



**MEASURING SERVICE PERFORMANCE AND CUSTOMER SATISFACTION
IN ORGANIZATION'S EXPERT TEAMS**

Lappeenranta–Lahti University of Technology LUT

Master's thesis

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Examiner: Professor, Janne Huiskonen

ABSTRACT

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Constantly evolving global industry sector drives forward performance measurement research. This has shifted research focus to more holistic approaches in exchange for just concentrating on financial performance. This shift becomes concrete in expert organizations and teams, where the provided product or service is intangible, which creates challenges on measuring performance. This sparked the need in case organization to research and develop their current performance measurement practices. This thesis aims to clarify good measurement practices in expert teams and propose a measurement model for the case business-unit.

The research of this study is conducted as qualitative research and aims to create a general knowledge on performance measurement practices. Theoretical background is executed with literature review consisting of performance management, customer satisfaction and expert organization, which then is applied in development of measurement model.

The target organization's business unit operates in the field of expert technical service, where the service provided is in the form of information. Current measurement practices that heavily rely on classical account management are not sufficient to provide a complete understanding of service process performance. The proposed model aims to provide a more customer-centric approach so to close this gap. Organizations and customer's values together with clear purpose of service provided creates a solid foundation on indicator selection. Implementation of the model and selection of the final indicators are left outside of the research scope and to the responsibility of the target organization.

TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

Teknis-luonnontieteellinen

Tuotantotalous

Mika Keski-Ruismäki

PALVELUN SUORITUSKYVYN JA ASIAKASTYYTYVÄISYYDEN MITTAAMINEN ORGANISAATIOIN ASIANTUNTIJATIIMISSÄ

Koulutusohjelmasi ja tutkielmasi: Tuotantotalouden pro gradu -tutkielma
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Jatkuvasti kehittyvä globaali teollisuus vie eteenpäin suorituskyvyn mittaustutkimusta. Tämä on siirtänyt tutkimuksen painopisteen kohti kokonaisvaltaisempia lähestymistapoja taloudelliseen suorituskykyyn fokuksina sijaan. Tämä muutos konkretisoituu etenkin asiantuntijaorganisaatioissa ja -tiimeissä, joissa tarjottava tuote tai palvelu on aineeton, mikä asettaa haasteita prosessien suorituskyvyn mittaamiselle. Tämä synnytti tapausorganisaatioissa tarpeen tutkia ja kehittää nykyisiä suorituskyvyn mittauskäytäntöjään. Tämän tutkimuksen tavoitteena on selvittää hyviä mittauskäytäntöjä asiantuntijaryhmissä ja ehdottaa mittausmallia kohdeliiketoimintayksikölle.

Tutkimus on toteutettu kvalitatiivisena tutkimuksena, jonka tavoitteena on luoda yleistietoa suorituskyvyn mittauskäytännöistä. Teoreettinen tausta on toteutettu kirjallisuuskatsauksella, joka koostuu suorituskyvynjohtamisesta, asiakastytyväisyydestä sekä asiantuntijaorganisaatiosta, mitä sovelletaan mittaristomallin kehittämisessä.

Kohdeorganisaation liiketoimintayksikkö toimii teknisen asiantuntijapalvelun alalla, jossa tarjottava palvelu on tiedon muodossa. Nykyiset mittauskäytännöt, jotka tukeutuvat vahvasti klassiseen tilihallintaan, eivät riitä antamaan täydellistä ymmärrystä palveluprosessin suorituskyvystä. Ehdotetun mallin tavoitteena on tarjota asiakaslähtöisempi lähestymistapa tämän aukon kuromiseksi. Organisaation ja asiakkaan arvot yhdessä selkeän palvelun tarkoituksen kanssa luovat vankan pohjan indikaattorien valinnalle. Mallin käyttöönotto ja lopullisten mittareiden valinta jäävät tutkimuksen ulkopuolelle ja kohdeorganisaation vastuulle.

Table of contents

Abstract

1	Introduction	7
1.1	Background of the study	7
1.2	Research objectives and limitations.....	7
1.3	Implementation of the study	8
1.4	Structure of the report	9
2	Performance management	11
2.1	Measuring performance	11
2.2	Designing performance measurement system	13
2.3	Measuring intangible assets	17
2.4	Benefits of measuring performance	19
3	Performance measurement systems.....	21
3.1	Balanced scorecard	21
3.2	Performance pyramid.....	22
3.3	Dynamic performance measurement system	24
3.4	Performance measurement indicators for service company	26
4	Customer satisfaction	28
4.1	Measuring customer satisfaction	29
4.2	Customer satisfaction applications	34
5	Expert and expert organization.....	37
5.1	Performance in expert organization	38
6	Designing a measurement system for case organization.....	40
6.1	Case organization and background of the study	40
6.2	Process and current measuring practices	41
6.3	Evaluating customer values via interviews of authority.....	42
6.4	Results of conducted interviews	43
6.4.1	Points of interests for developing measurement system.....	44
6.5	Case company's strategic priorities	45
6.6	Measurement system and dimensions.....	45

6.7	Measuring process lead time.....	47
6.1	Measuring service quality	48
6.2	Measuring customer's actions and engagement	49
6.3	Direct customer feedback gathering	51
6.4	Overall process performance and balance	52
6.5	Results.....	53
7	Conclusion and further study.....	58
7.1	Conclusion	58
7.2	Further study	59
	References.....	60

Appendices

Appendix 1. Thematic interview template (Eng/Fin)

Appendix 2. Customer satisfaction questionnaire

Figures

Figure 1. Thesis structure

Figure 2. Relationship between strategy and indicators (Kankkunen et al. 2005, pp 100)

Figure 3. Stages of performance measurement systems developing process and responsible stakeholders (Hannula et al. 153-155)

Figure 4. Balanced Score Card (Kaplan et al 1996, p 9)

Figure 5. Performance pyramid structure (Laitinen 1998, pp 291)

Figure 6. Dynamic performance measurement system (Laitinen 1998, pp 296)

Figure 7. Performance measurement system for service companies (Laitinen 1998, pp 293)

Figure 8. Distribution of customer experiences (Rope & Pöllänen 1995, pp 41)

Figure 9. Effects on customer satisfaction program (Allen et al. 2004, pp. 20)

Figure 10. Structure of target organization

Figure 11. Service process

Figure 12. Measurement system structure

Figure 13. Strategic map of indicators

Tables

Table 1. Four reasons to measure (Neely, 1998, pp 71-89)

Table 2. Approaches for intangible management system (Kujansivu et al. 2007 pp. 65)

Table 3. Examples of service teams indicators (Spiik 2007, pp 106-107)

Table 4. Different types of experience indicators (Holma et al, 2021, pp 262)

Table 5. Customer experience effects (Rope & Pöllänen 1995, pp 41-43)

Table 6. Proposed measurement system

1 Introduction

1.1 Background of the study

Throughout the centuries performance management practices have established themselves as vital part of our society (Neely 2007, pp 144). Need of managing complex systems in the middle of fast evolving global trends has created intricate frameworks to understand and predict constantly evolving field (Bititci et al. 2012, pp 308). While the financial indicators of the processes are well managed, measuring practices regarding people produce challenges since they are associated with intangible assets such as behavior and feelings (Spiik 2007, pp 101-102). Measuring process performance and finding the right set of indicators has been considered a difficult task in expert organizations, where produced solutions for customers are tailored for their needs and overall creative (Pesonen 2007, pp 20,154).

The purpose of this thesis is to further study expert service teams' performance measurement practices and propose a process performance measurement model for the case organization. The measurement model is created for the target organization's life-cycle functions regarding auxiliary systems which is specialized in providing an expert service for their customers. Expanding the model for the adjacent similar functions will be discussed in further study. Main objective of this study is to research whether the business functions measurement practices are sufficient to reflect process performance or does it need to be improved.

1.2 Research objectives and limitations

The objective of thesis is to study performance measurement practices in expert service teams and apply gathered knowledge to propose a measurement system for the case company. Study is limited to approach performance measurement in the prospect of customer satisfaction and performance management in expert teams. These limitations come from the case company's need for research and further develop their customer satisfaction and process performance measurement model. Measurements will be limited for the plant life-cycle expert service function of the organization. The focus of this study is on function's

main process regarding technical services and leaves out secondary process regarding audit services. Final selection of indicators to be implemented will also not be included in this study and it is the manager's responsibility. Expanding models for similar functions will be discussed in further development. Further selection and implementation of the proposed indicators will be outside of this thesis and in the company manager's responsibility.

Purpose of the thesis is to answer following research questions:

- What is required to develop a performance measurement system?
- What are good performance measurement practices for expert service teams?

1.3 Implementation of the study

This study is carried out as a case study by applying qualitative research methods. Data gathered in qualitative research is dictated by how much new information is discovered in the process and information is sufficient when it reaches saturation. This for example means that the interviews are conducted as long they produce new relevant information regarding the study. This saturation of information can be used as a guiding principle in data gathering and it is highly affected by the experience of researchers. (Hirsjärvi et al. 2009, pp 181-182)

In qualitative research the most common data collection methods are interviews, inquiries, perception, and data collected from different documentation sources. These different methods can be used either parallel or combined depending on studied problem and resources given to research. (Tuomi & Sarajärvi 2018, pp 83)

Strength in implementing research as a case study is that it can be utilized to gain comprehensive understanding of the cultural operating system. This differs from traditional research which aims to produce universal knowledge. Case study can be utilized to understand the phenomenon from different perspectives, and it highlights the importance of operating environment. The importance in case study is to produce detailed knowledge of different operators, events, and processes. Cases aren't generalizable by themselves, but they give tools to understand different phenomenon. (Laine et al. 2007, pp 45)

This thesis is conducted with co-operation of target organizations life-cycle business unit, which main function is to provide technical assistance to their customers. The study's objective comes from the case organizations need to further research and develop their process performance measurement practices. Based on this objective, literature review is made to fit in given framework and to establish a theory foundation to support suggested solution. Since study focuses on performance measurement in operational level, measurement system frameworks and its' literature are utilized as a guideline and to give structure for the proposed model thus the literature review aims to give general understanding of the most common and well-known frameworks.

1.4 Structure of the report

The study conducted is constructed into four sections. The first section of the study regards background, limitations, and research objectives of the thesis. The second part consists of literature reviews which create a basis and supports the case study. Literature is chosen by usage of following key words and phrases such as: "performance measurement", "performance management systems", "measuring customer satisfaction", "performance in expert teams", "intangible asset performance" and "measuring customer experience". In the third part literature basis is put into practice in the case study where the aim is to create measurement system and applicable indicators for the case organization. Last part discusses conclusion and framework for the future studies.

