning and the Business-IT alignment. Table 11 presents briefly the nine relevant publications that were found – a more detailed review of selected publications follows in the next chapter.

Table 11. Studies and publications on ITSM performance measurement

#	Author(s)	Published	Title	Short description
1	McNaughton et al.	2010	Designing an evaluation framework for IT service management	An evaluation framework ITSM, particularly ITIL processes. Has four perspectives of evaluation: 1) management, 2) technology, 3) IT-users and 4) IT employees on two abstraction levels (corporate and process level). Includes non-published survey questions, metrics and a scoring system for scoring of survey questions.
2	Gacenga	2013	A performance measurement framework for IT Service Management	A doctoral thesis that proposes an extensive framework for ITSM performance measurement. In addition to the measurement framework for organizational level, service level, and process level, it defines organization benefits, metrics, guidelines on deriving metrics etc.
3	Marcos et al.	2012	An IT Balance Scorecard Design under Service Management Philosophy	A BSC-based measurement framework for ITSM. Focuses on integrating IT with business and takes ITSM best practice into consideration.
4	Cronholm & Salomonson	2014	Measures that matters: service quality in IT service management	A developed version of SERVQUAL adjusted to an ITSM context.

5	Puvvala et al.	2016	A Metrics Analysis Framework for IT Service Management	A process-level framework based on a causal model for monitoring and analyzing process level metrics. Focuses on statistical analysis for identifying deviations.
6	Lahtela et al.	2010	Establishing a Measurement System for IT Service Management Processes: A Case Study	A process-level measurement framework and a real-time measurement tool for measuring ITSM processes.
7	Gacenga et al.	2010	An International Analysis of IT Service Management Benefits and Performance Measurement	An international literature review of academic literature on ITSM performance measurement focusing on ITSM benefits.
8	Marrone & Kolbe	2010	Uncovering ITIL claims IT executives' perception on benefits and Business-IT alignment	A study on ITIL benefits, particularly focusing on how the implementation of ITIL impacts operational effectiveness and strategic positioning. Studies the impacts on Business IT-alignment and considers how the processes' maturity levels impact the ITIL benefits.

3.4.1 The evaluation framework for IT service management by McNaughton et al. (2010)

McNaughton et al. (2010) strived to develop a practical and holistic evaluation framework that would be applicable for ITSM improvement efforts. First, they analyzed a variety of existing evaluation frameworks that were available back then, such as the IT Balanced Scorecard. Amongst other factors, they analyzed their applicability to ITIL, their complexity, and their level of prescription. Based on their analysis, they decided to combine common elements and expand some elements in order to make them more prescriptive and specific to ITIL. They resulted in a 2-level framework incorporating four dimensions: 1) management, technology, IT users, and IT employees. The framework is shown in figure 8below.

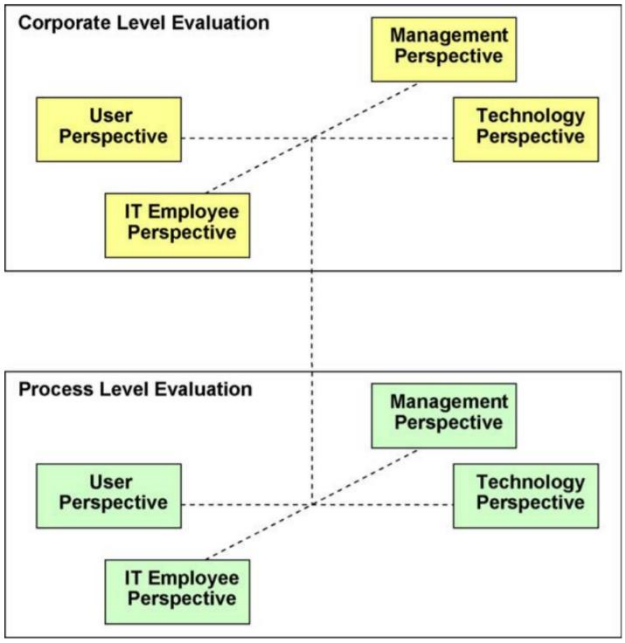

Figure 8. The evaluation framework for ITIL by McNaughton et al. (2010, 222)

As seen from the figure above, both abstraction levels include the same perspectives. The perspectives were developed based on the expected benefits for applying or improving ITSM within organizations. The Management perspective was included to ensure that areas such as financial impact, business impact, and collective user experience is considered in the evaluation. The Technology perspective helps to ensure a positive effect on areas such as technological efficiency, IT personnel and resource efficiency, and specific IT-related costs and budgets. The User perspective consists of areas such as IT service quality, expectations,

and perceptions. An IS adapted SERVQUAL was utilized for this perspective. SERVQUAL is a framework used for measuring service quality. The concept is presented later in chapter ITSM SERVQUAL framework by Cronholm & Salomonson (2014). The final perspective of McNaughton et al.'s (2010) framework, the IT Employees perspective, represent the personnel withing the IT department that are affected by ITIL-related change, such as support staff, network administrators, security personnel, database administrators, and application owners.

According to the authors (2010, 222) their framework can be used for conducting performance assessment, perform benefit realization, evaluate change, and direct future improvement. While validating the framework by using a contextual inquiry method, the authors found support for the framework's applicability outside of ITIL, especially on the Corporate level. Next, Gacenga's (2013) ITSM performance measurement framework is reviewed.

3.4.2 The ITSM performance measurement framework by Gacenga (2013)

Gacenga's (2013) doctoral thesis proposes an extensive framework for ITSM measurement. It consists of three components: 1) a model to measure the performance of ITSM at the Organizational level, 2) A contingency theory for the performance measurement of ITSM, and 3) performance metric constituents. Gacenga's model for ITSM measurement (2013, 255) consists of 5 layers, shown in table 12 below.

Table 12. Layers of Gacenga's (2013, 255) measurement model.

Layer	Performance measurement and reporting layer content
1	Business environment
2	Organization performance
3	IS organization performance
4	Performance metrics
5	Human and technology activity component metrics

The first layer considers the external and internal factors influencing the selection of metrics. The second layer considers broad economic terms (quality, productivity, and profitability) and the strategic point of view based on Kaplan & Norton's (1992, 1996a) four perspectives. Layer 3 considers the ITSM service level categorized into three areas: Service demand, Service resources, and Service offering. These areas are discussed in the next section. Layer 3 includes types of performance benefits and metrics categorized into the perspectives of people, process, resources and product and a variety of subtypes, such as customer satisfaction and process improvement. Layer 4 considers process metric constituents: outcome, stage, type, conduct and measures. Layer 5 considers human activities, hardware activities and software activities.

Based on a literature review, case studies, and a survey, Gacenga (2013, 252) identified that ITSM performance occurs in three main areas, which are 1) management of the IT service demand, 2) management of the IT service resources, and 3) management of the IT service offering. He proposed a mapping of these against the five service lifecycle phases proposed by ITIL, and resulted in providing a method for ITSM measurement that advises measuring different perspectives. For example, the intersection between the area "Management of the service demand" and the lifecycle phase "Operate the service" includes the following considerations: "Manage access to the service" and "Manage the fulfillment of service requests". Gacenga (2013, 25) Logically, this intersection points towards the typical metrics for the Service Request Management process, which mostly includes metrics for managing the fulfillment of service requests. For example, the ITIL framework proposes metrics for the process (OGC 2007a, 58).

In addition to considering the operational and tactical levels of ITSM measurement, Gacenga also extends the scope of measurement to the organizational level. For that, Tangen's (2005, 40) general areas of performance measurement (profitability, quality, and productivity) are combined with Kaplan and Norton's (1992; 1996a) BSC framework and the dimensions (service, function, process, and technology) advised by OCG, the publisher of the ITIL framework at that time. Figure 9 below presents Gacenga's (2013, 244) model for organization-level ITSM measurement.

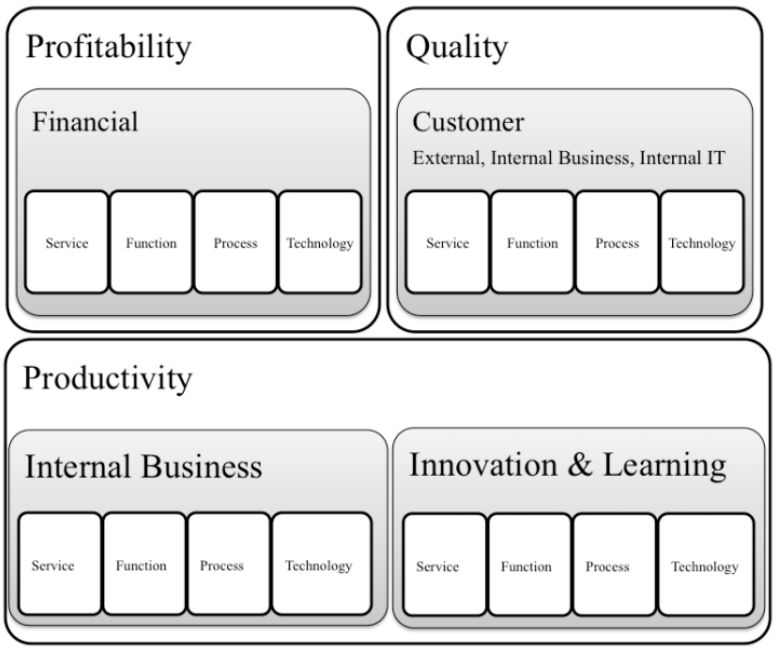

Figure 9. Gacenga's (2013, 244) model to measure ITSM performance on organization level

The purpose of the model's structure is to provide organization-level insight of the ITSM performance to top-level management by categorizing the metrics into Profitability, Quality and Productivity. The BSC perspectives are mapped to these areas, and each of the BSC perspectives then includes the service, function, process, and technology dimensions for measuring operational level performance. (Gacenga 2013, 244-245) By mapping the BSC perspectives to Tangen's general areas, a linkage of metrics may be established between the organization level and the operational levels. Also, it helps to communicate, which makes this model valuable. Although, in some cases, this kind of mapping may restrict in creation of linkages of metrics that demonstrate cause-and-effect relationships between the operational and organizational levels. For example, the Internal Business could contribute to the high-level area of Quality, which the proposed model would not allow by default.

The contingency theory in Gacenga's framework proposes how ITSM performance metrics should be selected based on performance dimensions, sample metrics, external contingency factors, and internal contingency factors. The model is shown below in figure 10

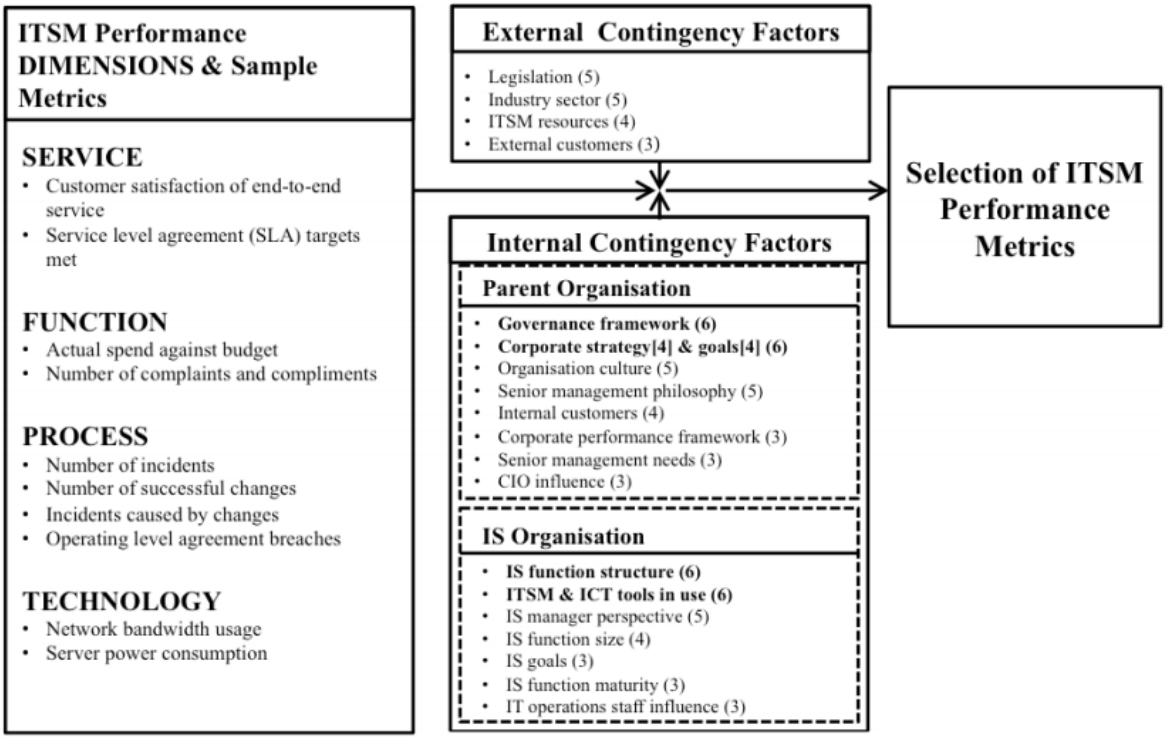

Figure 10. Gacenga's (2013, 227) model for selecting ITSM performance metrics.

This model, shown in figure 10 above is adapted from the IS Assessment Selection Model by Myers et al. (1997, 66), which in turn is adapted from the IS Function Performance evaluation Model by Saunders and Jones (1992, 66). It allows organizations to select suitable metrics by starting from sample metrics and considering external and internal factors that may affect the selection of metrics. It highlights the influence of individual preferences in the selection of metrics since it considers factors such as CIO influence, senior management needs, senior management philosophy, IS manager perspective, and IT operations staff (Gacenga 2013, 229). The model seems to provide helpful information on what influences or should influence the selection of metrics. Still, instructions or a process for selecting the metrics based on the factors could be helpful for organizations. Next, the model proposed by Marcos et al. (2012) is presented.

3.4.3 The ITSM BSC by Marcos et al. (2012)

The ITSM BSC framework by Marcos et al. (2012) strives for better integration of IT and business and builds on Van Grembergen's (2000) IT BSC. As the original BSC by Kaplan & Norton (1992, 1996a), also the ITSM BSC is more than just a measurement framework – it serves as a management tool for strategic planning and strategy deployment. The need for the ITSM BSC framework was motivated by findings from a survey executed in Spain, which indicated that there is room for improvement in the Business-IT-alignment, business planning, and innovation, amongst other areas.

The framework has five layers: 1) environment, 2) future, 3) operational, 4) IT user & IT customer, and 5) financial. The "environment" layer considers factors such as information technology leaps, social aspects, and macroeconomic aspects. The second layer labeled as "future" is adapted from Kaplan & Norton's (1992, 1996a) "Innovation and Learning" perspective. It bases on the idea that there are resources and capabilities that must be adapted for the future. The concepts of resources and capabilities in the IT context have been borrowed from ITIL V3. In addition to the resources and capabilities, people have been added as the third aspect of this layer. The third "operational" layer includes the ITIL V3's service lifecycle phases: service strategy, service design, service transition, service operation and continuous improvement. The fourth layer, "IT User & IT Customer," measures concepts that are also familiar from ITIL V3: utility (requirements coverage, outcomes, and constraints) and warranty (availability, capacity, continuity, and security). (Marcos et al. 2012, 4974-4888). In the ITIL context, utility describes the functionality of a product or service to meet a particular need. Warranty means a promise or a guarantee that the product or service will meet its agreed requirements. (OGC 2007b, 314-315) The fifth layer labeled as "financial" considers the financial aspects of strategic innovation, IT governance, operational efficiency, and IT funds. (Marcos et al. 2012, 4976)

The aspects on each layer mentioned above include objectives or alternatively objects for measurement. The People aspect in the "future" layer (2) and the IT governance aspect in the "financial" layer (5) lack these. Some of the objectives and objects for measurement are quite clear – for example, the processes included in the lifecycle phases on the "operational"

layer are clear measurement objects, since the academic and industry literature provide metrics for the processes. On the other hand, it is not evident how some of these aspects should be measured, even though they contain objectives.