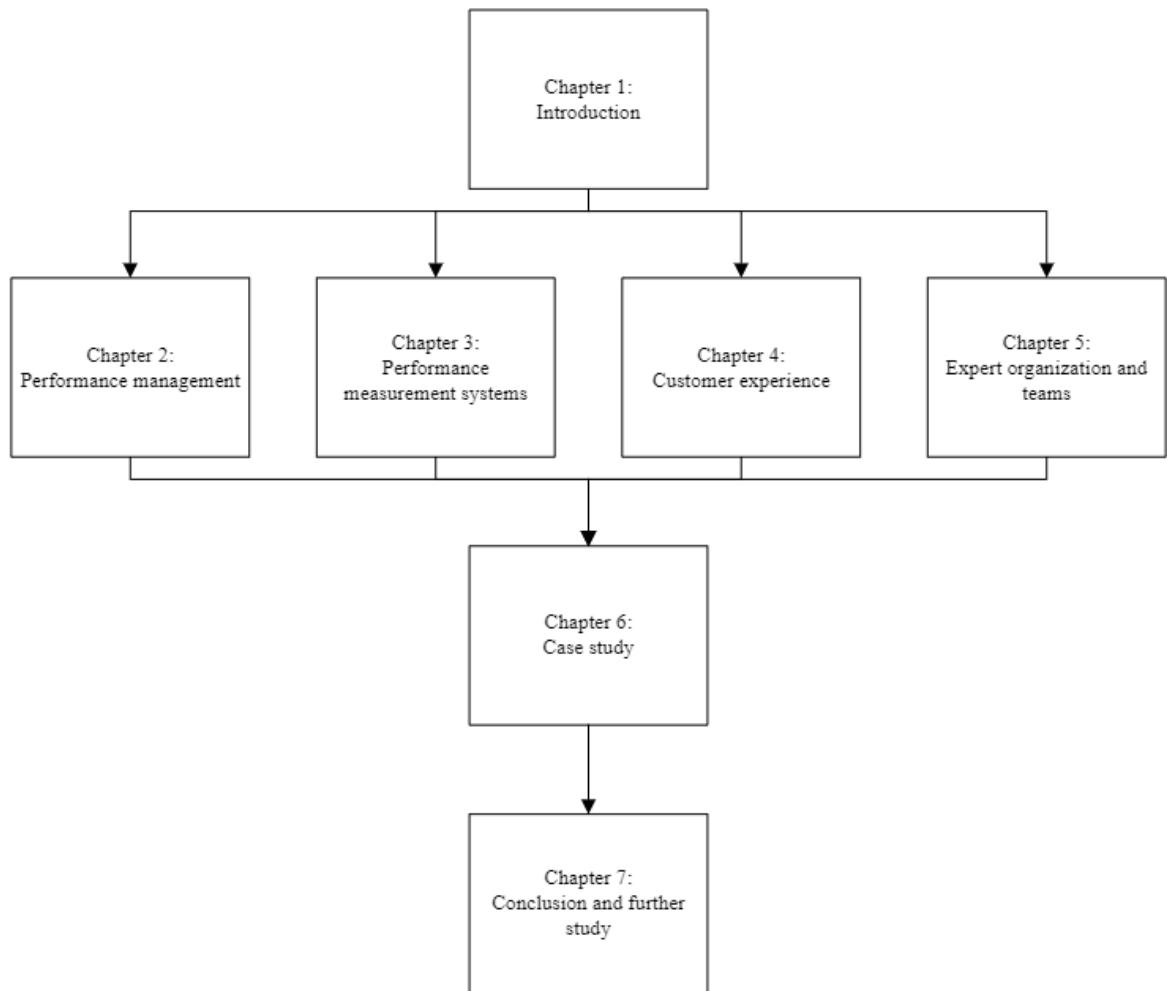


Figure 1. Thesis structure

2 Performance management

Dr. Aubrey Daniels can be credited with to be first to coin the term performance management. As defined by Dr. Daniels, performance management is the process by which an organization guarantees that its objectives are frequently met in a way that is both efficient and effective. Since the middle of 1950 this organizational imperative has been seen as the primary duty and task of practitioners and scholars who develop, run and research management control systems. Although the phrase “performance management” was first used in a formal sense by Dr. Daniels and his coauthor Theodore Rosen in 1983, its early usage was mostly limited to applied psychology and management journals. With the release of his article “Management Accounting Research”, David Oatley was the first to introduce the phrase into accounting literature in 1999 superseding phrase “management control” which was only used before this. (Adler 2022, pp 11-12)

In the middle of 1950s, performance management became a recognized topic of study. It is dedicated to assisting managers in successfully adjusting to shifting external organizational settings and keeping up with them when appropriate. Book, “Management Accounting: Text and Cases” by Robert Anthony published in 1956, gave the original the discipline of performance management its original meaning and momentum. Despite multiple updates in the form of new editions, Anthony’s 1956 publication continues to be regarded one of the most important and authoritative works on the conception and application of performance management. Accounting inquiry and research, that mainly regarded technical accounting topics and in general centered around finding the ideal input/output ratios, was the dominant model in accounting field prior to Anthony’s book. Taylor's scientific management, the prevailing management paradigm at the time, primarily shaped the research agenda in the accounting discipline. (Adler 2022, pp 21-22)

2.1 Measuring performance

Organizations’ performance measurement is a vast discipline regarding many different approaches depending on what part of organization’s operations performance is to be measured, but regardless of the chosen field measurements can be divided into two

categories: objective, which include use of data, and subjective, that relies in observations of managers (Neely 2007, pp. 7). Nearly 40% of the companies' differential profit variations cannot be explained. Singh, Darwish and Potaćnik (2016) suggested that this is due to the complexity of organizations performance, which is influenced by different varying factors both internal and external that companies can't manipulate or have only a little control over. If this scenario is accepted, then it is only a personal preference which method is applied to measure organizations performance. Problem in using subjective measures is that they could exaggerate performance and be prone to bias, but correct data collection can be used to mitigate problems and prove to be useful in situation where objective data can't be gathered in required accuracy. (Sing et al. 2016, pp 220-221)

Neely (1998) introduces in his book "Measuring business performance" that reasons for performance measurements can be divided roughly into four generalized categories: check position, communicate position, confirm priorities, and compel process. The first reason, checking position, lays the foundation for measurement practices. Measuring operations gives perspective on where the organization currently positions itself and where it is heading. This helps to evaluate plans and actions taken to achieve set goals. This also provides a tool for managers to further inspect and track performance historically and assess if used resources have been utilized efficiently. Communicating position is as necessary as checking it and may even be legally mandatory, for example disclosing financial statements annually. Well balanced and executed measurement practices support communication with internal and external stakeholders. Internally communicating position may be utilized to drive success in teams or as a way to appreciate their work input. Externally communicating positions help an organization to benchmark itself and utilize it as a marketing tool. (Neely, 1998, pp 71-77)

Confirming priorities via performance measurement practices helps organizations to determine how distant the set targets are by giving deeper knowledge on where the business currently is. This is comparable way to checking position in terms of how much is still needed to achieve goals and not how far organization has come. When performance shortcomings are identified, managers can start developing appropriate action plans to reduce the shortcoming. Measurable data gives a tool to evaluate plans and their effect on achieving set goals and without data backing decision making there is no guarantee that the plan developed is effective or suitable. (Neely, 1998, pp 79-81)

As a way to compel progress measuring practices has multiple effects:

- Expresses priorities in organization. Measurements can be used to communicate throughout the organization its values and that the organization is willing to invest resources to proactively measure it.
- Linking measurement into reward, which helps to focus the work and resources when measures make clear on how performance is determined. Linking measures into reward further enforces key values of the defined measurement dimension.
- Clarifies progress in a way of giving tools to verify how taken actions and plans have worked and has any progress been made. (Neely, 1998, pp 85-88)

Table 1. Four reasons to measure (Neely, 1998, pp 71-89)

Reason	Description
Check Position	To define organization's position internally and externally.
Communicate position	To comply with legislation and communicating core values throughout the organization
Confirm priorities	Clarifies organizations goals and focuses resources
Compel process	As a way to make a change in organization

2.2 Designing performance measurement system

A study conducted by Neely, Gregory and Platts (2005) suggests that there are three levels of performance measurement system that you need to take account while designing performance measurement system. This framework is divided into the individual performance measurements, performance measurement system as a body and the systems relation to its environment in which it operates. Individual performance level reflects

everyday operations regarding production and service. These individual measurements can be categorized further into four groups: quality, time, flexibility, and cost. The second level describes performance measurement systems more broadly, for example systems operation and implementation such as does the system include correct elements, has it been integrated vertically and horizontally. The highest level of design framework describes systems relation to the organization's strategy and culture and how well it depicts it. Measurements systems environment can be divided into internal, which depicts organization itself, and external dimensions, which depicts the market in which company operates. Company can utilize environments internal dimension for setting targets, feedback and rewarding. The external environment on the other hand is used for the company to benchmark itself to the competitors and to gather information regarding customers. (Neely et al. 2005)

It is recommended to use systematic foundation and check lists when designing performance indicators to avoid most problems regarding a single indicator which can be, for example, partial optimization. The number of indicators is hard to specify because the opinion on maximum amount varies heavily between companies. When assessing number of indicators, following factors should kept in mind when number of indicators rises:

- The probability of better business modelling rises and thus all relevant aspects can be taken into consideration.
 - People's understanding of indicators and measurement system as a whole decreases.
 - Understanding of relationships between indicators decreases.
 - Systems upkeep and recourses needed to upgrade rises.
 - The focus of certain subdivisions that are critical to operation can decrease.
- (Kankkunen et al. 2005 pp. 133-135)

It is necessary to transform the organization's strategy into concrete objectives before creating a strategic performance measurement system and by doing so it also ensures that everyone involved has the same clear understanding of expressed strategy. This drives to create an explicit business model that brings up assumptions of key success factors. Communication throughout the organization about the created measurement system and its

objectives is a vital part of creating measurement system. Communication is not only giving objectives and executing them from top to bottom, but it also creates a feedback loop from bottom to top and shares experience horizontally creating conversation regarding strategy which bolsters organizations culture. A strategic measurement system is a powerful tool to drive change in organization and the change process begins by defining objectives that drive the change in the wanted direction. This relationship between strategy and indicators is depicted in figure 2. When the objectives are clear, the measurement system can be created to measure how well these set goals are achieved. (Kankkunen et al. 2005 pp. 98-100)

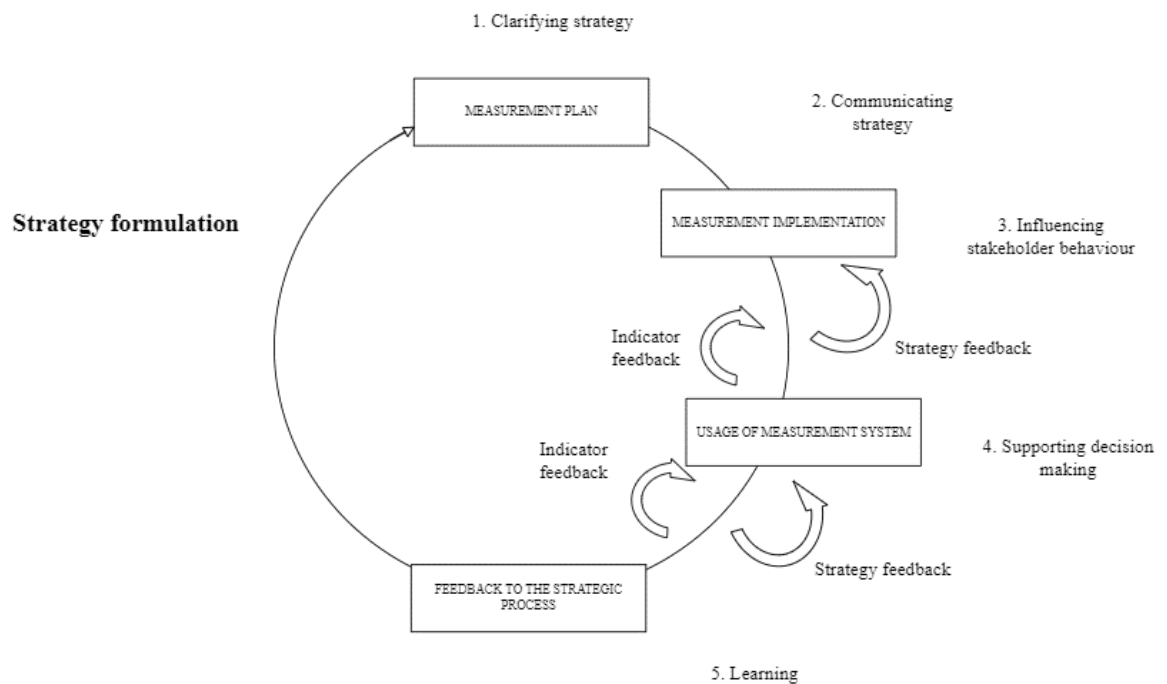


Figure 2. Relationship between strategy and indicators (Kankkunen et al. 2005, pp 100)