Like Van Grembergen's (2000) IT BSC, also the ITSM BSC consists of a cascade of BSC's that strive to link business and IT. It views IT as a service provider, regardless of whether it is internal or external. The cascade of scorecards consists of three levels: a top-level IT BSC, which is linked to "IT Governance", "IT Design & Transition," and "IT Operation" BSC is on the second level. These, in turn, are linked to "Area or line service BSC's," "ITIL process BSC's," or "Market space BSC's" on the third level. (Marcos et al. 2012, 4978) The BSC cascade is shown in figure 11 below.

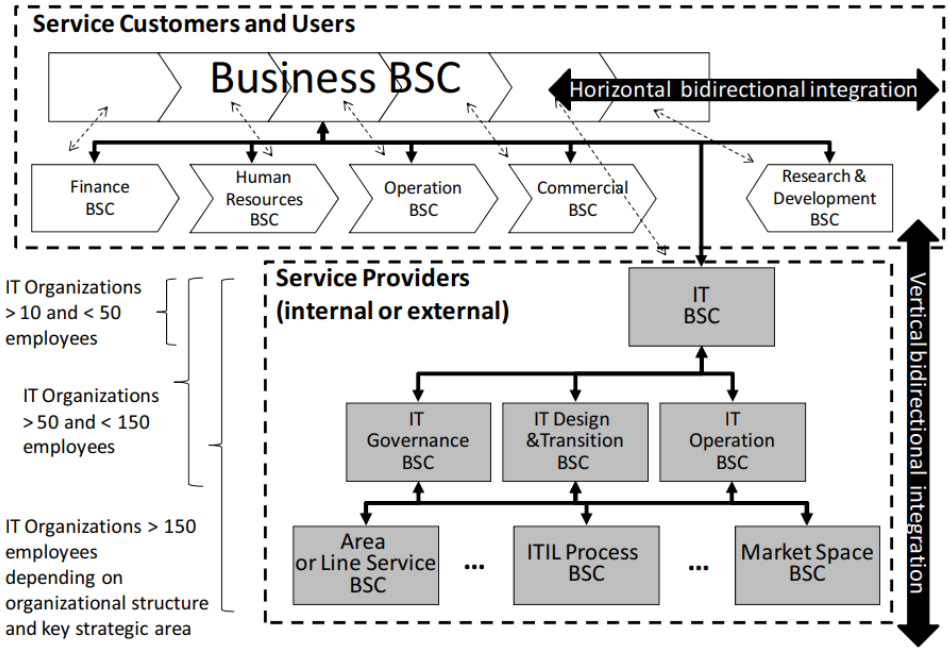

Figure 11. A BSC breakdown for ITSM by Marcos et al. (2012, 4978)

The arrows seen in figure 11 above describes the linkages between strategic, tactical, and operational levels. According to Marcos et al. (2012, 4977), "the alignment between strategy and operations is facilitated because strategy deployment through ITSM BSC translates strategic objectives into tactical objectives, and these into initiatives." Additionally, the framework emphasizes the need for vertical integration between IT and business and horizontal bidirectional integration to improve the integration inside IT and between all

business functions. Though, it does not instruct in detail how the horizontal bidirectional integration could be achieved.

As seen from figure 11 above, the framework is scalable because it is suitable for companies of different sizes – it includes recommendations on the scope of cascaded BSC's for different company sizes starting from 10 employees. This seems like a unique feature, which is not seen in the other frameworks reviewed in this study. Next, Cronholm's & Salomonson's (2014) ITSM SERVQUAL framework is presented.

3.4.4 The SERVQUAL and ITSM SERVQUAL frameworks

The ITSM SERVQUAL framework builds on the original SERVQUAL framework by Parasuraman et al., which was created in 1998 and refined three years later in 1991. Before presenting the ITSM SERVQUAL, a description of the original and refined frameworks follows. Parasuraman et al. (1988, 12) state that measuring consumer's perceptions of service quality is an appropriate approach for assessing the quality of a firm's service due to the lack of objective measures. The SERVQUAL scale was derived from previous research on service quality and was developed in 11 steps. It can be used for improving service by understanding the service expectations and perceptions of consumers. The framework bases on a 22-item scale, which represents five determinants: 1) tangibles, 2) reliability, 3) responsiveness, 4) assurance, and 5) empathy. The instrument itself is a questionnaire that bases on 22 items for measuring customers' expectations of companies within a specific sector and 22 perception statements, to which the respondent should respond with a scale from one to seven. (Parasuraman et al. 1988, 23-30; 1991, 421)

SERVQUAL was refined in 1991 based on findings from a second study involving customers of five companies: a telephone company, two insurance companies, and two banks. Based on the findings, the wordings of the expectation statements were refined to ensure realistic expectation scores. Also, since some of the statements had negative wording, which caused wide variation and confusion, the wordings of statements were changed to positive from negative. Finally, some items were replaced with new ones. (Parasuraman et al. 1991, 421-424)

The authors of the SERVQUAL framework stated that it could be adapted to the characteristics or specific research needs (Parasuraman et al. 1988, 31). Cronholm and Salomonson (2014) went further than just adapting it – they proposed an improved version based on a study involving 5 Swedish IT service providers and their customers. Their purpose was to propose a SERVQUAL for the ITSM context that bases on a customer perspective, since they claimed that current ITSM frameworks include metrics that are based on a service provider perspective (Cronholm & Salomonson 2014, 61). They added, modified, and confirmed attributes of SERVQUAL but also changed the structure by adding a third level for clearer categorization of items (Cronholm & Salomonson 2014, 62-63). An example of a modified attribute is "Calling the customer back quickly." As it measures just the speed and does not consider what has been agreed upon in a service level agreement (which are used in ITSM), a new attribute, "Giving service according to the agreed service level," was added.

The SERVQUAL for ITSM has a four-level structure: determinants, categories, attributes, and examples of customer experiences, which are actual citations from Cronholm's & Salomonson's (2014) study. The structure and two examples are shown in figure 12 below.

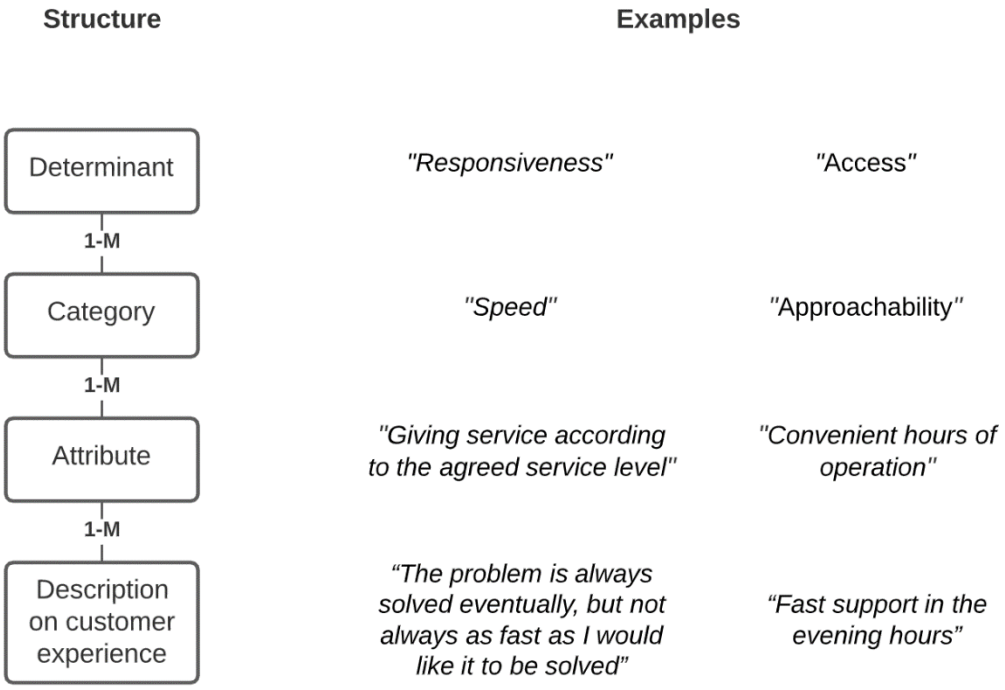

Figure 12. Structure of determinants, attributes, and customer experiences Cronholm's & Salomonson's ITSM SERVQUAL (2014)

The SERVQUAL for ITSM utilizes the ten determinants that were condensed to five in the original framework. These are Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding the customer, and Tangibles. Each of these determinants includes one or many categories, which in turn include one or many attributes. The attributes include one or many citations from Cronholm's & Salomonson's (2014) study that demonstrates the attribute's actual meaning for the customer. The authors state that "the suggested measurements should be seen as a complement to existing measurements, and they are primary suggested to improve questionnaires." (Cronholm & Salomonson 2014, 61-70) Therefore, the proposed determinants and attributes can be used as basis for measuring customer satisfaction in the ITSM context. Next, ITSM measurement approaches from industry sources are discussed.

3.4.5 ITSM Measurement approaches and metrics from industry sources

For including a practitioner perspective in the literature review, also industry sources were included. ITIL, the de-facto framework for ITSM, was also reviewed. The reviewed industry literature is presented in table 13 and described briefly in the following sections.

Table 13. Industry sources related to ITSM measurement

#	Source	Title	Short description
1	Axelos, 2019	ITIL 4 Foundation	An ITIL 4 foundation-level publication that describes the framework. Includes considerations for ITSM measurement.
2	OGC, 2007a	Continual Service Improvement	The ITIL v3 publication describing the ITIL Continual Service Improvement Process. Includes considerations for service measurement and service management measurement.
3	OGC, 2007b	Service Operation	The ITIL v3 publication describing the ITIL Service Operation processes. Includes considerations for metrics for each process.
4	Steinberg, 2013	Measuring ITSM	A book on ITSM metrics. Defines i.e. a metric model and a selection of process-level metrics. Provides a practitioner / consultant point of view.
5	McWhirter & Gaughan, 2012	The definitive Guide to IT Service Metrics	A book in ITSM metrics, that applies ITIL, ISO/IEC 20000 and Project management practices to ITSM measurement. Proposes a framework for deriving metrics. Provides a practitioner consultant point of view.

The Foundation publication for the latest ITIL version (ITIL 4) touches the topic in its Measurement and reporting process by recommending a clear relationship between high-level and subordinate goals and the objectives that relate to them. For defining the metrics, the well-known structure of Critical success factors (CSF) and corresponding Key performance indicators (KPI) are recommended. The other ITIL 4 publications were not available. Therefore the older ITIL v3 publications (OGC, 2007a; 2007b) were reviewed.

The ITIL v3 Continual Service Improvement publication (OCG 2007a) provides advice for service measurement. Services, components, service management processes that support services, activities within the processes, and outputs are possible objects for measurement. The importance of a balanced, accurate, and unbiased combination of measures that are linked to business is emphasized. Critical elements of a service measurement framework are also presented. Those include considerations for the measurement framework itself, for the performance measures, performance targets, and roles and responsibilities. A service measurement framework is proposed to consist of the following levels: 1) component level, 2) KPI's, 3a) Service Scorecards for history information, 3b) service dashboards for real-time information, and 4) an IT scorecard or balanced scorecard. In addition to the service measurement framework, also a company-wide measurement approach is proposed. It consists of four levels: 1) Core business measures, 2) IT Core Strategic Measures, 3) IT Management Process Measures, and 4) IT Operational Measures. (OCG 2007a, 56)

It is noteworthy that the Balanced Scorecard framework is recommended for measuring overall IT performance by cascading it down from the SBU level. (OCG 2007a, 107-109).
The ITIL v3 Service Operations publication defines metrics for each process. Examples of metrics for the Service Request management process are: "the mean elapsed time for handling each type of Service Request", "level of client satisfaction with the handling of Service Requests," and "the number and percentage of Service Requests completed within agreed target times." (OGC 2007b, 58) These metrics are solely process metrics – the topic of service measurement is discussed separately from the process level in the Continual Service Improvement publication (OCG 2007a, 107-109). However, no methods for creating linkages between the process metrics and service metrics are provided. Another finding was that critical success factors are presented for each process, but no linkages or means for creating linkages between the CSF's and the process metrics were presented.

Both Steinberg (2013) and McWhirter & Gaughan (2012) propose the well-known approach based on CSFs and KPI's. Steinberg's (2013, 19-33) approach is labeled as a starting point for measuring ITSM. It has four levels: 1) Operational metrics, 2) Key performance indicators, 3) Critical success factors, and 4) Dashboard metrics. Instead of a typical top-down approach, the metrics are derived from the operational level upward via KPIs to CSFs

and finally to dashboards. This approach seems to differ from the widely recognized idea of guiding the operative level with strategic goals and visions.

McWhirter & Gaughan (2012, 23) proposes a process for deriving metrics. It consists of a 6-step process: 1) Understand requirements and outcomes, 2) Determine metrics, 3) Verify metrics, 4) Determine tools for measuring and collecting metrics, 5) re-evaluate metrics with tools, and 6) Implement metrics. The framework is presented as a starting point for creating its own method – it does not intend to be complete or extensive. The process is based on ITIL's 7-Step Improvement Process (OCG 2007a, 43-56), which in turn is based on the PDCA cycle. In addition to the process for deriving metrics, McWhirter & Gaughan (2012) propose a collection of metrics for each ITIL process and function. These are derived from ITIL-based CSF's but differ from the ITIL metrics.

As essential parts of performance measurement and ITSM measurement literature have been reviewed and presented in the previous chapters, a theoretical base for the present study has been formed. The theoretical framework of the study is presented in the next chapter.

4 THEORETICAL FRAMING OF THIS STUDY

In order to propose a measurement framework for ESM, existing theories and models from the domains of performance measurement and ITSM measurement were reviewed. This chapter describes the relations of existing theories and the present study and describes why an ESM measurement framework is needed. As mentioned in the Introduction, no established definitions and research literature on ESM were found. Due to this, a definition for ESM was proposed based on existing ITSM definitions. Because of the lack of research literature, the closely related ITSM measurement literature was used as part of the theoretical base of the study. This, combined with performance measurement theories, form the theoretical foundation of the study, which is illustrated in figure 13 below.

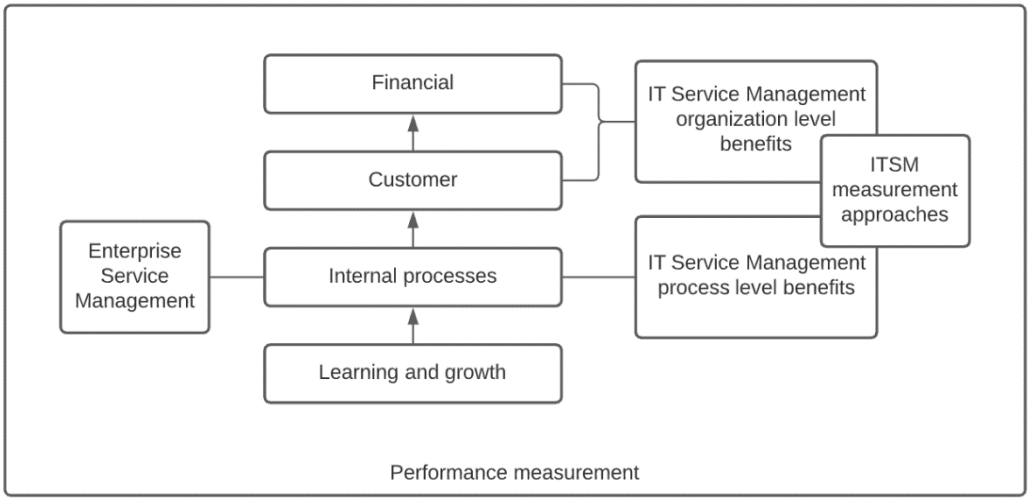

Figure 13. Theoretical framework of the study

As described in chapter 2, multidimensionality is emphasized in the performance measurement literature. Kaplan & Norton's (1992; 1996a; 1996b; 2004) dimensions and their proposed causal relationships have gained popularity amongst researchers and practitioners. The method of measuring performance through these dimensions has also been applied in the IT and ITSM contexts, of which the latter in closely related to ESM. Van Grembergen (2000) and Addo et al. (2004) have applied Kaplan & Norton's BSC methodology to the IT context, and later, Marcos et al. (2012) and Gacenga (2013) have applied the methodology to the ITSM context. Gacenga (2013) has also proposed approaches

for quantifying both organization level and process level benefits of ITSM, based on these aforementioned dimensions and processes proposed by the industry sources.

ITSM contributes to internal processes (Marrone & Kolbe 2009, 375-376; Gacenga 2013, 153) and provides benefits on the organization level (Gacenga 2013; Marrone & Kolbe, 2010; Huang et al. 2011; Hochstein et al. 2005). When organizational performance is viewed based on Kaplan & Norton's BSC dimensions, it could be argued that ITSM contributes to at least to the internal process, customer, and financial perspectives. Marcos et al.'s (2012) and Gacenga's (2013) ITSM performance measurement approaches strive to measure the impact on these perspectives by measuring organization-level performance and process-level performance. While ITSM can be defined as a set of policies, processes and procedures for managing the implementation, improvement, and support of customer-oriented IT services (White 2019, 1), ESM addresses the management of internal enterprise services, such as HR Service Management, Finance Operations Management, Facilities management, and Field Service Management (Bryan, Garnier & Co 2021, 11).

As seen from figure 13 above, the ITSM measurement theories were viewed as part of the performance measurement research area. Performance measurement research literature was reviewed in chapter 2 and was used in this study for providing theories for performance measurement approaches, the causal relationships of performance dimensions, and for understanding how ITSM and ESM can contribute to organization-level performance.

Since ITSM and ESM are related but separate domains, it was reasoned that they could be measured by using similar methods. This justifies the usage of ITSM measurement approaches as a theoretical base for the ESM context. Although ESM is a separate domain, and it is not clear whether ITSM measurement approaches can be directly applied to ESM. ESM has gained interest in organizations during recent years (Gartner 2018, 5). While ESM development and implementation initiatives become increasingly common, methods for measuring ESM performance become essential. This study makes an important contribution to the scarce ESM literature by proposing methods for ESM measurement.

5 METHODOLOGY

Designing a coherent research project requires an understanding of the epistemological, ontological, axiological assumptions that guide the selection of research methods, the research strategy, data collection techniques, and analysis procedures (Saunders et al., 2015, 124-125). This chapter discusses the underlying assumptions, describes the methodological choices, and describes how the research questions will be answered. Finally, the reliability of the results is discussed.

5.1 Research approach and methods

This study contributes to ESM research and organizations applying ESM solutions by proposing a practical starting point for ESM measurement. There is little or no existing research on the topic and little industry literature that could guide organizations in measuring their ESM activities. An underlying thought is to help the case company's customer organizations to take more advantage of ESM practices and develop them in the long run. Due to these reasons, the research employs a pragmatic approach. Pragmatism considers theories, concepts, ideas, hypotheses, and research findings regarding their practical consequences in specific contexts (Saunders et al., 2015, 143). Other research philosophies were considered, but the pragmatic approach was seen as most suitable when the aim of the research, the researcher's values, and the research questions were considered.

In addition to the underlying philosophical assumptions, the research questions can also guide the selection of research methods (Hirsjärvi and Hurme 2015, 27). According to Saunders et al. (2015, 164), the first methodological choice is whether a quantitative, qualitative, or mixed methods research design is used. On the highest level, methodological options can be divided into mono-method and multiple method studies. Mono-method studies use either a quantitative or qualitative method. Multiple method studies can be split further into multi-method and mixed methods studies. Multi-method studies use more than one qualitative or quantitative data technique but do not mix the two. (Saunders et al. 2015, 167-169) Research methods can also be mixed, and the methods can be combined in various ways: sequential exploratory, sequential explanatory, sequential multi-phase, iterative,

concurrent, and integrated ways can be used for combining methods (Saunders et al. 2015, 169-171; Hirsjärvi and Hurme 2015, 30-31).

In addition to assessing the philosophical assumptions and methodological choices, also the usage of research strategies was planned for. Strategies used with qualitative research are action research, case study, ethnography, grounded theory, and narrative research (Saunders et al. 2015, 169). Ørngreen and Levinsen (2017, 79) studied the use of workshops as a research methodology. They concluded that there is not much data on workshops-as-a-research-methodology, but that workshops "…inspire new insight into the research domain in question, and that they do so in ways that other research methods cannot."

This study used a sequential mixed method approach for collecting and analyzing data. First, a survey was used for describing ESM and ESM measurement practices in organizations. The survey combined quantitative and qualitative techniques and was used for creating an initial proposal, which was later developed further with participants. The survey was followed by workshops with two organizations—the workshops aimed at gathering qualitative data and for working towards a solution together with the participants. The data collection techniques are discussed in the next section.

5.2 Data collection

The study uses a combination of a survey and workshops due to multiple reasons, which are described in this section. There were also multiple purposes for using a survey prior to arranging the workshops with the participants. Surveys can be used for answering 'what,' 'who,' 'where,' 'how much', and 'how many' questions, and they allow the collection of standardized data from a sizeable population in a highly economical way (Saunders et al. 2015, 181). According to Hirsjärvi and Hurme (2015, 32), research methods can be used as triggering methods and complementary methods, amongst others. A research method can be used for triggering or inspiring the research process. In this study, the purpose of using a survey was to trigger and inspire the empirical phase of the study but also had a complementary purpose. By gathering and analyzing quantitative data related to the extent and characteristics of ESM, the survey triggered the empirical part of the research and

provided further confirmation for the need for an ESM measurement framework. The complementary purpose of the survey was twofold: it was used for supporting the process of building an initial proposal by providing information on ESM measurement practices. Also, it was used for proving a more comprehensive view of ESM and ESM measurement since it expanded the view to a larger number of organizations, compared to the usage of just the workshops with two organizations. The survey results were analyzed, and the results were used for creating a starting point (the initial proposal) in combination with the first workshops (current state analysis workshops). Figure 14 below provides a summary of the research methods and linkages between them.

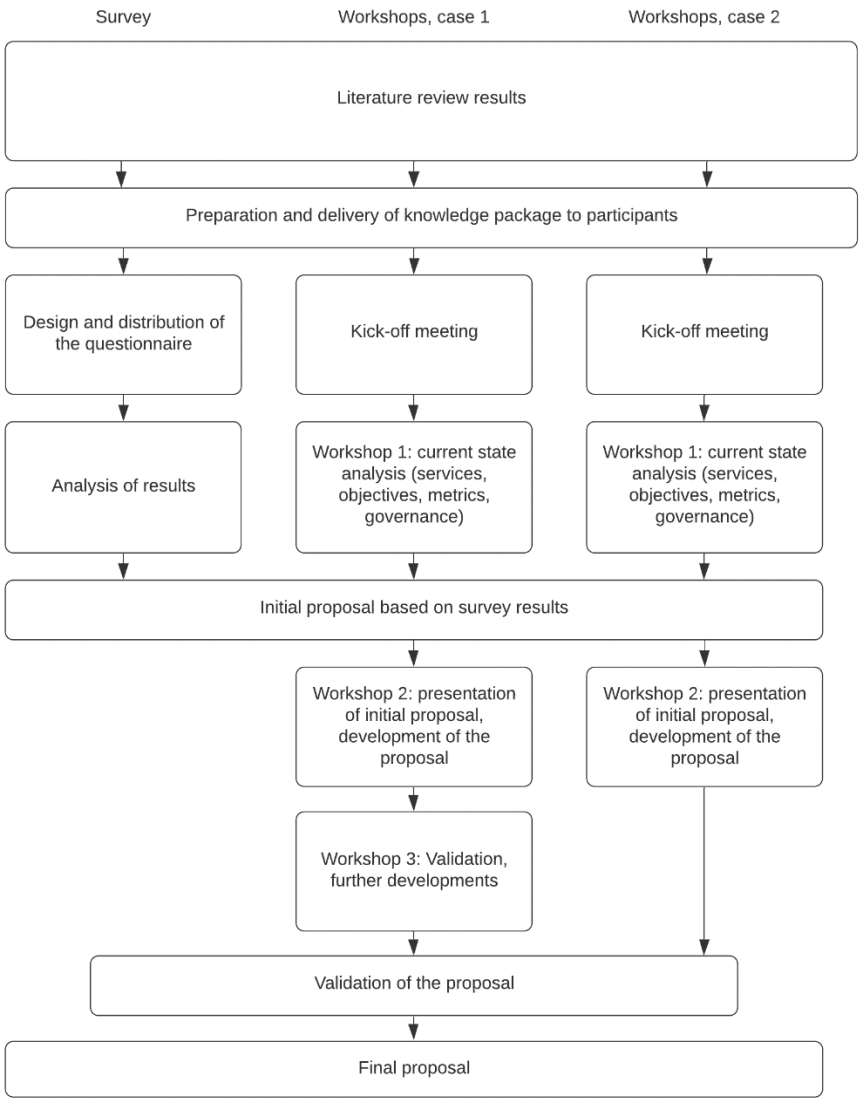

Figure 14. Overview and linkages of used methods for creating the proposal.

According to Ørngreen and Levinsen (2017, 71) "…workshop means an arrangement whereby a group of people learn, acquire new knowledge, perform creative problem-solving, or innovate in relation to a domain-specific issue." Ørngreen and Levinsen (2017, 73) also describe the aim of using workshops as a research method: "Workshops as a research methodology aims to produce reliable and valid data about the domain in question regarding forward-oriented processes, such as organizational change and design." The epistemological and axiological assumptions behind the choice of using workshops as one of the research methods are related to the practical worldview of the researcher and the experience drawn from the researcher's consulting work. Based on the author's personal experience, workshops seem to be an effective method for solving practical problems together with customers or colleagues. The choice of using a pragmatic approach did also motivate the usage of workshops.

In addition to factors discussed in the sections above, also practical constraints affect the making of methodological choices (Saunders et al., 2015, 209). As the research was carried out in the form of a master's thesis, the time horizon was limited to a few months during the winter and spring 2020-2021. Involving organizations in the study was also considered as a constraint – the challenge of finding organizations that would be willing to invest their employees' time in participating in workshops was a factor that was considered. Next, the survey used for data collection is described.

5.2.1 Survey for describing ESM, ESM benefits, and ESM measurement

A survey was used to gather information from organizations to build an initial proposal, which was used as a starting point for the workshops. The survey used a web-based questionnaire sent to the case company's customers that had previously shown interest in helping the case company develop its services. Therefore, not all organizations were necessarily providing, managing, or measuring Enterprise Services. However, this was considered when designing the questionnaire by utilizing response-based branched questions. The organizations had shown their interest in helping the case company develop its services in a previous survey: a yearly customer satisfaction survey measuring the Net Promoter Score and other customer satisfaction-related factors.

The present study's questionnaire was sent to 79 recipients representing 60 organizations. The recipients represented several organizational levels from specialists to middle managers. Examples of titles were "IT-specialist," "IT-coordinator," "System manager," "Head of Department", "Development manager", "Head of IT", "Support service manager," and "Service manager." The common denominator of the recipients was that they were involved with the use or development of their service management tool. The distribution between recipients' countries is presented in table 14 below. The distribution between the countries is roughly in line with the case company's overall customer country distribution.

Table 14. Distribution of questionnaire recipients

Country of organization	Number of recipients	% of total recipients
Sweden	4	11,7 %
Germany	8	13,3 %
Finland	45	75 %
Total	60	100 %

The web-based questionnaire was built by using the Google Forms tool. Google Forms was selected as a tool over the Microsoft Forms tool due to more flexible features related to building questions, mainly grids with multiple columns and rows. The grid was required for collection responses for the benefits of each process. The questionnaire gathered basic information about the respondents' organization for providing the possibility to analyze the results thoroughly. The questionnaire gathered information related to 6 main topics: current enterprise services, current utilized processes outside of the IT scope, perceived benefits, used metrics, utilized measurement frameworks, and ensuring that the right services are provided and managed. The questionnaire logic is presented in figure 15 below.

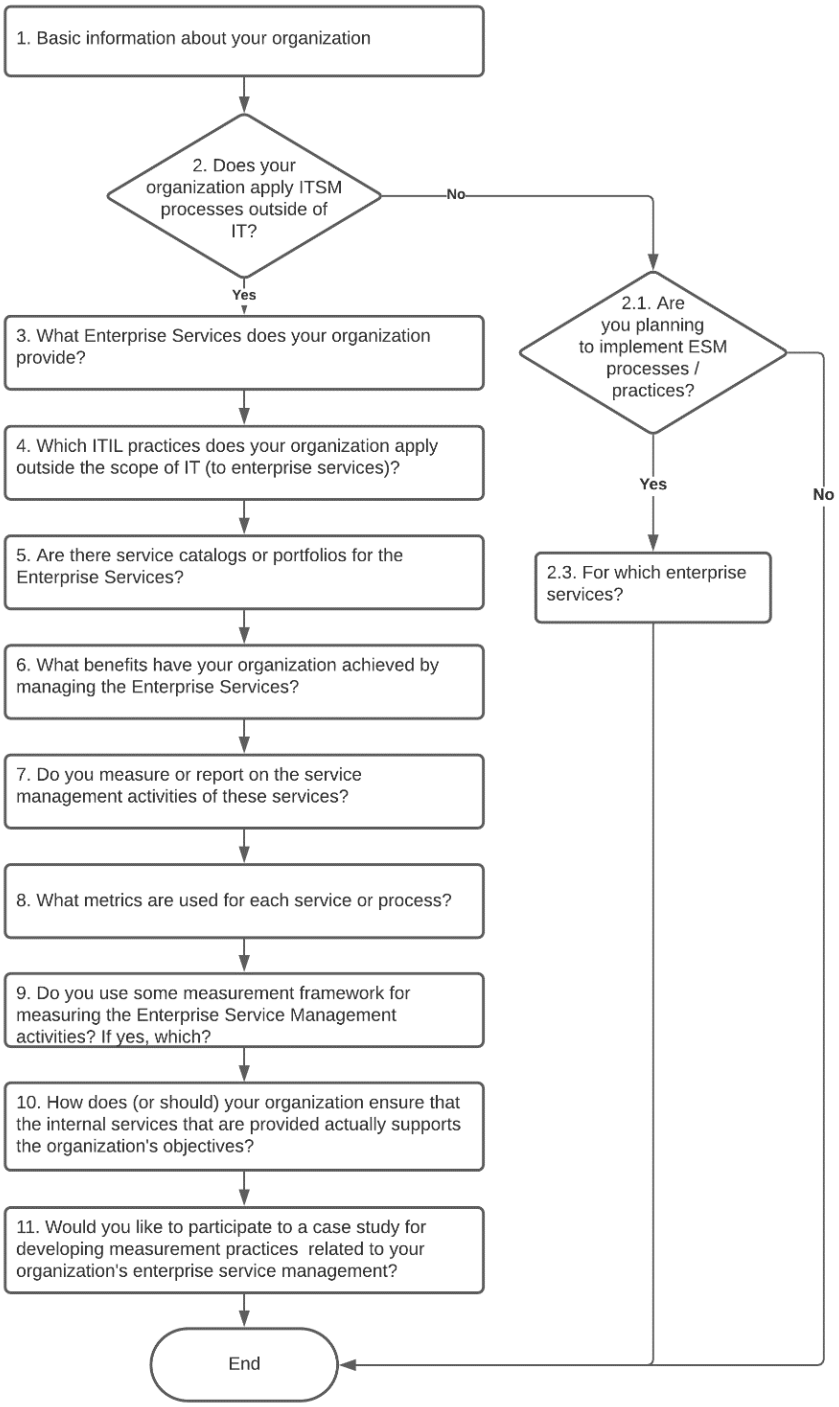

Figure 15. Questionnaire diagram

The main parts shown in figure 15 above are main themes, and one part may include more than one question. The purpose of parts 2…5 was to gather information on what are the most common high-level categories (such as HR and FINA) of enterprise services and what ITIL

processes are possibly applied for managing and delivering the services. The list of enterprise services was gathered by utilizing multiple sources: Bryan, Garnier & Co's report (2021), Garter's report (2018), and the case company's Enterprise Service Management solutions (Efecte HR Service Management, n.d., Community Solutions, n.d.). The list of ITIL practices for topic four was sourced from the ITIL 4 Foundation book (Axelos, 2019). The purpose of the questions above was to support defining the scope of the proposed framework in terms of included processes and metrics.