In literature there is consensus between researchers about developing a measurement system being a teamwork and in the composition of the groups involved in the developing process and their responsibilities. Main differences come in the opinion of is it necessary to employees to be part of the developing process and if it is then in which stage. For this employee's involvement, like in developing a measurement system in general, there is no single answer or guideline that is applicable in every company and in every work culture

about whose involvement is necessary to the development process. A couple of basic groups can be defined to be involved for the development. A steering group that consists of upper management and is responsible of guiding the development process, clarifying organizations strategy and vision, defining top level measurements, and identifying key processes. The steering group then forms project teams that are responsible for defining indicators for the different functions and critical processes and consists of supervisors and employees of that process of which indicators are being developed. In figure 3 is depicted measurement systems development process, responsibilities and organizational factors that affect it. (Hannula et al. 2002, 153-154)

When planning on who should be involved in the development process and in which stages, it is good to take in practice the principle that everyone participates via project teams to the development at least for the indicators that measure their performance. With this procedure can be achieved following benefits. Firstly, it engages employees in the measurement area to participate in the development of the indicators, which makes it easier to communicate the reasons behind measurement selections and eases the implementation. Secondly, wider scale of participation can bring out challenges and inconsistencies in selected measures of which management usually can be unaware. (Hannula et al. 2002, 154-155)

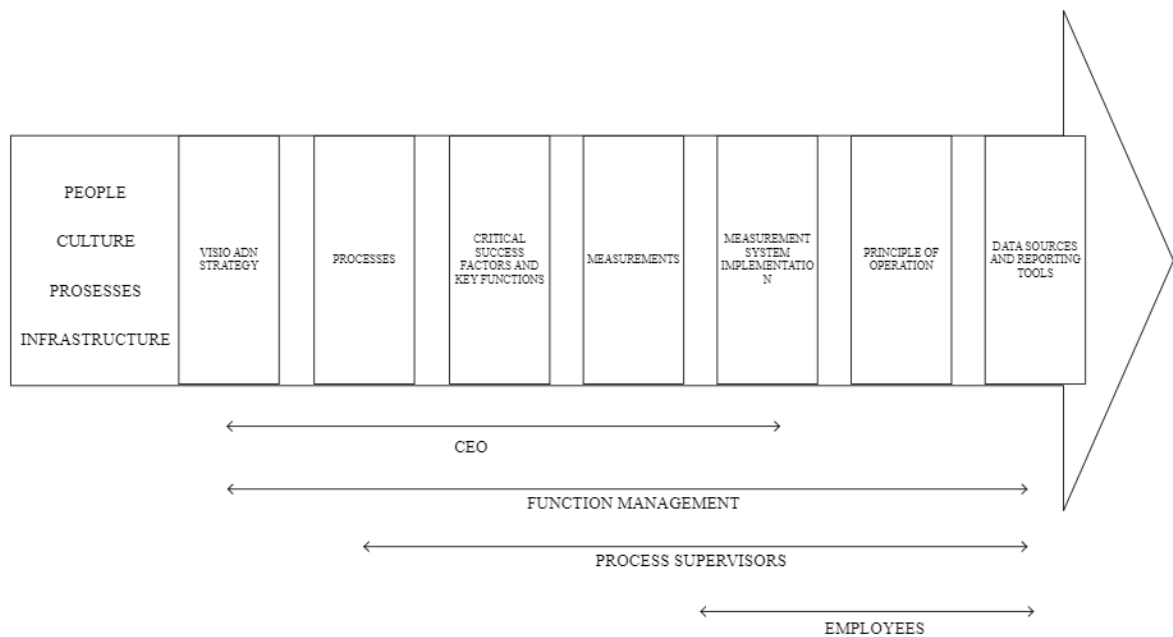


Figure 3. Stages of performance measurement systems developing process and responsible stakeholders (Hannula et al. 153-155)

2.3 Measuring intangible assets

Kujansivu, Lönnqvist, Jääskeläinen and Sillanpää (2007) proposes three different approaches to developing a management system for the organizations intangible capital: comprehensive, concentrated and linking intangible capital into existing management system. It is possible that development of intangible capital management systems covers multiple of presented approaches or just utilize one of them as a framework. Presented in table 2 are approaches to intangible asset management with their strengths and weaknesses exaggerated. (Kujansivu et al. 2007 pp. 61-65)

Table 2. Approaches for intangible management system (Kujansivu et al. 2007 pp. 65)

Comprehensive intangible capital management system		Concentrating in singular intangible success factor		Linking intangible success factors into existing management systems	
+ Creates comprehensive view of intangible capital	- Requires resources	+ Allows to concentrate on selected factor with reasonable resources	- Doesn't create comprehensive view	+ Saves resources and simplifies usage	- Doesn't create comprehensive view
+ Intangible capitals management system supports development	+/- Creates new system but can have affect on usage of existing systems	+ Very flexible to apply to different situations	+/- Traditional method to develop but doesn't create novelty value	+ Doesn't require personnel training	

The goal of a comprehensive approach is to take account intangible capital and its management's special characteristics. There are multiple models created to support management of intangible capital, but the models concentrate more on certain management needs rather than providing a systematic and broad enough approach. To be able to create a comprehensive management system it needs to include a comprehensive management

process that includes different process steps such as recognizing intangible capital and required development steps. Systematic and step by step progress is the advantage of the process model and utilizing these models gives structure to the development project. (Kujansivu et al. 2007 pp. 61-62)

Prioritizing and concentrating on a certain intangible success factor helps to save resources and is often faster than managing a larger and more comprehensive system. Approach can be chosen when there is already recognized an intangible success factor. This approach requires to define carefully intangible success factor to be successful. On top of that it is necessary to recognize how the factor can be affected and measured. Concentrating on a singular factor gives broad insight on its effects and operations but at the meantime neglects other critical factors. (Kujansivu et al. 2007 pp. 63-64)

Linking intangible success factors into existing management systems helps employees to adapt to change more easily and it helps to mitigate risks of unnecessary or overlapping work. This is possible if existing systems are regarded as functioning and well suited for the need so creating overlapping or parallel systems doesn't bring any extra value. Due the fact that more traditional management systems are more common, and the management already has practical experience in applying them into processes, it might come more naturally to link intangible factors into existing management development projects. (Kujansivu et al. 2007 pp. 64-65)

Building a set of indicators to represent teamwork is a challenging task and at the beginning of this process expectations should be managed. In the beginning only a couple of indicators should be implemented and tested how they work. Focus on the indicators should be that they are clear and understandable, and they work guiding the work process and creates desire to develop. Indicators that impress the things-side of the process, for example quantity, quality, errors and profits, usually make up the majority of indicators and are well managed, which is due to the account management background. In comparison, the people's side of measurement is harder because the measurement process is based on behavior and feeling. Gathering customer feedback gives insides from both fields. The purpose and the goals of the organization and the team should build a foundation for the building of the indicators especially on the people-side. (Spiik 2007, pp 101-104)

Activity is measured many ways in service teams and in service organizations and the most important indicator probably is financial performance. Financial performance only tells the past and should not be blindly followed. Change happens constantly and thus measurement practices should also focus on factors that ensure teams existence also in future of which examples of plausible indicators of service team is presented in table 3. Focus shifts in thinking to customers' needs and how fulfilling them, when building a measurement system in a service team. Measurements should be taken into account the people side of the business, which is often a more decisive factor in the service field. (Spiik 2007, pp 106-107)

Table 3. Examples of service teams indicators (Spiik 2007, pp 106-107)

Fields of measurement	Teams key performance indicators
team's placement in their market field	on time delivery
customer satisfaction	flexibility
level of service and readiness	quality
the results of actual teamwork	will and skills
order and cleanliness	overall information flow
	communication forward
	feedback to enquiries
	communication towards the customer
	order and clarity of action
	communication of team's responsibilities, function, and changes

2.4 Benefits of measuring performance

Roles of measurement can be divided into three categories that compliment reasons for measurement creating benefits when functioning effectively and necessary process is implemented. Roles can be divided into complying with the non-negotiable, checking health, and challenging assumptions. Every organization has some indicators that are non-negotiable and not achieving goals in any of these performance dimensions could lead to sanctions in organization or even in individual level. Performance measurement benefits in

this case by providing an early warning, which helps to plan preventing and correcting actions. (Neely, 1998, pp. 178-179)

To be able to get a comprehensive perspective of the health of an organization, it needs an equitable set of measurements. If measurements are lead from strategy and provide answers on how company is viewed by shareholders, customers, what is needed to outdo internally and how creating value and continuous improvement is achieved. These factors allow organizations to track the implementation of the strategy. The last role of challenging assumptions plays role in testing validity of existing assumptions that has been used as a foundation of strategy and planning. This way the implemented strategy can be evaluated and adjusted correctly if proven incorrect for the current state of business. Challenging underlying assumption creates learning cycle that can be either single looped or double looped. Single looped learning acts as a corrective measure to identify if plan is going to unwanted direction and double looped learning digs deeper in to planning process, where it questions assumptions in basis of decision making and counts on parties involved to challenge the acknowledged values. (Neely, 1998, pp. 179-180)

3 Performance measurement systems

Double entry bookkeeping that first appeared in the late 13th century, persisted till the industrial revolution, laid a foundation for performance measurement practices. In the 19th century, the rise of mass production methods and labor specialization were hallmarks of the industrial age. Introduction of wage system and rapid expansion of production facilities created need for tools to monitor complex organization structures in different levels and to delegate responsibilities. Globalization in 1950s brought need for more intricate productivity management systems and between 1960s and 1980s the characteristics of performance measurement sifted from financial indicator to focus more on the demand side creating multidimensional and balanced measurement practices. This shift in measurement practices also shifted literature to focus more on strategic control which led to the birth of performance measurement systems. (Bititci et al. 2012, pp 308-309)

3.1 Balanced scorecard

Introduced by Kaplan and Norton in 1992, balanced scorecard has become one of the most researched frameworks. (Koufteros et al. 2014; Franceschini et al. 2019, pp. 145) Kaplan and Norton (1996) describes that balanced scorecard was created to expand traditional financial measurements by widening measurement perspectives into four categories, which are financial, customer, internal processes and learning and growth, which are presented in figure 4. This way the measurement system gives broader aspect to managers on what needs to be improved internally to create value for customers and predict future customer needs. Balanced scorecard expands organization's strategy and vision into concrete goals and indicators which can help employees to further understand effects of their decisions and actions when it is used in all operations levels. (Kaplan et al. 1996, pp 7-11)

Balanced scorecards consist of 15 to 25 strategically significant factors which after selection are assigned with goals and developed indicators that have set reference value. Organization then selects actions to be initiated to achieve these set goals. Indicators should play an essential role in achieving strategic goals and organizations should avoid excessive metrics otherwise their traceability decreases which makes them less significant. Indicators should

be set to cover all dimensions. Building and implementing balanced scorecards is a learning process, which often takes multiple cycles to identify key factors and indicators to support strategy. (Lecklin, 2006, pp. 67-69)

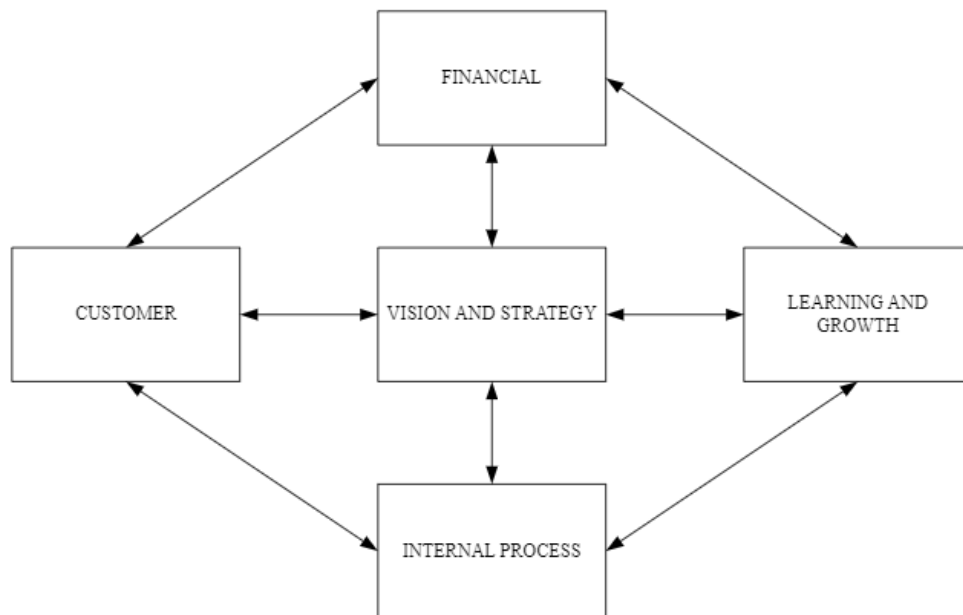


Figure 4. Balanced Score Card (Kaplan et al 1996, p 9)

3.2 Performance pyramid

A.S. Judson was first to introduced theoretical foundation for performance pyramid in 1990, which was later developed further by R.L. Lynch and K.F. Cross in 1991. Laitinen (1998) describes the purpose of performance pyramid was to combine organization's strategy and functions by transforming goals based on customer' values hierarchically from top to bottom and correspondingly related measurements from bottom to up. The model consists of four hierarchical levels shown in figure 5, which are tied into two larger dimensions: external effectiveness and internal efficiency. Every one of the four levels of the pyramid has its own measurements for both dimensions. (Laitinen 1998, pp. 288-291)

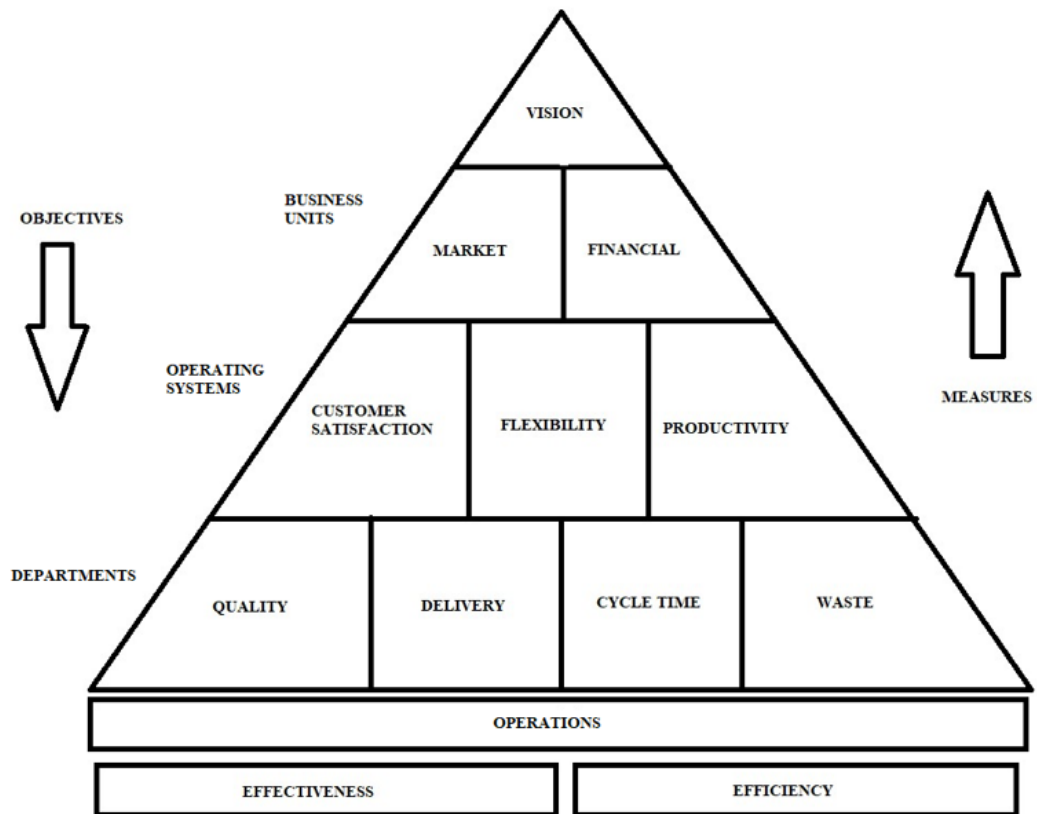


Figure 5. Performance pyramid structure (Laitinen 1998, pp. 291)

Performance pyramid is also applicable to expert work even though it is intended to be best utilized in production work due to its terminology. It is based on different time spans where the vision and business units have the longest and departments and individuals have the shortest time span. Clarifying mission in expert work is the basic requirement on implementations of performance pyramid. Starting an expert company derives from the vision that the operation is profitable in the long term, and it's achieved by executing certain strategies. On the business unit level, a company's existing product strengthens the reason for company's existence and expert organizations like other companies are sometimes affected by scarcity of resources. Factors affecting markets and financial dimension are described on operational level where customer satisfaction is easily regarded as a subjective quality of product in expert work. (Hannula et al 2002, pp. 28-29)

3.3 Dynamic performance measurement system

Created by Laitinen Erkki in 1996, dynamic performance measurement systems (DPMS) design is based on resources natural cycle inside the company highlighting process dynamics and dependence between measurement dimensions. The measurement system consists of two external performance dimensions and five internal performance dimensions shown in figure 6. Main principle of the model is to follow circulation of the resources inside the company and their conversion into revenues in the corporate process. Process steps follow each other causally, which helps to diagnose problems within the system and pinpoint cause of the performance in the dimension from previous step. This can be utilized to correctly identify success or failure cycles in the company and create a learning process for executives on how previous dimensions effects on performance of the process and whole company's performance. (Laitinen 1998, pp 294-299)

The first step in internal performance dimensions is to allocate costs to production factors by management, which is often based on budgeting. In this first step of the process indicators are meant to measure efficiency of the resource usage by the production factors. The second step in the process is to evaluate the production factors that were identified in the first step. Production factors can be further divided by need into tangible and intangible assets. This is done to further focus on factors that are vital to operations and prioritize them, which can be divided into capacity utilization rate and staff performance. The third step focuses on the efficiency of the functions performed by employees. Identifying core activities that are necessary for strategy execution is the first task in this process step. This is usually done by organizing functions by the value that they produce to the customer. Measuring functions efficiency has three essential dimensions for indicators: time, costs, and quality. In the fourth step of the process, measurement is focused to evaluate the value of produced outputs to customer which is linked to the fifth and last step in internal dimension: measuring profits. (Laitinen 1998, pp 299-310)

Measurement process' last two steps competitiveness and financial performance are results of previously mentioned internal process steps. Overall profits reflect the size of the company and its variation company's growth, which measures company's performance on the market. Competitiveness is the sixth step on the measurement process, and it includes two very important measurement dimension: absolute size change and relative size change,

which can be compared historically to company's previous records, values and, benchmark to key competitors' performance. Financial performance is a result of internal processes' outcomes and influences a company's competitiveness, growth, and size. It is traditionally divided into profitability, liquidity, and solvency. (Laitinen 1998, pp 310-313)

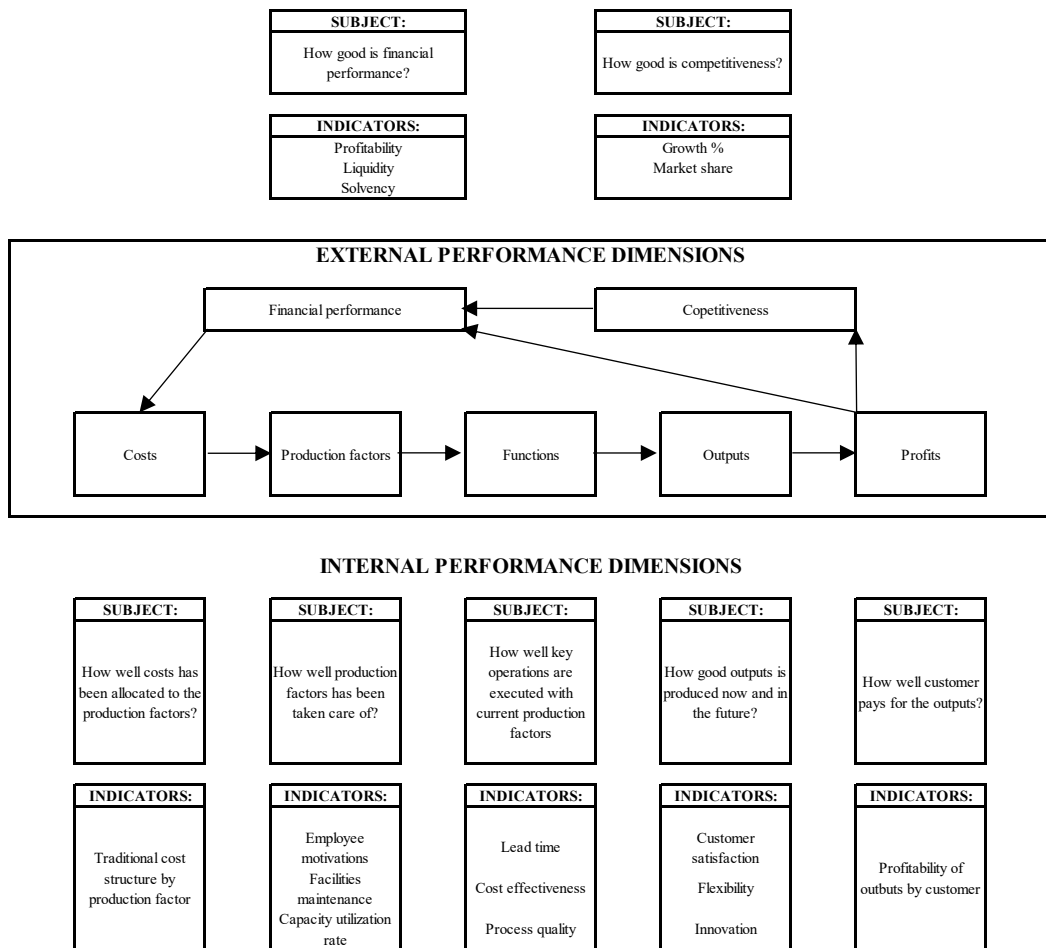


Figure 6. Dynamic performance measurement system (Laitinen 1998, pp 296)

3.4 Performance measurement indicators for service company

A new integrated performance measurement system was first introduced by L. Fitzgerald, R. Johnston, S. Brignall, R. Silvestro and C. Voss in 1991. It was developed especially for the needs of service businesses in order to achieve more efficient performance measurement and development. Developed system is based on a vast literature and its developers' observations on a 12 large English service companies. In-depth interviews of these selected companies' executives and middle management together with analyzing companies' internal processes and reports was utilized to gather data for the base of the measurement system. The measurement system consists of six dimensions presented in figure 7, competitiveness, financial performance, service quality, flexibility, resource utilization and innovation. Dimensions were selected because developers thought that too many measurement systems were based on too narrow subjected indicators that are easy to measure and leaving behind more complex indicators that are essential to company's competitiveness. Selected dimensions contain both financial and non-financial indicators and one of the key ideas of this system is that it allows management to assess trade-offs between employees. (Laitinen 1998, pp. 292-293)

	DIMENSIONS	EXAMPLE INDICATORS
OUTCOME	Competitiveness	Market share Growth in sales Customer base
	Financial performance	Profitability Liquidity Capital structure
DETERMINANTS	Service quality	Reliability Reseption Esthetics Communication Competence Availability Safety Cleaniness Politeness
	Flexibility	Quantity flexibility Delivery speed Product variety
	Resource utilization	Productivity Efficiency
	Innovation	Innovation process performance Performance of singular innovation

Figure 7. Performance measurement system for service companies (Laitinen 1998, pp 293)

4 Customer satisfaction

Customer experience is a more complex set of variables in a business-to-business setting than in business-to-consumer. It is typical in business-to-business that multiple different people in different roles and in different organization level consume the product or service. Complex organization structures, goal-oriented way of working and multiple decision makers involved with different priorities in the process increase factors in customer experience. Stakes are higher in operating business-to-business environment which creates necessity for solid co-operation and progress. This complexity in customer experience creates huge variation between companies in actions, indicators, and practices. Life cycle profits of customers are higher in business-to-business than in business-to-consumer because sales volumes of products and services are much higher. The value of every customer is significant in business-to-business, which justifies planning and developing customer experience. (Holma et al, 2021, pp 33-34)