The benefits listed in table 9, which were aggregated from Gacenga (2013), Marrone & Kolbe (2010), Huang et al. (2011), and Hochstein et al. (2005), were used in part 6. of the questionnaire. The purpose was to gather information on the perceived benefits for each enterprise service that leverages processes usually used in the ITSM context. This information was then utilized to design the structure of the proposed framework and plan the proposed measurement areas.

5.2.2 Workshops and presentation of case organizations

The study used workshops as a method for building the proposal. Five workshops were held with two separate organizations that utilized ESM practices but wanted to develop their measurement practices. Case organization A is a Finnish university that provides a multitude of different services for employees and students. Representants from two units were involved. The first unit provides internal "university services" for employees and has a service desk for serving the employees. The second unit is part of the first one and provides services for students. It provides services locally at the university's campuses and has a centralized service desk that provides support and guidance for students related to studies and other areas. The teams were using a shared ITSM/ESM solution for managing requests.

Case company B is a retail company that uses a shared support and service management model for ITSM and ESM. The company manages and provides enterprise services related to the company's core business processes. Examples of these are retail management services, store support services, and master data management services. The company does also manages and provides common enterprise services related to HR and Payroll. The shared

support services have two common service channels: an email address and a shared self-service portal. Both channels are connected to the ITSM/ESM solution. Basic information of the case organizations is presented in table 15 below.

Table 15. Basic information on the case organizations.

Case	Branch of business	Turnover (MEUR)	Number of employees	Scope of ESM
Case A	Education	1000	8100	Request fulfillment for various business services in several units
Case B	Retail	284,4	1 162	Request fulfillment for: -Retail management and support services -Master data management -HR services -Payroll services -Insurance claims and accident reports

The Case A workshops had 5 participants. The participants worked in two teams and had the following job titles: unit manager, project manager, planner, coordinator, and information system project manager. Therefore, they represented low-level management and specialists. The Case B workshops had 2 participants: the company's Chief Operating Officer and the Director of Core Solutions and Service Operations.

In order to prepare the participants for the workshops, an information package was made and delivered to the participants a few weeks before the workshops. The information package was delivered in the form of a Microsoft Sway presentation and included information on Performance measurement and Service management measurement. It presented basic concepts and principles of performance measurement and briefly introduced common frameworks, including the BSC, The Dynamic Performance Measurement System, IT BSC, and SERVQUAL.

Three workshops were held with Case A: a current state analysis workshop, a development workshop, and a final workshop to validate the proposed solution and develop it further. Chapter 6.5 describes the validation of the proposal in more detail. Next, the data analysis is discussed. Two workshops with similar content were held with Case B. The workshop scheme is presented in table 16 below. The validation of the proposal is described in section 6.5.

Table 16. Workshop scheme

#	Case	Workshop	Date and time
1	Case A	WS1: Current state analysis	16.03.2021 12:00-14:00
2	Case B	WS1: Current state analysis	25.03.2021 15:00-16:00
3	Case A	WS2: Development of the framework	25.03.2021 12:00-14:00
4	Case B	WS2+WS3: Development of the framework. Validation of the results.	29.03.2021 10:00-11:00
5	Case A	WS3: Validation and development of the proposal	07.04.2021 13:00-14:00

The common goal of the workshops was to work towards finding solutions to the research questions together with the participants. The goal of current state analysis workshops was to gain a common understanding of the following areas:

- What Enterprise Services are provided and managed?
- How are the services managed, governed, and measured?
- If services and service management activities are measures, are the metrics and goals linked to organization-level metrics and goals?
- How the services and service management activities should be measured according to the participants

An initial framework was built based on the survey results and the first workshops—the second workshops aimed at developing the initial proposal towards a final version. The author presented the initial proposal in detail for the participants. Then, its structure, linkages, and measurement areas were discussed and developed. This included testing the framework's structures and measurement areas with the case organizations' actual goals, metrics, and linkages. Next, the data analysis is discussed.

5.3 Data analysis

Data gathered by using the selected research methods must be processed to turn them into information. Quantitative data is based on numerical and standardized data. Therefore, quantitative analysis techniques include tables, graphs, and statistics. Qualitative data is based on meanings expressed through spoken and textual words and images, and the collection of data results in non-standardized data that requires classification into categories. (Saunders et al. 2015, 496, 568). In this research, a mixed-method approach was applied. The quantitative data produced by the survey was used for describing the extent and characteristics of ESM and ESM measurement. The data were very straightforward and were therefore analyzed by using tables, bar charts, and stacked bar charts.

The survey produced qualitative data related to ESM measurement practices. The data were analyzed by using a content analysis approach: results were assigned to categories, and the frequency of mentions was calculated, which Hirsjärvi and Hurme (2015, 172) describe as the simplest method of analysis. The workshops also produced qualitative data in the form of workshop notes, which included notes on the current state and the participants' views on ESM measurement practices. Since the proposal was partially developed in the workshops together with the participants, the purpose of the workshops was not to gather qualitative data.

5.4 Reliability of the results

Hirsjärvi & Hurme (2015, 23) states that in qualitative studies, the researcher and the objects under research do interact with each other. For example, interviews consist of the cooperation between the interviewer and interviewee. In quantitative studies, the researcher and the objects under research may be better isolated, and thus the researcher's influence on the results may be less significant. Although, it must be considered that questionnaires for gathering quantitative data may also reflect the researcher's views. (2015, 23).

As described in the previous chapters, this study combines quantitative and qualitative methods and uses a survey and workshops as research strategies. Using a mixed-method

approach may help improve the generalisability of the results, establish credibility, and produce more complete knowledge (Saunders 2009, 170). However, it is essential to note that in the selected approach of this study, the researcher develops the proposal in cooperation with the workshop participants. Thus, the researcher's views have a direct impact on the results. For ensuring that the proposed framework serves the needs of the case companies, the proposal is validated by using an interview.

This chapter described the methodological choices, the approach for data collection, and data analysis. A mixed-method design that used a survey and workshops was selected for answering the research questions. Practical constraints, such as time and the possibility to involve organizations, were also considered. In the next chapter, the results, the process of building the proposal, and the proposal itself are presented.

6 RESULTS AND DEVELOPMENT OF THE FRAMEWORK

The following subchapters describe the results of the study. After presenting the survey results, workshop results, and the results of the validation interviews in separate chapters, the final proposal is presented. A description of the development process follows this. The description maps the literature review findings, survey results, and workshop results with choices made during the development of the proposal, and therefore motivates the features of the proposal.

6.1 Survey results

The questionnaire resulted in 20 responses from 20 organizations. Most organizations were large – 13 (65 %) respondents represented organizations with more than 250 employees, and 12 (60 %) of the organizations had a yearly turnover above 40 M€. The organizations represented a variety of industry sections. The sectors “Information and communication” (6 responses), “Public administration and defense” (3 responses), “Human health and social work activities” (3 responses), “Education” (2 responses), and “Administrative and support service activities” (2 responses) gained more than one response. The rest of the responses were scattered to other sectors. The number of staff and yearly turnover categories are shown in tables 17 and 18 below.

Table 17. Number of staff of respondent organizations

Number of staff	Number of respondents	Percentage of respondents
< 10	0	-
< 50	1	5 %
50-250	6	30 %
> 250	13	65 %
Total	20	100 %

Table 18. The yearly turnover of respondent organizations

Yearly turnover	Number of respondents	Percentage of respondents
< 0,7 M€	1	5 %

< 12 M€	3	15 %
< 40 M€	4	20 %
> 40 M€	12	60 %
Total	20	100 %

12 respondents (60 %) responded that their organization applies ITSM processes or tools outside of IT. The responses to the next question "*What Enterprise Services does your organization provide?*" were distributed to several service categories, while HR-services gained most responses. Figure 16 below shows the distribution of responses.

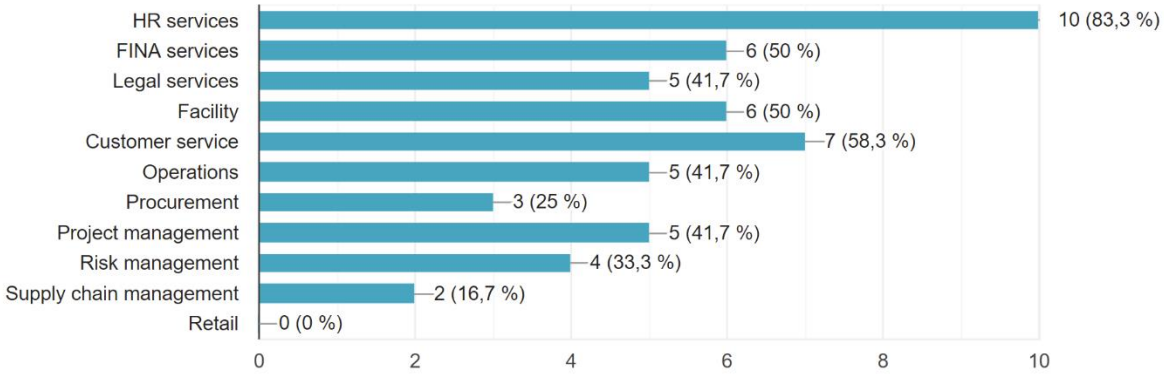

Figure 16. Responses to question "What Enterprise Services does your organization provide?"

The responses show the variety of enterprise service categories that are provided in organizations. Even though the survey results did not indicate exactly what services these categories included, it sheds some light on what service categories would be in the scope of enterprise service management activities. It should be noted that the number of responses to the "HR services" category may have been affected by the fact that the service provider has productized, marketed, and provided such solutions during the last years.

Six organizations did not apply ITSM processes or tools outside of IT. Two respondents did not know whether their organization does apply ITSM processes or tools outside of IT. Of these eight respondents, three were planning to implement ESM processes, and four were maybe going to do so. Only one organization was not going to apply ITSM processes or tools outside of IT. Those respondents who were planning to implement ESM considered

implementing services for supporting HR, FINA, customer service, operations, project management, risk management, and supply chain management.

The question "*Which ITIL processes/practices/functions does your organization apply outside the scope of IT (to Enterprise Services)?*" did result in a broad range of responses. 11 of the 12 respondents that applied ITSM processes or tools outside of IT, uses the Service request management process or practice (in ITIL v4 the processes are referred to as practices). This was expected since HR services were the most common category of service (see figure 16 above), and since HR service management involves the management of employee requests (Bryan, Garnier & Co 2021, 11). The Incident management process and the Service desk function were also common. The distribution of responses is shown in figure 17 below.

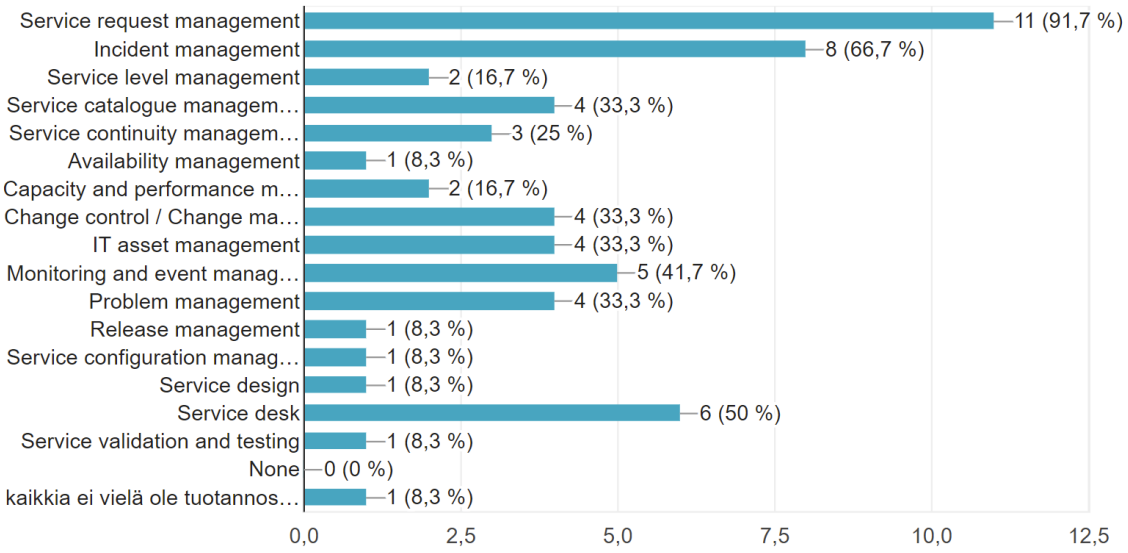

Figure 17. Distribution of responses to question "Which ITIL processes/practices/functions does your organization apply outside the scope of IT (to Enterprise Services)?"

Based on the survey results presented this far, management of HR-related service requests was a common use case amongst the respondents' organizations. Though, ESM activities were not limited to this use case: a multitude of services and processes were used. While the respondents recognized service categories that their organizations used ESM activities for, only half of them (six respondents) were sure they had service catalogs or portfolios for the enterprise services. Four respondents did not have service catalogs, and two were unsure. This finding indicates that the organizations do perform ESM activities but that they do not

necessarily have definitions for the services. In the ITSM context, ITIL's Service Strategy and Service Design lifecycle phases guide for designing the services and setting up the Service catalog management process (Pereira & Mira da Silva, 2010). In Pereira's and Mira da Silva's (2010) ITIL maturity model, the Service catalog management is placed on the lowest maturity level. The finding that half of the organizations using ESM activities may indicate that their maturity level for ESM would not be very high.

For gathering data on the perceived ESM benefits, the questionnaire included a question grid with benefit categories on the X-axis and the services categories on the Y-axis. Checking boxes at the intersections of different benefit and service categories made it possible for the respondents to pick different benefits for different service categories. The benefit results are presented first from the service category perspective, then from the benefit category perspective, and finally, the combination of these is presented. The benefit responses for each service category are summarized in figure 18 below.

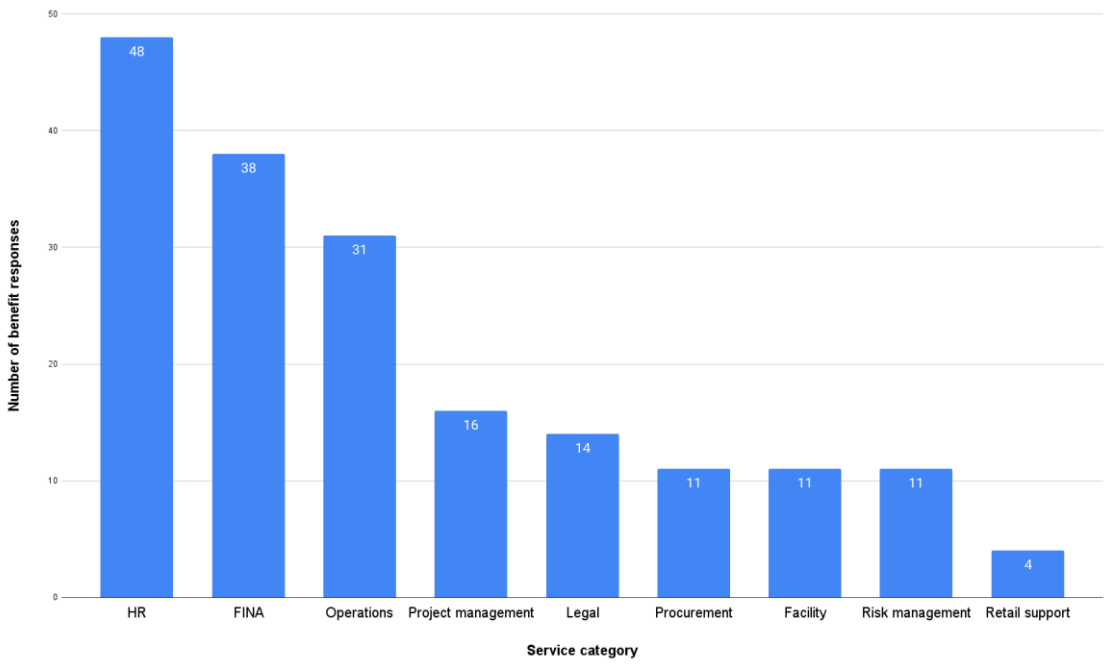

Figure 18. Aggregated results of the benefit responses for each service category (n=20).