Another difference between business-to-consumer and business-to-business is that in business-to-business customer relations are usually long and the process of acquiring a new customer or supplier is often complex, time-consuming, and cost heavy. Developing already existing customer relationships and creating a positive customer experience is easier and more affordable than acquiring new customers. And from a customer perspective, changing supplier can be risky if the acquired product or service significantly affects the quality of their own operations and services provided which they provide to their customers. business-to-business highlights functional experiences which companies produce by solving their customers challenges regarding their business. Good customer experience is not necessary experiential in business-to-business but practical, appropriate, risk free and reliable. This increases the baseline of requirements of the supplier that is needed to achieve. (Holma et al, 2021, pp 35-36)

4.1 Measuring customer satisfaction

Arboretti et al. (2018) defines customer satisfaction as a gap between expectations and experience of received product or service. This gap can be expressed as a measurable variable by customer such as a numerical grading which ties products or service's quality contrariwise to the variance and high variability can be seen producing waste in the process. Categorical judgements are often used to measure customer satisfaction, creating levels of satisfaction with the received service. As way of measuring variance in the process and customer satisfaction, this can lead to unreliable results when transforming questionnaire results into numeric values due the categorization and chosen levels in which given answer can differ from customer's received experience. Using the right statistical tools can be utilized to mitigate errors in data when transforming categorical answers into numeric values. (Arcoretti et al, 2018, pp. 19-20)

Organizations often strive to simplify measurement of customer experience and evaluation of customers' experience is concentrated into a single indicator or value that is easy to report as a key performance indicator. To get more reliable data of customers' experience, the single indicator needs to be expanded to cover other measurement dimensions, which can be categorized into five dimensions:

- Customer's emotional experience
- Transaction process and quality
- Effect of experience
- Outcome of experience
- Employee experience

General indicator that would verify overall customers' experience doesn't exist and best way to achieve most accurate evaluation of customers' experience is to utilize examples given in table 4 and tailor customized set of indicators to suit company's needs. (Holma pp 261-262)

Table 4. Different types of experience indicators (Holma et al, 2021, pp 262)

	What is measured?	What is found out?	Type of measurement	Example indicators
Customer's Experience	Emotion and its affect to experience	Correspondence to the expected value	Emotional experience, Satisfaction, Ease?	HappyIndex, CX Index, CSAT (Customer Satisfaction Score), CES (Customer Effort Score)
Transaction process and quality	Effortlessness of the promised process	Does processes support experience	Effortlessness, Speed, Usage metrics	CES, FCR (first call resolution), Number of reclamations
Effect of experience	Customers actions because of experience	Experiences effect on future	Recommendation willingness, Loyalty	NPS (Net Promoter Score), Retention, churn, Renewal purchases, Customer references
Outcome of experience	Customer retention and value	Experiences effect on business	Renewal and additional purchases, Purchase value, Life cycle value	Retention, CLV (Customer Lifetime Value),

				Customer retention cost
Employee experience	Work satisfaction	Effect of experience to commitment, absences etc.	Satisfaction, Image of employer	eNPS, HappyIndex, Recruit costs, Correlation to customer satisfaction

Indicators and measurements are useless if they are left without further processing. Gathered data needs to be combined and analyzed systematically. This helps to understand cause effect between different factors and dependencies on the customer journey. This helps decision makers to decide where to allocate resources and invest to develop customer experience. Data can be also utilized to authorize employees and to take responsibility. Incoherence of customer data and indicators in different systems and in corporate functions creates coercion and slows utilization of knowledge. Customer data siloing happens when an individual has their partial view on customer but lacks understanding of overall understanding of customer and their experience. Key function of measurements is to identify cause effect and data analysis this creates better conditions to develop processes and allows to identify easier and faster points that needs to be improved. (Holma pp 267-268)

Customers' experiences relative to expectations produce reactions in a satisfied-not satisfied axel. Levels of satisfaction can be divided into three main categories; under expectation situation (positive experience), balanced situation (expectations are met) and over expectation situation (negative experience). In over and under expectation situations, levels should be further divided into two smaller segments because the customer's reaction differs vastly. Average results of studies made about customer satisfaction distribution in different fields can be summarized in following figure 8, which shows that majority of customers (80%) were satisfied or surprised positively and rest 20% were disappointed on received service. This distribution is important because the customer's reaction is based on the level of satisfaction which is expressed in table 5. (Rope & Pöllänen 1995, pp 38-41)

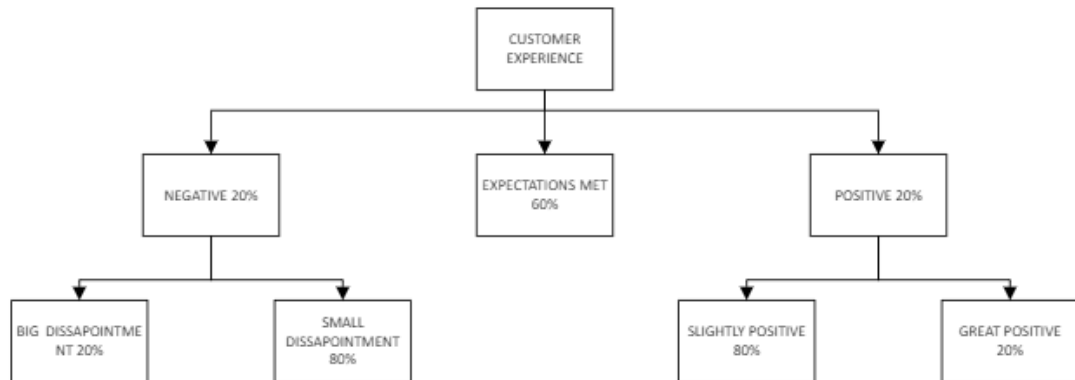


Figure 8. Distribution of customer experiences (Rope & Pöllänen 1995, pp 41)

Table 5. Customer experience effects (Rope & Pöllänen 1995, pp 41-43)

Distribution	Experience	Reaction
4 %	Deeply disappointed	Complaints and the possibility of termination of the customer relation especially when the company doesn't react to complaints in a way that disappointment could be compensated for and a customer's negative feeling averted.
16 %	Mildly disappointed	Mildly disappointed customers do not usually complain but will choose a different product on the next purchase and are willing to recommend competitor's services when asked about their experiences. This group doesn't usually react to disappointment if the company doesn't have a continuous system to

		gather customers' feedback that is regarded fast and effortless.
60 %	Expectations met	Customers do not usually produce a reaction about their experiences. Depending on the customer's expectation level, outcomes can differ. High expectations usually strengthen the customer relationship. When a low expectation is met customer is not necessarily satisfied and sees the situation more as "it is what it is". Meeting an average expectation does not strengthen nor weaken the relationship but can give chance for competitors to try weigh in by providing a better expectation level.
16 %	Mildly positively surprised	Customers do not usually give feedback independently outside of continuing relationship and readiness to recommend company's products.
4 %	Strongly positively surprised	Customer contacts are quite rare, and the key characteristics are that customers express their gratitude and are more likely to recommend the company forward. These strong surprises usually occur either when a customer has extremely low expectations and the process runs smoothly, contact is exceptional or some part or whole process performs of the highest quality.

Decisions should not be based only on inquiries made by customers and other subjective information given by them. These subjective customer data should be compared to objective data such as system logs to achieve better understanding of the events. This method aims to help decision making when actions are planned based on customers' feedback. Comparing subjective and objective data helps to understand process better and further develop it to suit better to customers' needs. (Holma 114-115)

4.2 Customer satisfaction applications

According to Allen et al. (2004) measuring customer satisfaction has many applications in organization throughout its multiple functions and levels by providing important information about consumers excluding behavioral feedback. Effects on customer satisfaction program are depicted in the figure 9. Results and gathered feedback from customer satisfaction programs can be utilized to shape numerous company's operations:

- Leadership: management can utilize customer satisfaction metrics to motivate and direct employees.
- Customer relationship management: customer relationship management plays a vital role in customer satisfaction. It defines the company's relationship to its surroundings and places customer in the center of operation.
- Competition: organizations can use customer satisfaction data to strategic planning by benchmarking competition and monitoring arising strategic opportunities and customer loyalty.
- Tactical: when focusing on customer transactions, gathered data can be utilized as a tool to improve key processes by pinpointing development opportunities
- Public relations: customer satisfaction program must be implemented correctly and have a set of tools to address accordingly to customers critical problems.
- Compensation: combining customer feedback with different economical metrics such as profitability or growth is a common way to create incentive programs to employees.

- Allocating resources: customer satisfaction metrics guide management to allocate necessary resources to solve key problems of the service or product. (Allen et al. 2004, pp. 20-21)



Figure 9. Effects on customer satisfaction program (Allen et al. 2004, pp. 20)

Customer satisfaction data can be utilized to pinpoint problems in process quality, to upkeep process performance, as a base of a rewarding system, to identifying customers' values and in crating marketing plan for key customers and for other customer segments. Most of the difficulties in utilization of gathered customer satisfaction data come from the fact that all the utilization areas are not identified before executing a customer satisfaction measurement. It is more expedient to build a measurement system to cover all the fields of data utilization,

even if they were not used right away, than later trying to patch older system or build an entirely new one. (Rope and Pöllänen 1995, pp. 61-62)

5 Expert and expert organization

Expert work has mainly two perspectives in literature. The first one is production related expert work such as product development and research has separated into seemingly independent activity. Second is that actual expert work is defined by the trade which defines their rules and so upholds expertise. This division is a bit artificial and expert work and expert organization can be defined in a following way to include special characteristics of expert work. Expert services, as described by Sipilä in 1996, are usually intangible, and best characterized as advice or instruction. Expertise can be embodied into concrete products such as computers, which represents cumulative knowledge and specific expertise in a compact package. Key characteristic is that the information is not self-contained by the customer. Demand for expert work comes from the fact that everything is manageable to do by ourselves either because of pure comfort or because of cost efficiency. Noticeable is that work provided by experts is not replaceable with own work, because often customer can't solve problem by themselves. It is important to knowledge difference between professional workers and experts, where the difference lies in the work process. Professional workers don't mainly develop independently their work methods nor processes involved and from experts such improvements are expected. Collaboration with different stakeholders' effects highly to expert work, especially when the product itself is advisory service. This kind of service often also engages the customer to be part of the solutions seeking process. (Hannula et al. 2002, pp 16-17)

Expert organization or expert company has its own special characteristic which can be described as following:

- Expert organization's value is based on cumulative knowledge.
- Has a highly educated staff.
- They operate in the field that involves complex problem solving.
- Human capital is the dominant share of the total capital.
- Provided products and services are unique and tailored for the needs of the customer.
- Knowledge that they possess is mainly tied to individuals and their experience can be more valuable than their formal theoretical knowledge.

Because of the high variety of organization, gross generalization that ties every expert organization is not easy to produce but a common nominator for these companies is the importance of the staff and their high human capital. From previously mentioned characteristics problem solving and high education level are typical for all the organizations. (Hannula et al. 2002, pp 17-18)

5.1 Performance in expert organization

Peter F. Drucker determined six major characteristics in 1999 for knowledge-worker productivity: task, autonomy, continuous learning and innovation, quality and being treated as a asset rather than a cost. Apart from at least one, these proposed needs of the knowledge-worker are nearly the exact opposite of what is required to boost manual laborers' output. Importance of quality is not to be neglected in physical labor, but poor quality is limitation, and a minimal standard of quality must be met. In the 20th century implementing statistical theory to manual labor in form of Total Quality Management, made possible to reduce production below this minimal level. (Drucker, 1999, pp 83-84)

“What is the task?” is the key question in defining knowledge-worker productivity. It also as the most conflict with the productivity of manual labor, where the question is in the form of “how should the work be done?” every time. One of the explanations for this difference is that in the knowledge-work the task itself doesn't program the worker as it does in manual labor, where it is always evident what is needed to be performed. Finding out what needs to be done is the first step in doing knowledge-work. This allows knowledge workers to focus on the task and eliminate everything else, or as much as is practical. To achieve this, knowledge workers must define the task or what it ought to be by themselves. This means in order to improve knowledge-workers productivity, the first step is to ask them what their objective is or what it ought to be, and what should be removed from them to be able achieve it. (Drucker, 1999, pp 84-85)

Defining the right goals and indicators has become a most difficult problem for the expert organizations. Quantitative indicators are easy to find but they are usually not enough. Often enough, the following key performance areas can be separated in expert organization: quality, quantity, economy, productivity, co-operation, development, and innovation. In the literature, organization effectiveness and relevance are examples of indicators of quality.

Objectives regarding corporate image should be part of quality objectives in all expert organizations even in internal service units. Common goals in the business unit help to improve co-operation and a clear set of objectives lays a foundation for the evaluation of the achieved results, which can be utilized for rewards. Chosen objectives should reflect what is important for the organization and its values. (Sipilä, 1991 pp. 94-95)

6 Designing a measurement system for case organization

6.1 Case organization and background of the study

This study is done with cooperation with world leading power source manufacturer's life cycle business unit shown in figure 10, which is specialized in technical customer support. The expert team's service process includes giving technical expertise and audition services. Technical service is provided remotely and is initiated by customer's request. Both internal and external customers utilize these technical expert services.

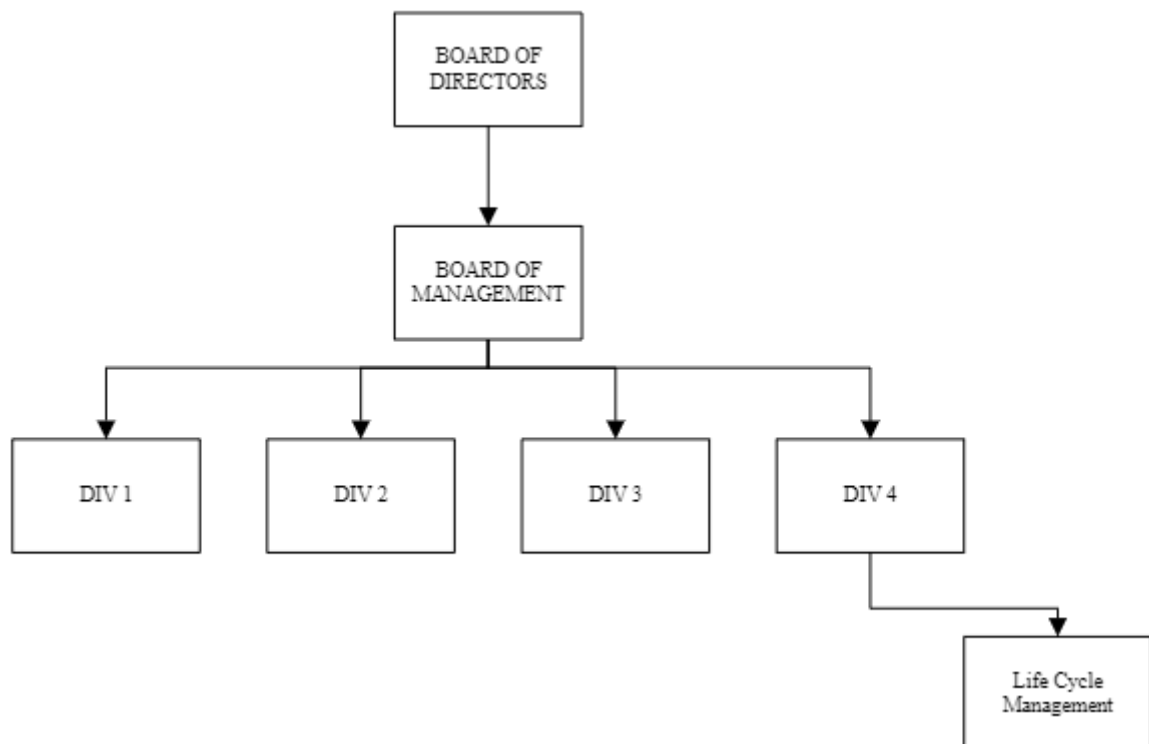


Figure 10. Structure of target organization

Case study focuses on developing current process performance and customer satisfaction measuring practices to establish a complete understanding of key success factors that lays a foundation for the proposed measurement model. Study does not include the secondary

function of the business unit, which is auditing services. Service provided in this case is mostly knowledge based and intangible, which creates challenges in creating indicators that provide sufficient information about process performance and service quality. The goal of this study is to improve current measurement practices and develop a balanced set of indicators to support process performance evaluation and decision-making process. Focusing measurements to pinpoint strengths and weaknesses in service provided and act as a basis on continuous improvement, process development and decision making. Service provided by its nature is highly case specific with unique solutions, which adds a challenge on creating versatile and sufficient indicators that reflect adequately process performance.

6.2 Process and current measuring practices

The business unit provides technical support to their internal and external customers, which is initiated by the customer. After the customer has created a request for technical support it is then placed into a queue from which a team of technical experts start to evaluate and work on finding a solution to the problem. Complexity of requests varies heavily which can increase response and lead times. When a plausible solution to the given problem has been formulated based on given information, it is provided to the customer who will further assess solution's accuracy and test it in practice. If the solution was inaccurate or a problem sustains, request will be taken into further evaluation with new information and new solution will be provided based on new evidence. The service process is presented in figure 11.

Currently performance measurement is done mostly regarding internal process' including classic financial indicators. Data regarding customer experience and satisfaction is done by giving customers an option to express their satisfaction after the service via a quick questionnaire with options of was the service provided satisfactory or not. The questionnaire includes measurement dimensions of speed, quality, and overall service rating. Also, customers have the option to express their experience freely in the text.

Direct customer feedback has roughly a 30% answer rate, which gives a rough estimation of service quality and customer experiences. Free text expression of experience has even less answer rate. Because of the nature of the process and already existing measurement practices, data utilized in case study aims to expand current measurement practices and to

create indicators that support decision making giving a more in-depth information on factors that affect customers' experiences.

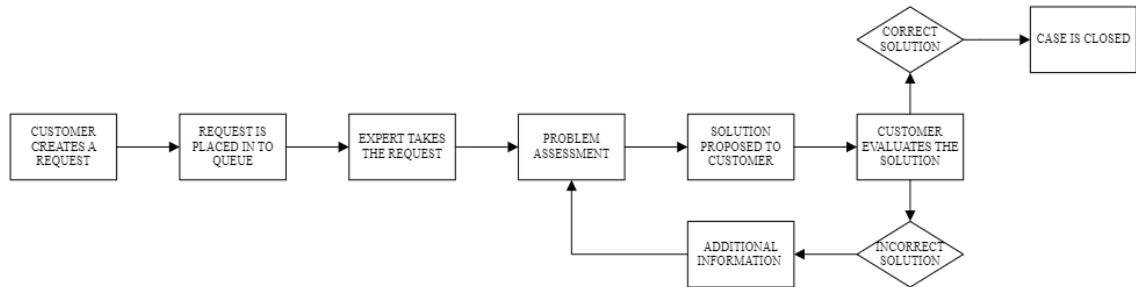


Figure 11. Service process

6.3 Evaluating customer values via interviews of authority

Due the fact that direct customer feedback, that has been acquired from previous service experiences, regards roughly less than 30% of service provided, it suits best for approximating services strength and weaknesses but doesn't provide necessary enough data to be utilized widely in decision making. For this reason, interviews of authority are utilized to identify critical process steps and possible root causes in service process that has significant effect on customer satisfaction. Interviews together with gathered feedback is utilized to identify customers' values and expectations.

The form presented in appendix 1 is utilized to conduct thematic open interviews and to guide conversation. The people selected to be part of this process are technical experts that have in-depth experience of the service process and of customers' values and expectations. Interviews are conducted until the gathered answers are repeating themselves, which concluded interviews after five conversations that lasted between 30-40 minutes. Interviews also serve to engage people involved in the service process to the measurement model's development process, bringing more in-depth perspective and knowledge to the measurement system's development process.

An open theme interview or a half-structured interview is close to an in-depth interview. Theme interview is based on certain central pre-selected themes and related detailed questions. Benefits of conducting interviews this way is that it allows to focus and refine questions depending on answers during interview. As a methodology it highlights people's

interpretation on the matter and their given meanings on the issue and how the meanings are created in interaction. (Tuomi & Sarajärvi, 2018, 87-88)

6.4 Results of conducted interviews

When interviewing experts about what they perceive to be the most significant weakness of the customer service process, almost every response brought up the start of the customer service process. The initial information provided by customers about the problem and the desired support is often incomplete and too limited to be able to start searching for a solution effectively immediately. This forces you to "fish" for more information, prolonging the start of the process and slowing down the work and processing of the case. In addition, communication may fade or even be completely cut off on the customer's side, making it almost impossible to find a solution. The current resources and tools were considered sufficient for the implementation of the service and would not slow down the service process.

When discussing what should be considered in the service process and how it could be improved, the responses highlighted better customer engagement and activity, as part of finding a solution, and finding a "neutral" approach to avoid a negative experience. The problem could possibly be reduced by implementing a clear sign in the system when action is wanted or required from the customer. In this case, it can be clearly stated that the process requires input from the customer so that the process proceeds, and possible requirements are not lost in the text. In addition, consideration should be given to whether the customer should be better informed about what information should be included in the initial definition of the problem to be able to start the process better. The system is considered clumsy for discussion, which often means that the discussion is transferred to other platforms. Better use of images could improve and facilitate discussion.

In addition to the initial specification, the problem area in the customer's operations is the definition of the original deadline for the surveys, which is often underdefined and impossible to achieve. This is also greatly influenced by how the customer has conducted the survey. When creating a survey, the customer may have created their request in the wrong queue, which increases processing times, and the deadline may have expired before the inquiry is in the correct queue. In addition, the actions of other queue processors will have a

significant impact on the increasing processing time if they do not notice that the query is forwarded within a reasonable time.

Feedback on customer service is difficult to get and the complexity of the problem usually increases the amount of feedback. If the customer's problem is simple and can be answered quickly and accurately, the customer may choose not to give feedback because the process proceeded as expected and the problem was not significant. In addition, the continuum and follow-up after the response was highlighted as a tool to generate added value for the customer and enable continuous learning.

6.4.1 Points of interests for developing measurement system

Results from conducted interviews raised a couple of points of interest that will be considered while developing the measurement system. The first issue raised was one of the most influential factors to the customer service process quality and the duration of processing the customer's request. If the request lacks crucial information or is otherwise incomplete, it significantly hinders the process and lengthens waiting time. Secondly the customer's engagement in the process needs to be considered. When providing remote support and not being able to send someone to the site to assess the situation further, the customer's action in providing additional information is vital to the succession of the service.

To get a better understanding of customer's experiences of the service, measurement system should be designed to provide extensive information from different parts of process. This way measurement system could be better utilized to pinpoint weaknesses in process and trigger continues development and learning allowing to provide better service experience.

Purpose of the measurement system and key points of interest:

1. Process initiation and problem assessment.
2. Customers' engagement and activity.
3. Defining factors affecting customers' experience.

6.5 Case company's strategic priorities

Based on measurement system development, it is necessary to identify first core customer values. Based on previous customer feedback and interviews on authority, following core values and key dimensions are identified: time, quality, and customer. The development of a customer satisfaction measurement system is done in line with the case company's strategy statement, where values regarding customer success and performance are highlighted. Strategic priorities mentioned in the company's statement will guide measurement system and indicator development, which further puts strategy into practice and helps to clarify company's vision.