The organizations that had ESM activities in place reported various benefits for most service categories. The service categories HR, Operations and FINA gained the most benefit

responses. Project management, Legal, Risk management, Procurement, Retail support, and Facility did gather a smaller number of benefit responses. The number of benefit responses should be viewed with figure 16 in mind since the number of benefit responses may be related to the prevalence of the service categories in organizations. Being a common service category, HR received a substantial number of benefit responses. The nature of HR activities may have also impacted the number of perceived benefits: HR service delivery usually involves processing employee requests in high volumes. Therefore, streamlining HR service delivery activities with ESM could have introduced significant benefits. Next, the benefit responses are viewed from the benefit category perspective in figure 19 below.

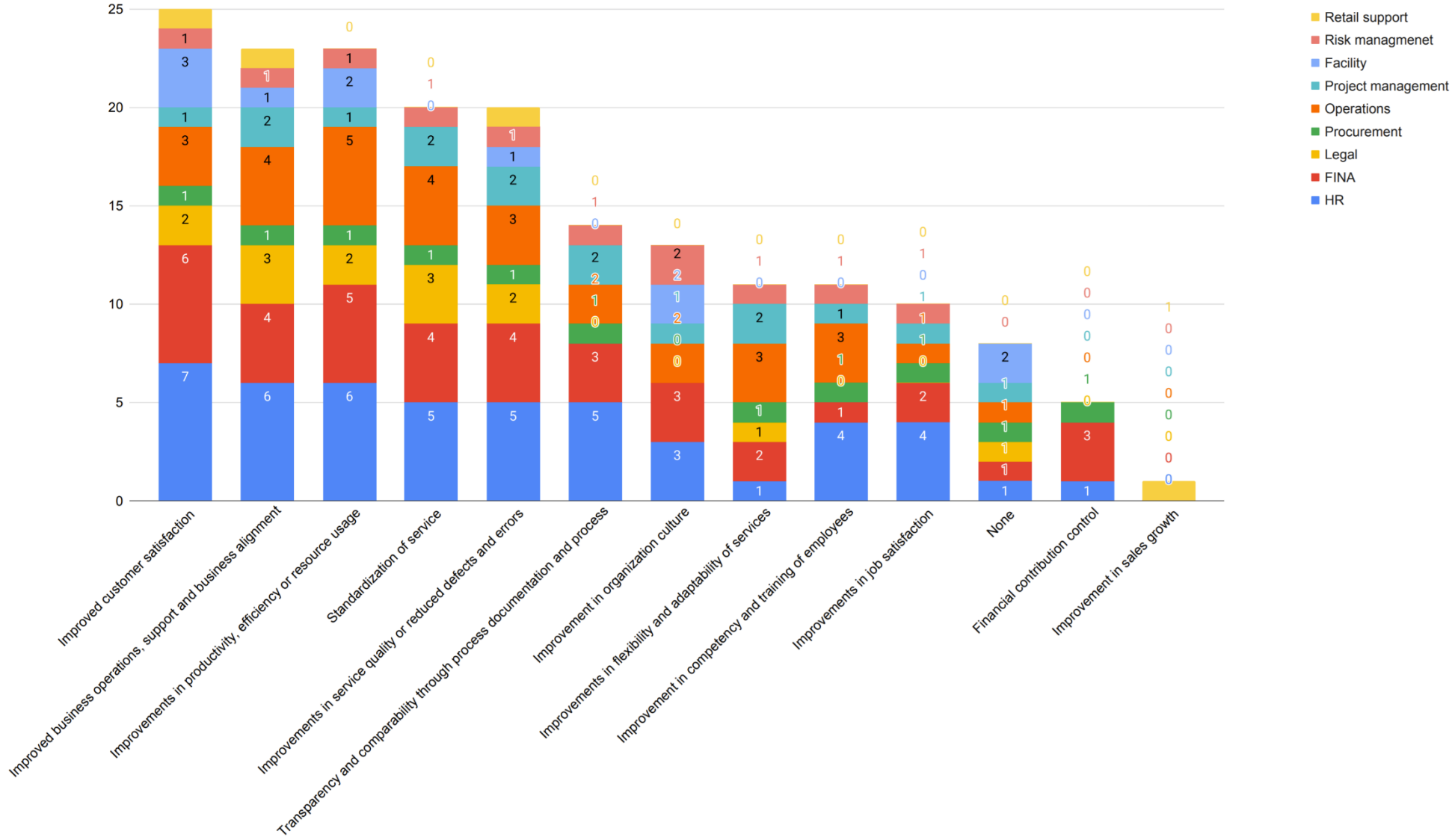

Figure 19. A summary of the ESM benefit responses for each service category (n=20).

When the aggregated benefit responses were inspected, five benefit categories stood out: “Improved customer satisfaction,” “Improved business operations, support, and business alignment”, “Improvements in productivity, efficiency or resource usage”, “Standardization of service” and “Improvements in service quality or reduced defects and errors.” Regardless of a modest sample size (n=20), these findings suggests that ESM activities bring several benefits. On the other hand, the benefit category “None” also gained some responses from two respondents.

Next, the results related to the measurement of ESM were inspected. Four of the 12 respondents that had applied ITSM practices outside of IT did measure or report on the service management activities. Three were unsure, and five did not measure or report. Of those four organizations that measured or reported on the service management activities, only one used a measurement framework. The respondent gave a brief description:

> “SERVQUAL'ish most likely as the we're non-profit company and the customers/users are the core of services that we're providing in general.”

The four organizations that measured or reported on the service management activities also provided information on what metrics were used. All organizations used process metrics (such as SLA metrics, response time, the volume of requests, types of requests). One organization used statistical process control (SPC) measurement methods. Only one organization used metrics that were not solely classifiable as process metrics: quality, productivity, and cost. This was the same organization that used the “SERVQUAL’ish” framework. The conclusion from these findings is that ESM measurement is not very common, and while some organizations measure ESM, they mostly use process metrics.

Even though ESM measurement activities were not very common, the respondents provided information on how they do or should ensure that internal services support the organization’s objectives. The question “How does (or should) your organization ensure that the internal services that are provided actually supports the organization's objectives?” was formulated as it is to gather insight from respondents, in case their organizations would not currently have such mechanisms in place. The responses are summarized in table 19 below.

Table 19. Summary of responses to question "How does (or should) your organization ensure that the internal services that are provided actually supports the organization's objectives?"

#	Categories	Number of mentions
1	KPI measurements	2
2	Systematical analysis of service usage	1
3	User feedback and satisfaction	2
4	Internal or external audits or assessments	2
5	SLA metrics	1
6	Cascaded goals from the strategy	1
7	Usage of a shared service management tool	1

A content analysis approach was used for summarizing the responses shown in table 19 above. KPI measurements, User feedback, and Internal or external audits or assessments did gain the most mentions. While analyzing the results, it must be noted that this question was also asked from respondents whose organizations did not necessarily have ESM activities. Therefore, the responses do not represent the reality but provide an overview of how the respondents think the ESM activities should be aligned with the business.

Based on the survey results, activities for managing HR-related requests were the most common ESM activities. Though, the scope of ESM is not limited to HR service management: a broad range of organizational functions was using ESM activities. (Operations, FINA, Project management, Legal, Risk management, Procurement, Retail support, and Facility). Service request management and Incident management were the most common processes that were applied outside of ITSM. ITSM activities that are applied outside of IT are interpreted as ESM activities in this study. Half of the organizations did not have service catalogs for Enterprise Services. These findings may indicate a low maturity level for ESM. ESM measurement and usage of measurement frameworks were neither common. Most of the organizations that measured ESM did focus on process measurement. These findings provided additional motivation for the need for an ESM measurement framework.

As described in the section Survey for identifying ESM benefits metrics and measurement practices, a survey was used for supporting the process of building an initial proposal by providing information on ESM measurement practices and ESM in general. The survey provided valuable insight for creating the initial proposal, which was used as a starting point for building the proposal with the case organizations. Next, the workshops results are presented.

6.2 Workshop results

This chapter presents the key findings and results of the workshops with the two case organizations. As described in chapter 5.2.2 Workshops and presentation of case organizations, an initial proposal was made based on the literature review findings, the survey results, and the first workshops. The following workshops focused on developing the initial proposal together with the case companies. This chapter is followed by a description of the development process for building the proposal.

The current state analysis of Case A showed that the organization did provide a broad set of Enterprise Services but that they were not systematically managed or measured. Although many units had centralized service delivery, and there was a common service catalog that described the services on a very high level. No goals or metrics were set for the Enterprise Services. An informal, non-documented Service Request Management process was used for delivering Enterprise Services. No goals or metrics were set for the processes. Though, it was recognized that there were some organization-level goals and metrics that did set requirements for the Enterprise Services.

Being a university, the organization used industry metrics, such as the number of graduated students, the progress of student's studies measured in ECTS credits, number of applicants, and others. The workshop participants thought that there would be a relation between the success of the Enterprise Services delivery and the organization success measured by the previously listed metrics, even though there are many steps in between. A simplified example on these cause-and-effect relationships would be the general support services for the education staff: by providing guidance and request fulfillment, the education staff will

have better means for supporting the students in their studies and for providing better education. This strengthened the idea that Enterprise Services should be measured based on their business value.

Case A revealed an important finding that was not considered in the initial proposal: the distribution of information and knowledge is an essential part of providing Enterprise Services. The delivery of Enterprise Services, in Case A, was based on providing guidance, self-service, and request fulfillment. The Case A participants had experienced that if information that is easily found, users can find the information they need and then help themselves. On the other hand, the personnel providing the services and support also benefit from knowledge availability – guiding customers and fulfilling their requests is easier if knowledge is available. Due to these reasons, the Case A participants perceived that knowledge management activities had positive impacts on Enterprise Services and reduced the need for service requests related to the Enterprise Services. This applies to certain services – some services may be more labor-intensive than others and require more knowledge. This finding is interesting and relevant since Pérez-López and Alegre (2012, 656) have shown that knowledge management processes influence market performance positively.

In addition to knowledge availability, service quality was also seen as an important factor that determines the success of the Enterprise Service Management activities. Service quality would, in this context, mean that the Enterprise Services are managed well, and they deliver value to the users (internal customers). There are similar views in the IS and ITSM contexts: Cronholm & Salomonson (2013, 72) argue that service providers can further improve their business by taking the customers' interests into account. Service quality in the IS context has been found to have a positive impact on organization-level performance (DeLone & McLean, 1992; 2003; Gorla et al., 2010).

The current state analysis of Case B showed that the company provided and managed enterprise services related to three areas: 1) HR services, 2) Store management services, and 3) Product data services. Most of these services were facilitated by a Service Request Management process. The services were delivered upon requests from employees, mainly

from the store staff. The services were partially managed by using a shared service management tool, which was also used by the company's IT department. Main processes used for managing the Enterprise Services were shared: the same Incident Management, Service Request Management, and Change Management processes were shared between the IT Service delivery and the Enterprise Service delivery teams. The shared Service Request Management process was measured by using the metrics shown in table 20 below.

Table 20. Service request management process metrics at Case B

#	**Metric**
1	Percentage of requests delivered according to the SLA's target resolution time
2	Average resolution time
3	Number of requests per category
4	Number of requests at each status
5	Customer satisfaction for the handling of requests
6	Difference between number of opened and resolved requests per month
7	Work time used per request
8	Percentage of requests fulfilled during 24 hours from creation

The process metrics 1…5 in table 20 above are based on the ITIL Service Request Management process metrics. The process metrics 6, 7, and 8 were used in addition to ITIL's metrics for process steering and development purposes. The Enterprise Services themselves were not measured, but as in Case A, it was acknowledged that the Enterprise Services should contribute towards the case company's organization-level goals. Based on the participants' views, the services could have their own, separate metrics from the process metrics, but those should be aligned.

In the second workshop for developing the initial proposal, the Case B participants emphasized the importance of the business impact of Enterprise Services. It was found that the company has a mechanism that translates customer needs and strategic directions into changes to Enterprise Services. While working towards a solution for ensuring alignment with business, it was recognized that the Demand Management and Change Management processes could be used to align the Enterprise Services with business needs. Therefore, it

was concluded that the two aforementioned processes should be measured from the perspective of how well the processes align the Enterprise Services and the business needs.

Other key findings were related to automation. The trend of automatizing request fulfillment was handled from two perspectives. Especially for the fulfillment of routine service requests, process automation was seen as a tool for freeing time from employees and for reducing costs. Therefore, it was found with the participants that the degree of automation-related to Enterprise Service delivery processes should be measured. On the other hand, process automation was seen as a challenge for the current process metrics. If most service requests are fulfilled automatically in the future, traditional process metrics may become obsolete. It was concluded that some of the current process metrics might lose their relevance. Therefore measurement of business impact and customer satisfaction should be emphasized in the future, instead of focusing on technical process metrics.

The initial proposal did not include considerations for environmental factors. While working towards solutions for setting goals for ESM activities, the Case B participants did bring up the importance of considering environmental factors since they may impact the Enterprise Services, their metrics, and the goals set for them. The current COVID-19 pandemic was mentioned as an example: the HR services had been changed due to new requirements of remote working practices. This discussion also led to the improvement of the initial process for deriving ESM metrics: it was concluded that the process should have a step for evaluating environmental factors. Since the proposed process for deriving metrics was iterative, it was found that Case B would benefit from clear criteria for when to restart the process of deriving metrics and targets for ESM.

The workshops with both Case A and Case B did result in several findings that were presented in the previous paragraphs. The proposal itself, including the process for deriving measures, was developed during and after the workshops, based on the findings. After developing the proposal, it was validated by using interviews. A summary of the validation phase is presented below, after which the final proposal is presented. That is followed by a description of how the proposal was built based on literature review findings, survey results, and workshop results.

6.3 Validation of the proposal

The proposal was validated by using a semi-structured interview. The validation interviews were performed with the case study participants and one additional participant who did not participate in the workshops with the case companies. The interviewee's job positions varied from practitioners to senior managers. Table 29 below lists the participants' job titles and work experience.

Table 21. Job titles and work experience of validation interview participants

#	Case	Job title	Experience
1	Case A	Planning officer	13 years
2	Case A	Manager	N/A
3	Case A	Project manager	N/A
4	Case A	Coordinator	14 years
5	Case B	Chief Operating Officer	20 years
6	Case B	Director, Core Solutions and Service Operations	10 years
7	-	VP, Operational ICT Services	30 years

The initial framework was presented to the interviewees before starting the interview. The interview questions were based on the questions McNaughton et al. (2010, 224) used for validating their ITSM evaluation framework. As the interview was semi-structured, the framework was discussed freely, and the author asked questions during the discussion. All questions were not examined in every validation interview due to the limited time. Regardless of that, the validation interviews resulted in several valuable findings, which were used for improving the proposal. Table 30 below presents the validation questions and answers.

Table 22. Validation interview questions and answers.