From the organization's strategic statement, we can identify priorities and objectives that are necessary in achieving growth. Driving to create customer value is identified as a critical success factor. This is achieved through high performing teams and continuous learning improving at every level of the organization and especially growth in services is highlighted. Also, this growth and development is achieved through innovation in the environmental sector and driving for decarbonizing. Strategic statement together with conducted expert interviews lays a solid foundation for the critical success factors in developing measurement system for the expert business unit.

6.6 Measurement system and dimensions

Since the objective is to improve and define indicators for the expert business unit and to operational level of organization, performance management system frameworks are utilized more on giving a structure for the indicators. Financial indicators at this level are not that significant for the process performance and thus will not be included. This is due to the fact that, with the information available for this study, it is very difficult or almost impossible to estimate the incurred costs of the service provided. Measurement practices regarding costs will be left out of the project scope and to the management's responsibility. From this we can conduct three measurement dimensions that are critical to expert team's process performance, which are: time, quality, and customer.

Since the target business unit didn't have a preference nor existing measurement system structure implemented, the system's model requirements mainly derives from organizations vision, function's purpose, and customers' values. To highlight these dependencies and correlation a simplified version of performance pyramid was chosen to structure measurement system that is depicted in figure 12. Performance pyramid was chosen to highlight defined measurement dimensions and their dependency and effects. This creates a clear framework for indicator selection and helps to focus to key success factors of the service process.

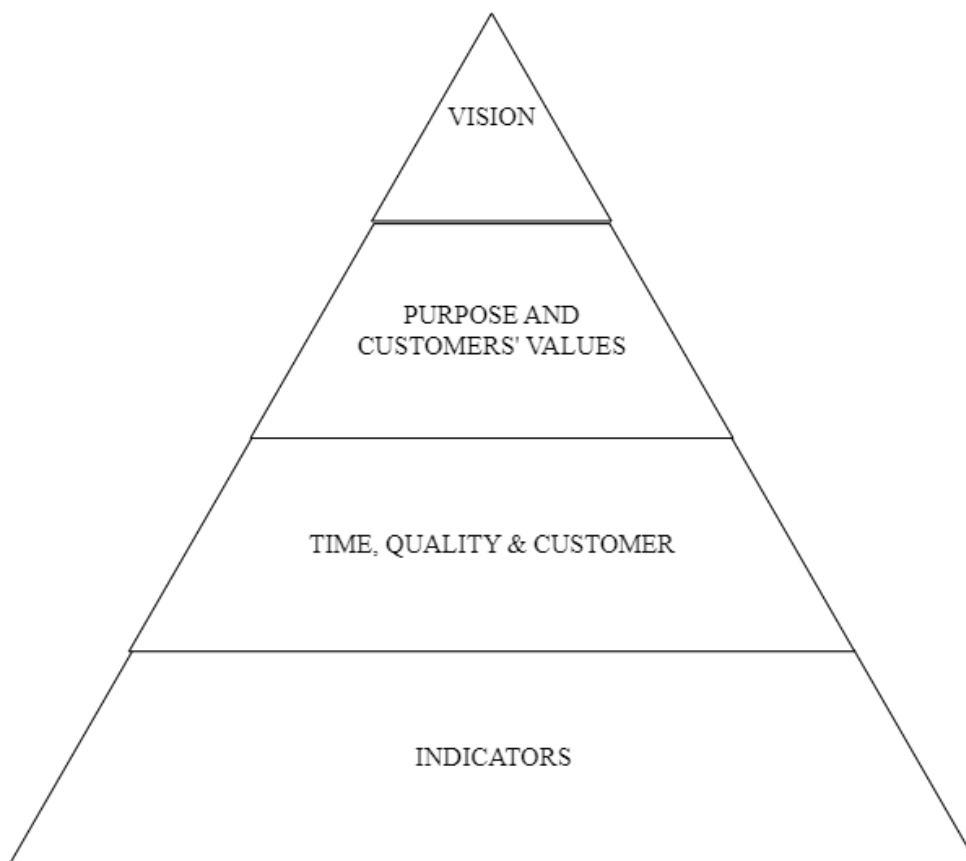


Figure 12. Measurement system structure

6.7 Measuring process lead time

Service speed is currently measured mainly with service lead time and on time request closure. On-time delivery of service is a customer's set timeframe in which they would like to receive an answer to their request or problem. Both measurements have the same kind of problems that leave room for sub optimizing results. Because the service provided is very case specific and complexity of solutions vary heavily, lead time must be evaluated case specifically and it provides only indicative results. In the case of providing solutions on time, it leaves room for optimizing results by service provider. By asking for longer deadlines from customers before providing a solution, service providers can manipulate measurements to look more favorable and thus effect on-time delivery rates. Because the on-time goal is set solely by the customer, the time given to solve complex problems varies and can be anything between from very generous to impossible to fulfil.

The problem regarding these time-based measurements is that they create necessity for supporting performance indicators, which currently are not considered in more depth. Overall lead time is great way to assess general direction of service, but it should be supported by indicators that allow measurement system's key users to pinpoint root causes of risen or decreased lead time, which can be further utilized in development and learning purposes. Supportive indicators for lead time should concentrate on different parts of the service process which are more prone to time loss or time saving. The first point in the process where time save can occur is in the beginning when customer is creating a request, and it is then placed in queue. Indicators should monitor the time how long customers request is in the queue, and if customer has accidentally placed their request on wrong queue, the time how long the request takes to achieve right queue should also be monitored. This is necessary to create division on how much possibility there is to influence lead time by own actions. In the case where request is lost in wrong queue due the customer's action or other service providers should be considered if customer needs to be provided with better information.

On time indicator as a process performance indicator is a bit problematic because it is based on the customer's wish of the period in which they want answer. System complexity creates heavy stress on deadlines and the customer's initial problem assessment heavily affects how fast a solution can be provided. Assumption is that best quality service is provided as soon

as possible and there is no incentive to stretch deadlines unnecessarily. To be utilized more efficiently on time request closure, it should be also supported by indicators that give approximation on complexity on request and customers engagement, that also reduces chances for suboptimization. Indicators that could be used to approximate the complexity of the request could be for example how many times deadlines have been changed and the number of responses from the customer and service provider. The major downside in monitoring message numbers and frequency is that the conversations are often taken to the more convenient platforms such as email or teams, but in moderation it could be used to approximate customer engagement and complexity of service. On-time solution delivery could also be complemented with indicators that provide information about service quality such as request re-open frequency, which are already monitored and give good information about service accuracy.

6.1 Measuring service quality

Service quality is measured by an accuracy indicator, which reflects how many customers' requests have not been reopened. This is extremely high, over 90 %, which indicates that almost always the customer is provided with a correct solution to their problem. This high-quality performance might be enough to justify higher lead times or deadline changes. In some cases, providing an inaccurate solution might cost more to customer than an extended deadline, but this is highly case specific and hard to evaluate with available data.

In the service setting, quality is highly tied to customer satisfaction, which correlates to feedback being over 90% positive. High accuracy in solutions provided and low negative feedback indicates that the process performs well despite the high deviation in lead times. Trying to optimize too radically process lead time can have a negative impact on provided quality. Forcing the experts to provide answers to customers without having any flexibility can lead to an increase in errors and lower customer satisfaction. Since the quality is tied so closely with the other two measurement dimensions, it provides crucial information for decision making and explains the trends in lead times and customer feedback.

To engage more organizational learning, supporting indicators should be considered to identify success factors affecting this high-performance dimension. Directly affecting factors to quality, for example employee competences, such as training and certifications, and availability of the experts. Having a tool to monitor competences is crucial to sustain the high process performance and to keep up with the evolving field. Since the service process is divided into roles with certain expertise, the availability of the experts might have an impact on service quality. This can occur when the required expert is occupied with other projects such as auditing services that require travelling, but since the unit keeps operating in a very high range of quality, measuring availability might not provide useful additional information for decision making. Currently competences are monitored in different databases so implementing it twice might not be necessary.

6.2 Measuring customer's actions and engagement

Expanding measurements and indicators from providing information of process owners action to also taking account customers' actions provides important information on how much is not dependent on service providers actions. It is hard to provide accurate and efficient service if interaction is one sided. Creating indicators that express customers' actions provides additional information of the process structure and enforces causality. These indicators can be utilized to assess direction and trigger measures to engage or inform customers better if the indicated direction is unfavorable.

Effects of customers initial actions when creating technical requests to service speed and quality are critical. This creates a need for monitoring customers' actions so the critical errors can be identified and concentrate resources mitigate this and to inform customers what is required from their part to get better service. From interviews conducted the biggest challenges regarding customers' actions in the service process are in the beginning of the service in the initial problem assessment and during the process as the customer's engagement and activity to respond and being part of the solution formulation.

Initial problem assessment from the customer is often deficient and concise, which gives necessity for follow up questions to build an adequate perception of the stated problem. This was identified in interviews as one of the major problems that hinders the process most. Without sufficient information about the problem, system and or possible causes, experts

cannot start looking for solution to the problem and the process drifts into standstill. Customers' activity and response times affect highly on how fast a possible solution can be found. Creating indicators for customers activity is challenging especially when platform given is experienced as cumbersome and discourse is often taken to the different platform in order to make conversation easier and more flexible. This makes sampling size smaller for indicators regarding customers' action but can be indicative in assessment of root cause, for example increased lead times.

These indicators should be utilized to express trends both in internal and external customers. Creating a distinction between trends of internal and external customers helps to assess how resources should be concentrated and what kind of initial support and information should be given to customers before service process itself. Understanding how different stakeholders participate in the process helps to formulate what kind of information and how it should be shared to provide best results in increasing process initiation and overall service quality.

A solution to the lack of customer engagement is to further develop the given service platform to be more flexible. This was also mentioned in conducted interviews, where better utilization of pictures and attachments in texts could provide clearer communication. Also, a clear indication or assignment of action could speed respond times when it could be unclear for the customer that their actions are needed. This can also be used as a subtle reminder to insinuate required actions and engage customer in service process if they have not taken actions to reply experts request even when clearly stated.

Improving customer activity and engaging customers more deeply into the service process might increase the rate at which direct feedback is received. When customers or relevant stakeholders are engaged into service process and solution formulation, process lead times and quality of service improve compared to customers' passively waiting for the solution. This is more applicable for more complex requests and inquiries when a plausible solution requires possibly co-operation with multiple stakeholders. Increased feedback would allow better understanding of how received service is experienced and increase quality of data and enforcing already gathered customer satisfaction data.

6.3 Direct customer feedback gathering

Direct customer feedback's quality and rate, which was around 30%, might not be sufficient to base larger and drastic decisions and draw accurate conclusions about customer's received experience. Feedback can be used to vaguely give directions on customer satisfaction and usage of other measurements and indicators to benchmark the actual experience of the service. From the interviews concluded, it became clear that there are many factors that might affect the feedback ratio and even when experts have asked feedback directly getting the answer is not guaranteed. The complexity of customers' requests and more extreme ends of experience, either exceptional or below standard service experience, tend to provoke more feedback. Simpler requests that are solved accurately, in time and which do not require much activity or actions, can cause giving feedback to feel unnecessary for customer, when dealing with minor issues and received service is as expected.

Finding balance in feedback form is crucial. The customer feedback gathering form should be simple enough, so it does not seem too big of an inconvenience to the customer but at the same time gives enough information about the service process and customer's experience. Complex feedback form would provide more than enough data about service, but it might seem off putting for customers to fill it. The current feedback form consists of a few steps regarding the main dimensions of measurement and a free space to express openly thoughts. Expanding crucial answer options into numeric scale helps to map the experience better rather than yes or no option. To improve customer feedback quality and amount, sending a more detailed question form to key customers should be considered or giving an option to answer more detailed questions after the service. In appendix 2 is presented the current customer satisfaction elements together with additional questions for the questionnaire to improve understanding of customer's experiences.

Giving only the option of are you or are you not satisfied in certain fields of service forces the answer to either one of the extremes when reality can be somewhere in between. Giving only two options also gives too vague of scale to express shortcomings or successes in the process. This can distort the results and insinuates that we are either exceeding or failing in the service. Operating in extremes might give a false image of the process to decision makers, making them take more drastic action than necessary to fix this problem or hide the problem completely. This might not be topical scenario yet to the case organization, which

operates in a high satisfaction rate over 90%, but should be considered when taking actions to optimize process.