#	Question	Comments (Case A)	Comments (Case B)	Comments (VP, Operational ICT Services)
1	Does the presented framework fill the need for measuring Enterprise Service Management?	The travel service implementation is starting; we are going to use this framework for measuring the service. It could be used as a basis for developing the travel service. It is very nice that we could finally start to measure our services.	Yes, it does.	(N/A)
2	Are all the concepts in the evaluation framework understandable?	The balanced scorecard section above is a bit fuzzy in our context since the operations are a bit different than in regular companies.	Yes, familiar concepts	Yes

3	Discuss the usefulness of the framework	It's very useful, since we're currently not measuring our services very well.	There are currently starting and ongoing changes that would benefit from such a framework.	"This could be something we could use – it is more than we do currently."
4	Would you use this evaluation framework?	Yes, we are going to use this for the new travel service, and possibly for other services also.	We could use the framework for a future HR development initiative.	(N/A)
5	What can be changed or improved with the evaluation framework?	Some guidelines for measuring service resources could be good to have. Maybe more instructions for deriving the metrics from the business.	-The measurement of business impact should be emphasized -The planning of reporting should be included -The impact from the business environment should be included in the framework -Business continuity should be included -End customer view should be emphasized	-Definitions or guidance on how and what to report "upwards" from the Enterprise Service layer

			-Triggers for the review process should be also linked to the strategy -The commitment of employees should be considered -The linkage to strategy should be clearer	
6	Discuss whether the framework would be useful for general Enterprise Service Management development purposes	We could use the framework while we are developing our services.	-Could be used for a HR development initiative -A similar approach was used for product data development	(N/A)
7	Discuss whether the illustrated organizational setup (business-business process-enterprise service) is compatible and	In the university context this is a bit fuzzy.	The presented organizational setup seems to describe the typical setup.	(N/A)

	relevant for the organization			
8	What is your opinion on the validity of the general service measures?	(N/A)	-These seem to measure the service, but the business impact has to be emphasized in the framework	-Cost savings achieved by automation could be included -Throughput time should be added as an additional measure
9	What is your opinion on how user satisfaction is measured and the survey questions for measuring user satisfaction?	(N/A)	(N/A)	-It is very challenging to measure user satisfaction reliably. The idea of comparing the expectations with the perception proposed in SERVQUAL could have some idea within it. Regular customer satisfaction metrics are not working well.

The validation interviews, particularly with Case B, did result in several suggestions for improvement. Overall, the framework was seen as valid by the participants. Both Case A and Case B participants thought that they would use the framework for future ESM initiatives. Case A participants were implementing a new travel service and planned to use the framework for designing the metrics and for measuring the service. Case B was developing their HR services and did also look forward to using the framework for developing the service measurement and measuring the services.

A significant suggestion for improvement was the consideration of environmental factors when deriving metrics. The process for deriving metrics did not include a step for reviewing environmental factors. Therefore, the process step "*2.2 Review environmental factors that may affect the measurement and target setting*" was added into the "*Review background factors*" phase of the process. Also, the Case B participants brought up the idea of defining triggers for restarting the process for deriving metrics. It was proposed that the organization's business strategy should be included in the trigger criteria. The process step "*Trigger for new cycle*" was added according to these ideas.

A validation interview was also held with an external participant who was not part of the case organizations. As the participant was not involved in the workshops, they did inspect the framework from a different perspective than the other interviewees. The interview with this participant resulted in two main findings. The first finding was that the extent or degree of automation should not be measured as it was. The proposed framework included an internal measurement area, "Degree of automation." It was concluded that automation is not an end itself, and therefore the cost perspective should be measured instead. Automation can cut the need for unnecessary manual work and can consequently reduce costs. However, not all tasks should be automatized just for the sake of automation without considering the cost perspective. The second finding was a confirmation for the proposed SERVQUAL-based measurement. According to the interviewee's organization's experiences, the standard customer satisfaction metrics are too subjective and do not reliably describe the service quality. Therefore, the idea of measuring service quality by comparing expectations with the perception as proposed in SERVQUAL could serve the purpose of measuring internal and external service quality.

Overall, the validation phase did improve the proposal significantly. Although all improvement ideas were not implemented – further research would be required to ensure the ideas serve the purpose of measuring ESM activities. The development and validation of the proposal were discussed in the previous chapters. Next, the final proposal is presented.

6.4 Presentation of the final proposal

This chapter presents the proposed framework. Building the framework was guided by the research questions and built based on the literature review, the survey, and the workshops with two case companies. The proposal includes a framework for measuring ESM and a process for deriving metrics. This chapter presents the final proposal – it includes the improvements made based on the validation interviews.

6.4.1 The measurement framework

The proposed framework for measuring ESM consists of three layers: 1) Business unit or Business process, 2) General measurement areas and 3a) Enterprise Service, and 3b) ESM process level layers. The structure is designed to be inspected from the perspective of one service at a time – it does not strive to map all the Enterprise Services and their linkages at once. Table 21 below presents the layers and their purposes.

Table 23. The framework's layers and their purposes.

#	**Layer name**	**Purpose**
1	Business unit or Business process BSC	Used for deriving metrics and targets from the business units or business processes. Answers the question *"To which objectives does the Enterprise Service contribute to and what should the outcomes be like?"*
2	General measurement areas	The purpose is to reach a “better coverage” of the ESM measurement, to ensure that the Enterprise Service performs well in general terms in addition to the specific and frequently changing layer 1 targets.
3.1	Internal service measurement areas	The purpose is to provide an internal perspective to the Enterprise Service by measuring common areas such as Internal

		Service quality, Service cost management and Improvement & Innovation.
3.2	Enterprise Service Management Process	The purpose of this layer is to measure process level performance of the ESM processes. The same process metrics and targets may be shared across a range of Enterprise Services. Answers the question *"What makes a good Enterprise Service?"* together with the *3.1. Internal service measurement areas* layer.

The first "*Business unit or Business process*" level of the framework has the form of Kaplan & Norton's (e.g. 2000; 2004) strategy map. The purpose of the first level is to answer the question *"To which objectives does the Enterprise Service contribute to and what should the outcomes be like?"* When inspecting a particular Enterprise Service, the related business unit or business process objectives and related metrics should be inspected. This level sets topical and specific objectives for the Enterprise Services. The metrics and targets should be reviewed and adjusted for example quarterly, since the business requirements may change frequently.

The second layer, the *"General measurement areas"* include common areas for measurement, such as Service quality, Business support & alignment, Productivity, Standardization, and Knowledge availability. These measurement areas can be used for any Enterprise Service, regardless of the goals derived from the business. The purpose of the general measurement areas is to reach a "better coverage" of the ESM measurement, to ensure that the Enterprise Service performs well in general terms in addition to the specific and frequently changing layer 1 targets. The measurement areas of the second layer were selected based on the workshop results. Table 22 below proposes some proposed approaches for measurement and example metrics.

Table 24. Proposed measurement approaches and example metrics for general measurement areas.

Measurement area	Proposed approach for measurement	Example metrics	Sources
Service quality	-SERVQUAL -Customer satisfaction surveys -Employee satisfaction surveys	-Customer satisfaction -Employee satisfaction as a proxy for service quality	Bellou & Andronikidis 2008, 950; Khawaja et al. 2016 335; Chi & Gursoy 2009, 251-252; Loveman cited in Gilbert, 2000; Cronholm & Salomonson, 2014; Parasuraman et al., 1988, 1991
Business support & alignment	-Questionnaire targeted for management	-Scoring based on questionnaire results	-
Productivity	-Business productivity measures -Employee productivity	-Labor productivity (economical output per labour hour)	Rantanen, 2005
Standardization	-Audits for assessing the degree of standardization of service provision	-Scoring based on audit results	-
Knowledge availability	-Simple voting buttons for knowledge base articles or intranet pages -Surveys for assessing the availability and usefulness of knowledge	-Responses of embedded poll questions such as “Did you find the information you were searching for?” or “Was this article helpful”?	Workshop 2, Case A

The third layer is called *"3. Enterprise Service Management layer"*. It provides an internal perspective to the Enterprise Service. By measuring the performance of Enterprise Services on the service and process levels, the layer strives to answer the question *"What makes a good Enterprise Service?"*. The layer consists of two sublayers: *"3.1. Internal service measurement areas"* and *"3.2. Enterprise Service Management process"*. The Enterprise Service layer consists of four measurement areas that may be common for all Enterprise Services: Internal service quality, Service cost management, and Improvement & Innovation. Success related to these areas are important for most Enterprise Services: if there is enough available knowledge for the end-user of the service, if the service quality related to the service delivery is on a high level, if its costs are managed well, and if it is improved regularly, there are high chances that the Enterprise Service is successful. Although, goals and metrics derived from the business (layer 1) are still important since it must be ensured that the Enterprise Service serves the business needs. Table 23 below presents proposed approaches for measurement and example metrics for the internal service measurement areas.

Table 25. Proposed approaches for measurement and example metrics for the internal measurement areas.

Measurement area	**Proposed approach for measurement**	**Example metrics**
Internal service quality	-SERVQUAL -Employee satisfaction surveys -Internal service quality surveys	-Employee satisfaction as a proxy for internal service quality -Internal service quality (technical competence and personal service)
Service cost management	-Utilization of service budgeting, accounting, and charging information	-Cost savings brought by automation of ESM processes -Service costs vs. budget for a time period

Improvement and innovation	-Initiative management measurement -Innovation management measurement	-Metrics related to innovation resources, innovation strategy, innovation processes

The final layer *"3.2. Enterprise Service Management Process"* consists of processes to be measured. Since the same processes may facilitate and support service delivery for a broad range of different Enterprise Services, the same process metrics can be used for a range of Enterprise Services. For example, the same Service Request Management process can fulfill requests related to HR services and Facility management services. Both these service areas may wish to get requests fulfilled promptly and with high internal customer satisfaction. Although, there may be a need to adjust target levels for the metrics based on the service's or service area's needs. The most common processes used for ESM were included in the layer based on the survey results. These should be adjusted based on the organization's needs. According to the survey results, Service request management and Incident management were the most common ESM processes. Example process metrics for these processes are listed in table 24 below.

Table 26. Example process metrics for Service request management and Incident management.

#	**Metric**
1	The number and percentage of Incidents / Service requests completed within agreed target times
2	Throughput time (median) for handling Incidents / Service requests
3	Volume and trend of Incidents / Service Requests
4	User satisfaction related to Request / Incident handling

In addition to the three layers presented above, the environmental factors influencing the selection of metrics are considered in the framework. Since those have been investigated thoroughly by Gacenga (2013, 224) in the ITSM context, they are not re-invented here but instead referred to. The structure of the framework is presented in a visual format in figure 20 below.

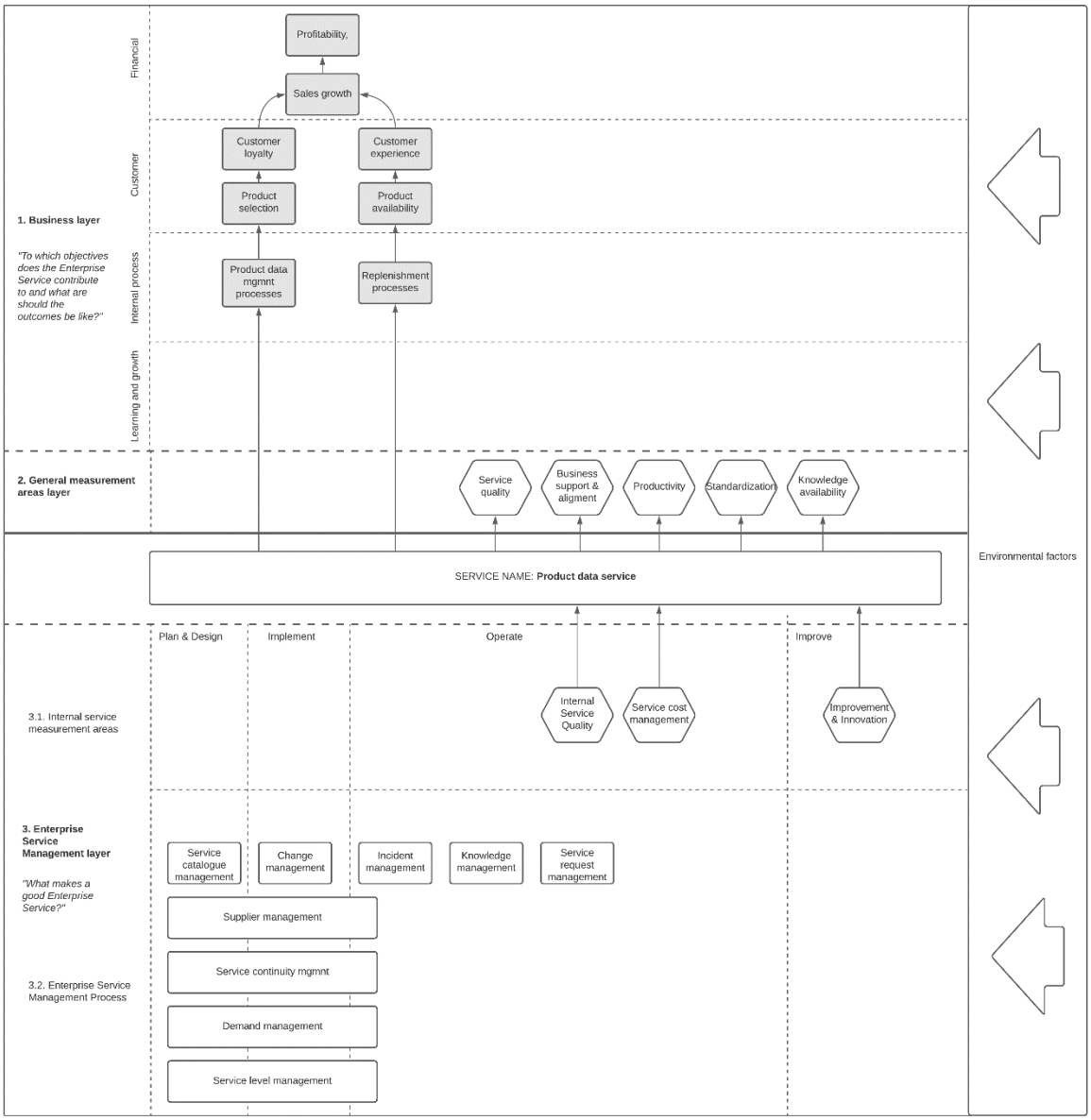

Figure 20. The structure of the proposed ESM measurement framework on the example of a Product Data Service.

Figure 20 above presents the structure by using a particular Product data service as an example in order to demonstrate the use of assumed causal relationships. As seen from the figure, the service to be measured is in the middle. Layers 3.1 and 3.2 are located below it. This symbolizes the idea that these layers focus on measuring the underlying internal aspects of the service – how the service is produced and managed. The general measurement layer and the business layer are above the service. As seen from the figure above, the service relates to the general measurement areas by arrows. The same applies for the business

objectives in the Business layer. These arrows symbolize the outcomes of the service: the service should produce outcomes that are measurable with the general measurement areas and with the metrics defined by the business layer.

The relations between the service, measurement areas, and business objectives should be defined. Each objective and metric should have a parent level to which they contribute. Additionally, the purpose of each metric should be defined. For supporting the planning and defining of metrics, an ESM measurement table was created. The table is shown below.

Table 27. Table for defining objectives, metrics and linkages.

1. Business layer									
Perspective	**Objectives**	**Metrics**	**Target levels**	**Related parent level objectives**	**Purpose**				
Financial									
Customer									
Internal process									
Learning and growth									
2. General measurement areas layer									
Service Quality									
Business support & alignment									
Productivity									
Standardization									
Knowledge availability									
3. Enterprise Service Management layer									
3.1. Internal service measurement areas						**Lifecycle phase**			
Measurement area	**Objectives**	**Metrics**	**Target levels**	**Related parent level objectives**	**Purpose**	**Plan & Design**	**Imple-ment**	**Operate**	**Improve**
Internal service quality								X	
Service cost management						X	X	X	
Improvement & Innovation									X
3.1 Enterprise Service Management process						**Lifecycle phase**			
Process	**Objectives**	**Metrics**	**Target levels**	**Related parent level objectives**	**Purpose**	**Plan & Design**	**Imple-ment**	**Operate**	**Improve**
Service catalogue mgmnt						X	X	X	
Supplier mgmnt						X	X	X	
Service continuity mgmnt						X	X	X	
Demand mgmnt						X	X	X	
Service level mgmnt							X	X	
Change mgmnt							X		
Service request mgmnt								X	
Knowledge mgmnt								X	

The ESM measurement table is based on the structure of the measurement framework presented in figure 25. It includes the same layers and same measurement areas. The table can be used for defining objectives, metrics, target levels, purposes for the metrics, and relations between the metrics. The table is intended to be adapted to each organization's needs: measurement areas and processes can be added, changed, and removed if necessary. The key is to include defined business objectives and then link the ESM objectives and metrics to them.

6.4.2 The process for deriving metrics

In addition to the measurement framework, a process for deriving objectives and metrics based on business needs was designed. Findings from academic literature from the performance management domain (Kaplan & Norton 1996a 279; Laitinen cited in Tenhunen 2001, 69-70) were used in addition to workshop findings for designing the process. The proposed process has four main phases: 1) Prepare, 2) Review background factors, 3) Define metrics, and 4) Finalize and develop. In addition to supporting the definition of objectives and metrics, the process also provides high-level guidance for implementing the measurement framework. The process is presented in figure 21.

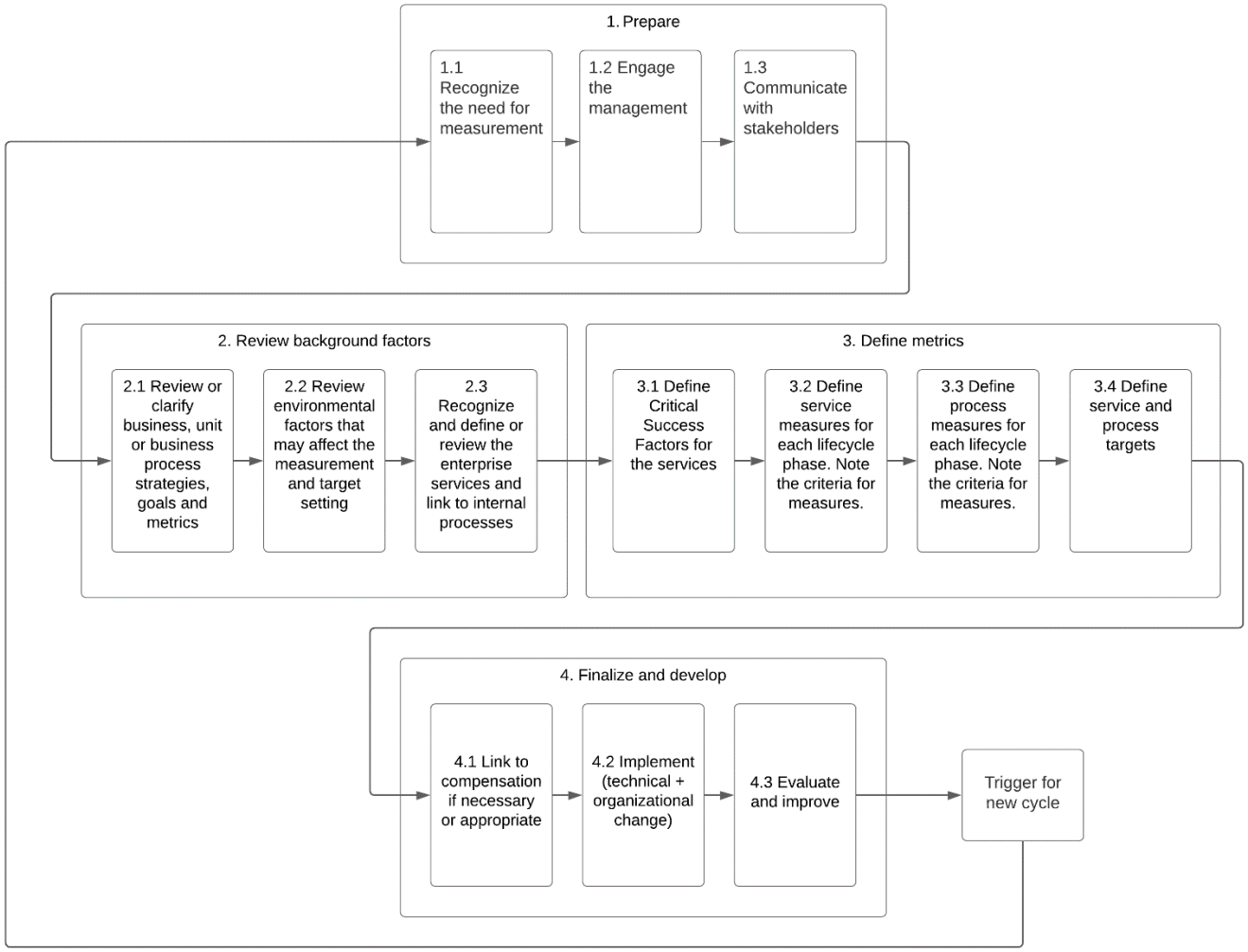

Figure 21. The proposed process for deriving metrics.

Each of the phases in the proposed process include three or four steps. The first phase includes preparative steps: recognizing the need for measurement, engaging the management, and communicating with stakeholders. These steps strive to ensure that the measurement process to be executed has a purpose and gets support from the management and employees.

The second phase focuses on reviewing internal and external factors that may affect the selection of objectives and metrics. Internal factors include organizational variables, such as strategies, goals and metrics amongst others. The environmental factors refer to any external environmental variables, such as the industry, the competitive environment, culture, economy etc. These examples of the internal and external variables to consider are based on findings from the Information system (IS) research domain's literature.

The objectives and metrics for ESM are defined in the third phase. Critical success factors, service measure, process measures and targets for these are defined in accordance to the background factors reviewed in the previous phase. The final phase includes steps for linking the measures to compensation if necessary or appropriate, for implementing the measurement system and for evaluating and improving the system.

In addition to the process phases and steps presented above, the proposed process has a step for triggering a new measurement process. This implies that there should be a defined trigger, such as certain changes in the environmental factors, that trigger a new cycle of the measurement process. The purpose of this is to ensure, that the objectives and measures for ESM are updated in necessary. A topical example would be the still ongoing pandemic (COVID-19): the crisis could have impacts on the business strategies, priorities, objectives, and could also set new requirements for ESM. Consider for example HR services – remote work may set new priorities to HR services for supporting employees in a new working setting. The conditions of this trigger should be defined based on the organization's needs. Next, the development process of the proposal is described.

6.5 Description of the development process of the proposal

This chapter describes how the proposal was built based on the literature review findings, survey results, and workshop results. The chapter is structured around key findings, which are mapped to features or areas in the proposal, and then motivated. Literature on performance measurement and ITSM performance measurement was used as a basis for designing and executing both the survey and the workshops. Table 26 below maps the key literature findings with proposal features, whereas table 27 maps the survey results and proposal features. Finally, table 28 maps the workshop findings with proposal features. These tables are accompanied by further descriptions below.

Table 28. Mapping of key literature review findings and proposal features

#	Literature review finding	Source	Proposal features or characteristics
1	The balanced and multidimensional nature of measurement systems (business and ITSM)	E.g. Kaplan & Norton, 1996a; Gacenga 2013; Marcos, 2012	The structure of the framework is based on the four well-known perspectives: Financial, Customer, Internal processes, and Learning and growth.
2	The causal relationships between objectives and linkages to business strategy	E.g. Neely et al. 1995, 83; Anguinis 2009, 03; Kaplan & Norton 1996a, 10; Ducq et al. 2019, 5029	In addition to measuring the service and process performance, the services are measured based on metrics derived from the business.
3	Best practices for implementing a measurement framework	Kaplan & Norton, 1996a; Laitinen (cited in Tenhunen 2001, 69-70)	A process for deriving metrics and implementing the framework is proposed. Several practices proposed by Kaplan & Norton and Laitinen are utilized.
4	The SERVQUAL framework can be used for measuring service	Parasuraman, 1988, 1991; Cronholm & Salomonson, 2013	The SERVQUAL framework is proposed as an approach for measuring ESM service quality.

	quality in customer service and ITSM contexts.		This applies for internal service quality and service quality from customer perspective.
	Internal and external environmental factors influence the selection of metrics	Gacenga 2013, 224-225; Myers et al. 1997, 66; Saunders and Jones 1992, 66	The impact of environmental factors is considered and emphasized in the framework. The use of Gacenga's (2013) list of environmental factors are recommended.

As described in chapter 5, a survey was used for describing ESM, ESM benefits and ESM measurement. The survey results, in combination with the literature review findings, were used for creating the initial proposal, which was then developed further in the workshops. Table 27 below maps the survey findings, and the proposal features or characteristics.

Table 29. Mapping of key survey findings and proposal features

#	**Survey finding**	**Questionnaire question**	**Proposal features or characteristics**
1	Only 45,5 % of respondents had service catalogs of their Enterprise Services	"Are there service catalogs or portfolios for the Enterprise Services?"	Process step in the proposed implementation process: "*2.3 Recognize and define or review the Enterprise Services and link to internal processes*" for ensuring that the organization has a consensus on what internal services are provided.
2	Several benefit responses for different ESM processes	"What benefits have your organization achieved by managing the Enterprise Services?"	General measurement areas were added to the framework: "Business support & alignment", "Productivity",

			"Standardization", and "Transparency"
3	Several benefit responses for the category "Improved customer satisfaction"	"What benefits have your organization achieved by managing the Enterprise Services?"	Service quality for measuring customer satisfaction is included in the General measurement areas.
4	Several benefit responses for the category "Improved service quality or reduced defects and errors"	"What benefits have your organization achieved by managing the Enterprise Services?"	The aspect of internal service quality is included in the Enterprise Service Layer. Measurement of customer satisfaction of request handling on process level.
5	A measurement framework based on SERVQUAL is applied for measuring ESM (1 response)	"How does (or should) your organization ensure that the internal services that are provided actually supports the organization's objectives?"	Usage of SERVQUAL / ITSM SERVQUAL-based measurement frameworks is recommended for measuring service quality.
6	The number and types of perceived ESM benefits	"What benefits have your organization achieved by managing the Enterprise Services?"	"General measurement areas" were added for the benefit types that had gained most responses.

In addition to the findings from the literature review and survey results, the workshops did provide valuable input for developing the initial proposal. The key workshop findings from Case A and B are mapped to proposal features or characteristics in table 28 below.

Table 30. Mapping of key workshop findings and features

#	Workshop finding	Case	Proposal features or characteristics
1	The importance of knowledge availability for customers and support	Case A	The aspect of knowledge availability was included in the framework's "Enterprise Service" layer, in the "Operate" lifecycle phase.
2	The importance of customer satisfaction (internal customers)	Case A	The aspect of service quality was included in the framework's "Service Layer", in the "Operate" lifecycle phase.
3	There should be a mechanism that translates customer needs and strategic directions into changes, and a feedback loop that helps to evaluate the actions.	Case B	The aspects of Demand management and Change management were included in the framework.
4	The importance of measuring business impact	Case B	Measurement of ESM based on metrics derived from the business.
5	The trend of automizing request fulfillment	Case B	The "Degree of automation" was added as a service measure. Though, means for measuring the degree of automation of enterprise service management are not explored and is therefore suggested as an area of further research.
6	The challenge of measuring automated services or processes	Case B	Measurement of services and processes with metrics derived from the business.
7	The same stack of process metrics could be used regardless of the	Case B	Shared process metrics for different ESM processes. The service metrics are inspected separately.

	service that the ESM process handles		

As the key findings have been summarized in the tables above, the proposal features are described and motivated below in the following subchapters.

6.5.1 Business layer

The literature review showed that Kaplan & Norton's (1992, 1996a, 1996b) concept of the four balanced dimensions had been utilized in two different ITSM measurement frameworks (Gacenga 2013; Marcos et al., 2012). Due to ESM's similarity with ITSM, the dimensions are also utilized in the proposal for deriving metrics from the business. Also, the concept of utilizing the mappings of causal relationships of objectives across the four dimensions is adopted to the proposed framework for deriving metrics based on business goals. This concept originates from Kaplan & Norton's (2000, 2004) strategy map. As seen from figure 96, this strategy map-inspired section, labeled "Business layer," is located on the top of the structure.

6.5.2 The General measurement area layer

The *General measurement area layer* is located below the *Business layer*. The general measurement areas were derived based on the literature review, the survey's benefit responses, and workshop results. Benefit types were gathered from Gacenga's (2013), Marrone's & Kolbe's, Huang et al.'s (2011), and Hochstein et al.'s findings. The benefit types were used in the survey question "What benefits have your organization achieved by managing the Enterprise Services?" The responses were then inspected in accordance with the workshop results, and the five most relevant benefit types were included as General measurement areas. For example, improved customer satisfaction is recognized as a benefit in the ITSM context and is used as a dimension in one of the ITSM measurement frameworks (Gacenga 2013, 255). The "Improved customer satisfaction" gained 25 benefit responses in the survey and was also recognized as an important benefit in the workshops with Case A

participants. Therefore, it is considered in the proposed framework by including the aspects of Service Quality as a general measurement area.

In addition to the responses related to customer satisfaction and service quality, several benefit responses were addressed to the categories “Improved business operations, support, and business alignment,” “Improvements in productivity, efficiency or resource usage,” and “Standardization of service.” The importance of knowledge availability was found in the workshops with Case A. These were also included as general service measurement areas. Since these are general types of benefits that cannot necessarily be linked with specific business objectives, they are labeled as general measurement areas. By measuring ESM activities based on these areas, amongst other aspects, organizations can quantify the performance of the ESM activities.

6.5.3 Internal service measurement areas layer

The *Internal service measurement areas* layer is located below the service. This illustrates the idea of measuring internal aspects related to the management and delivery of the Enterprise Service. The layer includes three aspects: Internal service quality, Service cost management, and Improvement and innovation. As mentioned above, the “Improved customer satisfaction” benefit category gained 25 benefit responses in the survey. Additionally, the benefit category “Improvements in service quality or reduced defects and errors” gained 20 benefit responses in the survey. Improved customer satisfaction is also recognized as a benefit in the ITSM context and used as a dimension in the ITSM measurement context (Gacenga 2013, 255). The workshop results (Case A) supported these findings. The findings related to the importance of internal customer satisfaction and service quality presented this far seem to be also supported by other research findings. As previously mentioned, DeLone and McLean (1992; 2003) and Gorla et al. (2010) have found a positive relationship between IS service quality and organization-level performance. Also, as demonstrated by the service-profit chain, internal service quality leads to employee satisfaction (Loveman cited in Gilbert, 2000). Employee satisfaction has been found to significantly impact customer satisfaction, which in turn has been found to significantly impact financial performance (Chi & Gursoy 2009, 251-252). Gilbert (2000, 178) also

concludes, “The measurement of internal customer satisfaction is a tool that can be a useful aid for managers of service quality and their work teams to help them more accurately measure the effectiveness of their units.” These previous findings give further confirmation for the survey and workshop findings and motivate including the aspect of internal service quality into the proposed framework.

Cronholm & Salomonson (2014) found that an adapted SERVQUAL framework could be used in the ITSM context for measuring service quality. Opposed to measuring just the customer satisfaction, the ITSM SERVQUAL framework strives to measure the gap between the customer’s expectations and perceptions of the service received. The survey results also showed that one of the organizations did use a SERVQUAL based measurement approach for ESM. Even though this finding was limited to just one organization, it was anyway valuable to find that an organization is using a similar approach in the ESM context. Due to these findings, a SERVQUAL-based measurement approach is recommended for measuring internal service quality and service quality. Additionally, the Service Quality related to handling of requests may be measured on the process level.

Service cost management, which is the second measurement area in the *Internal service measurement areas* layer, was derived based on the literature review and the workshop results. Cost management is part of Gacenga’s (2013, 255) framework and was therefore inspected in the workshops. Automation and cost management of ESM activities were handled in the workshops with Case B. A “Service cost management” measurement area was added to the *Internal service measurement areas* layer for representing all the cost management activities, which may also include automation. Automation was not added as a separate area since automation should not be the end itself but should instead be used to reduce unnecessary manual work and thus reduce costs.

6.5.4 Enterprise Service Management Process layer

The final layer is designed to measure process-level performance. Due to the lack of industry standards for ESM, there is some uncertainty in what processes or practices should be included when inspecting it. Most of the ITSM processes focus on IT – therefore, the metrics

related to all ITSM processes are not relevant when inspecting the ESM context. Some processes or practices, such as Service Request Management, Service Level Management, Service Catalogue Management, Service Financial Management, may be relevant for the ESM context. As shown in figure 17 in chapter 6.1 Survey results, the Service request management and Incident management processes and the Service desk function were the most common processes at the survey respondents' organizations.

The purpose of the process level is to focus on process performance by using straightforward and meaningful process metrics for steering and developing the processes. The layer includes an example set of processes that may be relevant in the ESM context. The set of processes was defined based on the survey results and workshop results. Organizations should include relevant processes into this layer and define metrics for each process. Process metrics from the industry literature (such as ITIL) and academic literature (e.g., Gacenga, 2013) are recommended. If the same processes are used for delivering several types of services, it is recommended to use a quite static set of process metrics regardless of the services. For example, if the Service request management process is used for handling employee tax cards (HR service) and for setting up new products into an ERP system (Product data service), the metric such as "Mean elapsed time to achieve request resolution" is relevant for both request types. Though, the SLA's and target levels may be different.

6.5.5 Development of the process for deriving metrics

As stated by McLoughlin et al. (2014, para. 13) in the ITSM benefit planning context, "the literature does not provide a logical process by which the operational or process level benefits relate or can be related to organizational or strategic level benefits and importantly, how these strategic level benefits would be realized." Even though the present study focuses on ESM instead of ITSM, this finding is relevant, since the survey results showed that the organizations did not have processes for deriving metrics. The responses to the question "How does (or should) your organization ensure that the internal services that are provided actually supports the organization's objectives?" were quite scattered (see table 19). For supporting organizations in implementing the proposed ESM measurement framework, a process was proposed.

Parts of Kaplan & Norton's (1996a) and Laitinen's (cited in Tenhunen 2001, 69-70) measurement system implementation processes were utilized. Steps such as "clarifying the strategy," "communication with employees," "recognizing the need for a performance measurement system and selection of the framework," "engaging the management," and "continuous improvement of the measurement system" were used directly or modified. Additional steps were added based on the workshop results.

The responses to the question *"Are there service catalogs or portfolios for the Enterprise Services?"* revealed that less than half of the organizations had service catalogs for Enterprise Services. This implies that most companies that did provide Enterprise Services did not have definitions on what Enterprise Services were provided. In order to measure and manage Enterprise Services, the services must be known and defined. Due to this reason, the step "*2.3 Recognize and define or review the enterprise services and link to internal processes"* is included proposed implementation process.

The features of the proposal were presented and motivated in the previous chapters. Next, the validation phase of the study is discussed.

7 DISCUSSION

According to the survey results, almost two-thirds of the organizations were providing and managing Enterprise Services. Most of the organizations that did not, were either planning to implement ESM activities or possibly planning to do so. IT management tool vendors, the market leaders at the head, have also extended their functional scope towards ESM and rebranded their offerings towards the ESM market (Gartner 2017, 3; Bryan, Garnier & Co 2021, 10). Since no previous research related to ESM was found, there is no information on whether ESM is growing in popularity. However, based on the present study's findings and the two industry research reports referred to above, it could be cautiously estimated that ESM is getting increasingly common.

It was found that organizations were providing and managing Enterprise Services by using tools and a wide range of processes familiar from the ITSM context. Even though the organizations did use ESM activities for providing services to several organizational functions, most of the organizations were not measuring and managing the performance or their ESM activities. Examples of these functions are HR, Finance, Legal, Facility, Operations, Procurement, Customer service, and Project management. Since ESM is used for providing internal services to a wide range of organizational functions, it is essential to manage and measure the performance of it. Otherwise, organizations can not be assured of internal service quality and employee satisfaction, of which the latter impacts customer satisfaction and financial performance (Loveman cited in Gilbert, 2000; Chi & Gursoy 2009, 251-252).

According to the survey results, only half of the organizations had defined services, and only one-third of the organizations measured their ESM activities. In order to measure the performance of the services and the service management activities, the services must be defined – otherwise, it is not clear what should be measured and what the targets are. It can be concluded that ESM measurement activities were uncommon and informal at the 20 organizations inspected through the survey.

The research questions and objectives guided the study through all phases. The main research question of this study was "How can the performance of ESM be measured?, and the main objective was to "To propose a framework for measuring Enterprise Service Management." A summary of the results per research question is provided below. Included is also an evaluation of whether the objectives were met.

RQ 1 How can the performance of ESM be measured?

The results indicate that organizations should measure their ESM activities using a multidimensional approach that emphasizes the business value. Even though organizations may find it tempting to use only process-level metrics due to their simplicity, a more comprehensive approach is required for measuring the actual performance of the service and the service management activities. The use of only process-level metrics does not measure how the ESM provides value to the business. However, process metrics are also important but should be used amongst other dimensions. More comprehensive ESM measurement can bring the discussion to a new level and introduce a possibility to answer questions like: "Is the organization in question providing correct services that support business in achieving its objectives?", "Does the organization offer some unnecessary Enterprise Services or services that are not aligned with business objectives and priorities?" and "Are there targets and service level agreements, and are they aligned with the business objectives?"

Based on the workshop results, the adoption of solutions and technologies such as Robotic Process Automation (RPA), Artificial Intelligence (AI), Machine Learning (ML), and integrations were seen as methods for automating ESM activities. Such solutions and technologies may become increasingly common also in the ESM context in the future. This is essential to note since it also impacts the requirements for ESM measurement. For instance, if the delivery of routine service requests becomes automated, several process measures may become obsolete. In such a scenario, the approaches for measuring ESM based on business value and general measurement areas as proposed in this study would become increasingly important.

The measurement framework shows how the performance of ESM can be measured based goals and metrics derived from the business. A combination of a strategy map-inspired approach for linking metrics and illustrating perceived causal relationships, general measurement areas, internal measurement areas, and process metrics is proposed for thorough ESM measurement. Since a measurement framework was proposed, the main objective of the study was reached. Because this proposal touches on a new area of research, further development of the framework is more than welcome.

RQ 1.1 Can measurement practices and measures derived from ITSM be utilized in ESM measurement?

The proposal was inspired by ITSM measurement practices. Similar principles for linking business and service management metrics were used. For example, Marcos et al. (2012) proposed a cascaded set of scorecards for linking business objectives to ITSM metrics. The proposal of the current study instructs to create the linkages based on a related strategy map-inspired approach. The approach of the current study's proposal was selected for the sake of simplicity in designing and demonstrating the causal relationships. The ITSM measurement framework by Gacenga (2013) is based on several layers. A similar idea of measuring ESM on separate but linked layers was used in the current proposal: the organization level is measured separately from the service and process levels.

ITSM and ESM are related, but since ITSM focuses on managing IT services, and ESM focuses on providing mostly internal Enterprise Services, there are some differences. The scope of ESM may usually be narrower than in ITSM, which is reflected in the measurement framework. Some areas such as technology metrics and system availability are not necessarily relevant in the ESM context. Based on the results, it can be concluded that some principles familiar from the ITSM context can be utilized in the ESM measurement.

RQ 1.2 What kind of perspectives or metrics can be used for ESM performance measurement?

A four-layer approach was proposed: 1) Business unit or Business process BSC, 2) General measurement areas, 3.1) Internal service measurement areas, and 3.2) Enterprise Service Management Process. Such perspectives can be used for a comprehensive view of the ESM performance. Together, these perspectives form a balanced view of how the ESM activities are performing. Each of these layers includes should include metrics. Examples of metrics for each layer are listed in chapter 6.3.1 The measurement framework.

RQ 1.3 How can ESM metrics be derived?

Several aspects need to be considered while designing a measurement system for ESM. The process for deriving metrics describes the proposed steps for preparing the implementation, reviewing background factors, defining metrics, and finalizing the implementation. It is essential to review or clarify business objectives, review environmental factors that may affect the goals and selection of metrics, and recognizing or defining the Enterprise Services. It can be concluded that the objective "To provide an approach for deriving ESM metrics based on business objectives." was met, but that it should be tested and validated in further research.

The findings of this study are essential for several reasons. The existing academic research literature and industrial publications did not provide means for ESM performance measurement. This study contributes to the scarce research literature on ESM performance measurement by proposing a framework for ESM measurement, including a process for deriving metrics and implementing the framework. By implementing an ESM measurement framework, organizations can manage the performance of their ESM activities. Managing the performance of ESM may lead to improvements in internal service quality.

The generalizability of the results is limited by the sample size, even though the organizations represent a range of different industries. Survey responses were received from 20 organizations, and workshops were held with two organizations. The goal was to have workshops with three organizations, but challenges were encountered in finding suitable organizations that would have been willing to invest time for participating. It

should also be noted that all the survey respondents and the case companies were customers of the same tool vendor, and were therefore using the same service management tool.

The lack of existing research literature was also recognized as a limiting factor that could impact the results. Since ESM is a new concept, no previous research on ESM performance, ESM benefits, and ESM measurement were found. On the contrary, research literature related to ITSM exists. Due to ESM's and ITSM's similarity, ITSM research literature was used and applied to the ESM context to mitigate this challenge. Also, some frameworks designed for general service management purposes were reviewed.

Since this study explores a quite new area of research. Therefore, several interesting opportunities for future research were identified. Even though this study did focus on ESM performance measurement, it was noted that no service management frameworks dedicated to ESM were found. Such frameworks would be essential for developing ESM activities in organizations and would also support ESM measurement initiatives. For the sole ESM measurement context, future research is needed to validate the applicability of the proposed measurement framework in practice, preferably in the long term. Further research on ESM performance management and the benefits of ESM could also introduce potential insights for improving the proposed framework and process. For extending the proposed framework and process, performance measurement of service provider networks in the ESM context could also bring useful insights since the multi-vendor setting may become increasingly common in ESM in the future. Also, the introduction of new technologies mentioned earlier in this chapter may set unanticipated requirements for ESM measurement, although the proposal was designed with such development in mind.

Recommendations for organizations include shifting from process-based thinking towards service-based thinking and working towards defined practices for delivering and managing Enterprise Services. Once the Enterprise Services are managed based on predefined methods, measurement and performance management of the services become

easier and more meaningful. This, in turn, enables further development and optimization and can lead to improved business results. The proposed process is designed for guiding towards these directions and could therefore be used by any organization that wishes to improve their ESM activities by measuring performance.

8 CONCLUSIONS

Organizations apply ITSM processes and tools outside of IT to HR, Finance, Legal, Facility, Operations, Procurement, and other functions. This phenomenon has recently been labeled as ESM. It comprises the activities for managing the Enterprise Services' lifecycles from strategic planning and design through implementation, operation, support, and improvement to deliver value to users and enable business. For ensuring satisfactory internal service quality, organizations need to manage and measure the performance of ESM activities. This study aimed to create a framework for ESM performance measurement for answering this need.

The main research question was "*How can the performance of ESM be measured?*". A sequential mixed-method approach was used for answering the research question. A literature review was conducted for gathering information on performance measurement in general and in the ITSM context. Literature related to the ITSM context was used due to the similarity with ESM and due to the scarce research literature associated with ESM. The literature review provided input for designing the survey, which was used for gathering information on ESM and ESM measurement practices in organizations. The survey combined quantitative and qualitative techniques and was used for creating an initial proposal. In addition to the survey, workshops were used as a method to build the proposal—the workshops aimed at gathering qualitative data and working towards a solution for measuring ESM. The workshops were held with two Finnish companies (a retail company and a university).

Based on the survey results, ESM activities were common: organizations provided a wide range of different services and utilized several processes adapted from the ITSM context. Few organizations did measure their ESM activities, and the organizations that measured their ESM activities used mostly process-level metrics. Service catalogs for defining Enterprise Services were also uncommon. The outcomes of this study suggested that organizations should measure their ESM activities using a multidimensional approach that emphasizes the measurement of business value instead of relying on process-level metrics. However, process metrics can be used as one dimension amongst others.

The existing research literature related to ESM was scarce – no methods for ESM measurement were found. This study contributes to the ESM literature by providing a framework for ESM performance measurement. Additionally, a process for deriving metrics was proposed for supporting organizations in implementing the proposed framework. Measuring and managing the performance of ESM is essential for ensuring high internal service quality, which has been found to impact employee satisfaction and customer satisfaction, which in turn has been found to affect financial performance. By measuring ESM from the business perspective, organizations can ensure that the ESM activities are aligned with business objectives.

Despite that the study proposed a framework for measuring ESM performance and a process for implementing the framework, more research is needed to validate the framework and process in practice. Recommendations to organizations include shifting from process-based to service-based thinking in the ESM context. Also, based on the results, it is recommended to work towards solutions for measuring ESM from the business perspective for ensuring that the ESM activities serve the business in the most meaningful ways.

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APPENDICES

Appendix 1. A summary of ITSM metrics for Service Request Management and Incident Management

Publication	Process / Practice	Metric	Definition
ITIL (OGC 2007c, 54-58)	Service Request Management	The total number of Service requests (as a control measure)	-
		Breakdown of Service Requests at each stage	-
		The size of current backlog of outstanding Service Requests	-
		The mean elapsed time for handling each type of service request	-
		The number and percentage of Service Requests completed within agreed target times	-
		The average cost per type of Service Request	-
		Level of client satisfaction with the handling of Service Requests (as measured in some form of satisfaction survey)	-
	Incident Management	Total numbers of Incidents (as a control measure)	-

		Breakdown of Incidents at each stage (e.g. logged, work in progress, closed etc)	-
		Size of current Incident backlog	-
		Number and percentage of major incidents	-
		Mean elapsed time to achieve incident resolution or circumvention, broken down by impact code	-
		Percentage of incidents handled within agreed response times (incident response-time targets may be specified in SLA's, for example, by impact and urgency codes)	-
YASM	Resolve incidents and service requests	Number of incidents and service requests	Number of incidents and service requests logged by 1st level support, possibly grouped by priorities, categories, clients, ...
		Number of major incidents	Number of incidents resolved by invoking the special procedure for major incidents.
		Average initial response time	Average delay between the time a user reported an incident or service request and the time that 1st level support responded to that incident or

			request, possibly grouped by priorities, categories, clients, ...
		Average resolution time	Average time for resolving incidents or service requests, possibly grouped by priorities, categories, clients, ...
		Resolution within agreed time	Percentage of incidents and service requests resolved within the target resolution times specified in the service agreements, possibly grouped by priorities, categories, clients, ...
		First time resolution rate	Percentage of incidents and service requests resolved by 1st level support during the first call, possibly grouped by priorities, categories, clients, ...
		Number of standard incidents and service requests	Number of incidents and service requests which were resolved by applying known resolution methods (typically defined in incident models) , possibly grouped by priorities, categories, clients, ...
		Incidents resolved remotely	Number of incidents and service requests resolved remotely (i.e. without carrying out

			work at the user's location), possibly grouped by priorities, categories, clients, ...
		Incidents resolved pro-actively	Number of incidents reported and resolved pro-actively (i.e. incidents resolved before impacting business processes on the client side), possibly grouped by priorities, categories, clients, ...
		Share of escalated incidents	Percentage of incidents where a hierarchic escalation occurred.
		Average resolution effort	Average work effort for resolving incidents and service requests, possibly grouped by priorities, categories, clients, ...
The Definitive Guide to IT Service Metrics (McWhirter & Gaughan 2012,	Request Fulfillment	Percentage of overdue requests	
		Service request queue rate	
		Percentage of escalated service requests	

		Percentage of correctly assigned service requests	
		Percentage of pre-approved service requests	
		Percentage of automated service requests	