Direct feedback serves two major functions; benchmark measurement system to see how well-developed measurement system portrays actual customer experience and to benchmark business functions performance to parallel functions in internal audits. To be able to internally compare business functions together, the measurement system and the method of gathering direct customer feedback should be in unison. Comparing results between functions that are using different measurement methods and scales can give a distorted image of performance between functions making the comparison more challenging.

6.4 Overall process performance and balance

Combining these measurement dimensions and their indicators creates a solid foundation on evaluation of process performance. Three measurement dimensions gives wide enough perspective and insight on factors that affect process performance and its outcome. Finding a right balance between measurement dimensions and its indicators creates challenge that if not done correctly it can distort the assumption on underlying issues of work process and drive decision making process and correcting actions to be concentrated on wrong root cause and further waste resources. In an expert organization setting where service provided is non-tangible and knowledge based, where outcome isn't easily measured by quantity, it is easier to find indicators regarding service lead time than customers' satisfaction. Especially in a case where customers are reluctant to express their opinion on a matter.

In this case where process lead time and time is widely appreciated by customer having more indicators monitoring it isn't necessary a negative thing. Having other dimensions; quality and customer supporting further optimizations of time-dimensions gives insightful feedback on how process itself has been managed to optimize lead times without compromising service quality and customer experience Even if the direct customer feedback is low, but it is not mainly negative, we can draw an assumption that we have met customers' expectations most of the times. All dimensions should be inspected when making decisions in the process. In the situation where too much optimization on lead times and process time has been done,

because of the more indicators are easier available, can have a negative impact on service quality and customers experience, which can be in the worst case irreversible and extremely costly both to the company and customer. This trade-off between time, quality and customer satisfaction should be closely monitored and satisfied customers should be regarded as a byproduct of a working and healthy service process.

Further using a single measurement dimension as a “main” indicator of a process performance gives a too narrow perspective of process health to be considered as a basis of decision making for managers. Without having a full comprehension of the current situation invested resources will be most likely to be utilized inefficiently or taken measures are too extreme. Also balancing the measurement system into a singular indicator by giving the dimensions an arbitrary numerical weight will give more emphasis on who is assigning these numerical values and their experience, which is sensitive to biases and invalidates reviewing and comparing historical data.

Further evaluation of the balance of the suggested key performance indicators and measure practices should be done regularly and in a planned timeframe. The time window for evaluation should be dictated by the need to confirm that the measurement system is aligned with current strategy, objectives, and data’s usefulness, meaning that data correctly reflects process performance. Evaluation should also focus on how well the chosen indicators complement each other, highlighting dependency of indicators among the process.

6.5 Results

Organization’s values, that were reflected in strategic statement and in conducted interviews, alongside customer’s values laid a foundation for the measurement system. Since dealing with customers request in operational level by providing expert services, financial factors were not identified as a critical success factor, although their importance in higher organization level can’t be dismissed. Three main measurements, dimensions that provide balanced overview of the process performance, were identified: time, quality, and customer. Under these three main measurement dimensions, the performance pyramid’s structure gave

solid building blocks for indicators. Areas that directly affected indicator selection are customer satisfaction, flexibility, productivity, quality, delivery, cycle time and waste.

Current measurement practices that were already implemented for the business unit provide a pretty good understanding of the process performance, which allowed to seek options to increase the measurement quality. Already existing indicators can be retained, and the new proposed indicators can be implemented alongside them. The focus on the proposed measurement systems, presented in table 6, aims to highlight root causes and causality in the process. This relationship between indicators is expressed in the strategic map in figure 13, which further highlights cause effect relations in measurement system.

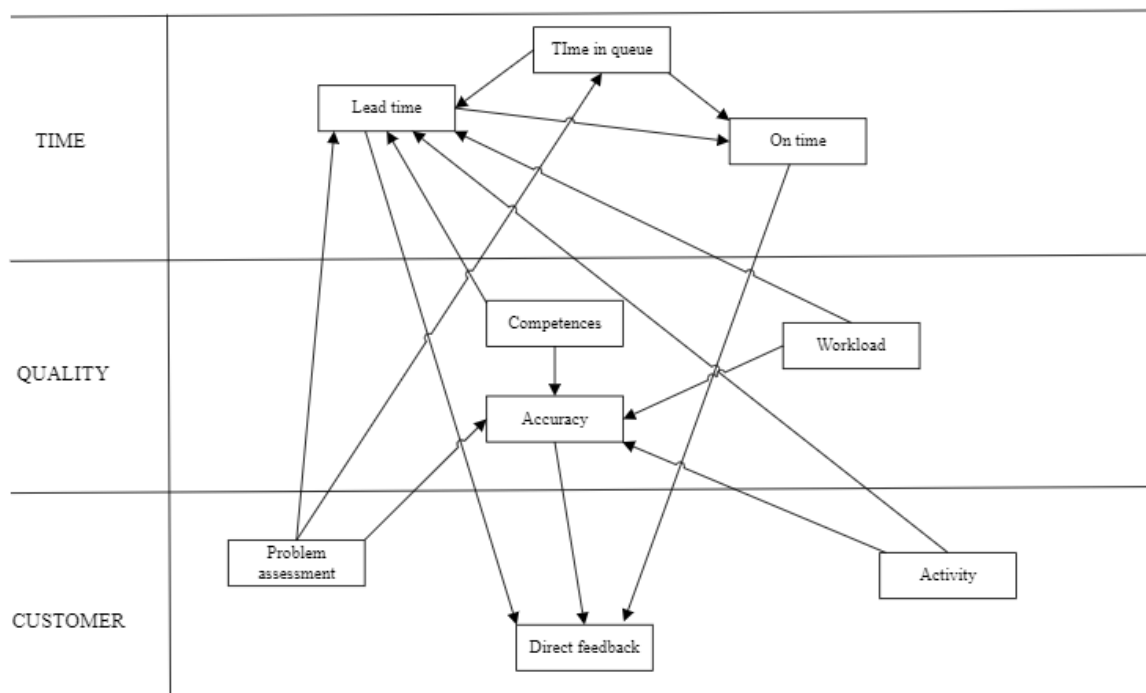


Figure 13. Strategic map of indicators

Table 6. Proposed measurement system

		INDICATORS	
TIME	Lead time	Days	
	Time in queue / wrong queue	Days	
	On time	%	
	Deadline changes	Amount	
QUALITY	Accuracy	%	
	Workload	total cases, cases per expert	
	Competences	(own database)	
CUSTOMER	Feedback	After service, continuous	
	Questionnaire	Once a year to selected customers	
	Activity	Time to respond	
	Problem assesment	Amount of data (description length, appendices), expert evaluation	

Main indicator in time dimension is process lead time that expresses how long it takes to deliver service for the customer and can be expressed easily in days. Alone this indicator only gives a shallow outlook of the process performance and needs to be supported with other indicators. A customer's request being idle in que is a significant indicator if service process has been started and how much from the lead time is possibly wasted. Workload and employee availability has a major effect on que times. On time service delivery is easily manipulated itself and often the customer has set too strict a deadline for the delivery. To be utilized more efficiently it should be complemented with other indicators such as deadline changes, which can be used to evaluate request complexity.

In quality dimension the most important indicator is delivery accuracy that tells how often delivered solution has been correct at the first time. The workload and competence of employees affect highly to the quality of service. Employee competence, such as certification and training, is managed in different databases so it isn't necessary to be implemented again but needs to be regarded as a vital part of process performance. Workload and employee availability play a significant role in the quality of the service. When expert

process is divided into different roles with own competences, it creates stress to the specific role depending on the request type amount. High workloads can have an impact on quality and time of the delivery.

Customer dimensions most influential indicator is gathered direct feedback. The amount gathered is in line with the Rope and Pöllänen (1994) research that suggests that on average only a few customers give feedback about the service or product. This allows us to draw the conclusion that in general customers' expectations are met. To increase customer feedback and its quality, the feedback range could be expanded for example to rate the experience from 1 to 5, where 1 being disappointed and 5 being positively surprised, or 1 to 4 if we want to guide customers opinion to avoid neutral stances. Feedback could also be gathered from key customers, that are identified either by priority or usage of the services, by sending a questionnaire for example once a year. This can help to improve customer relationships and gather better quality feedback simultaneously complementing the existing system. In the appendix 2 is proposed additional questions to increase the customer feedback quality that could be utilized as a basis of questionnaire.

Customers activity and problem assessment influences highly on lead time and the quality of the service. When operating remotely, the customer needs to assess the current situation on problem well enough and in certain accuracy for the expert to them be able to start working on solution. A customer's passivity has a negative impact on gathering additional information and delays the delivery. To get sense of customer's engagement measuring customer's answer speed could give a rough estimation. This is not reliable to be based larger decisions due the fact that communication is often transferred to more flexible communication methods. Problem assessment by customer could be measured by number of appendices and files or size of initial description. This is also a pretty rough estimation because it doesn't consider the quality of given information and cases differs highly, which is currently the main challenge. Updating instruction for the customer on how to build a better problem assessment should be taken into consideration to increase the quality of problem assessment. The possibility of gathering numerical feedback, for example 1 to 5, from the expert providing a service from the quality of problem assessment could provide better quality of information than drawing conclusions from number of files and text length.

The proposed measurement system's implementation and indicator selection will be the manager's responsibility. Implementing the suggested model can be done in parts and

alongside existing measurement dashboards. Model aims to give a clear and easily understandable overview of process performance, which is why creating a new dashboard regarding proposed measurement model is advised. This way all the mentioned dimensions are expressed together highlighting causality among the process. More simplified measurements can be utilized when the existing measurement practices are kept, for example change rate in trend in certain review period such as process lead time change from last quartal or customer satisfaction rate. This way the existing dashboard will be kept providing a more in-depth view of the process with full historical data. After implementation of the model managers should review and assess measurement model's performance and suitability and make necessary changes. Depending on management reviews could be done quarterly at the beginning to assess the functionality. Review periods can be less frequent after the functionality has been established, but the whole system reviews should be done at least once a year or when new strategic objectives have been implemented.

7 Conclusion and further study

7.1 Conclusion

The purpose of this thesis was to study good performance measurement practices for the expert team and to develop a comprehensive performance management system. Thesis was conducted as a case study and the case organizations need to set the limitations and research questions. The uniqueness of the field where expert service team operates creates challenges for reliable performance measurement, which acted as a catalyst for the study. Literature review was utilized to gather basic understanding on performance measurement and its more common systems, customer experience composition and measurement, and expert organization and expert team characteristics.

In the beginning of the development process, thematic interviews were conducted to get a better understanding of the provided service process and customer values. This helped to pinpoint key success factors in operations and set the objective for the measurement system. Interviews were also utilized as a tool to involve employees in the process. Understanding organizations and customers' values is the core requirement to build an effective measurement model that reflects correctly process health. After the core values were identified the measurement dimensions could be established, which in this case were time, quality, and customer. These three chosen dimensions reflect best the purpose of the process and provide wide enough information from the different aspects of the process. Under each of the dimensions were proposed a set of indicators to provide insights and root cause for the process performance.

Since dealing in the large organization and the proposed measurement system is developed for the operational level, the aim was to create a balanced, easily readable, and understandable set of indicators. This approach allows to demonstrate the process performance simply to the different stakeholders that are not common with the operations, for example during internal audits. For everyone that is involved in the process, the model provides clarifications on organizations and customer's values and further enforces the purpose of the work, which are the key requirements in building a performance measurement

system. Main driving factors of indicator choosing process was to highlight causality in the process and to prevent deliberate optimization of the measurements.

7.2 Further study

Since the implementation of measurement model was outside of the study scope, the following step could be to study the evaluation and implementation of the proposed measurements. The functionality of the implemented measurements should be done systematically over a longer period. This could lead to possible new discoveries on what indicators are suitable for the process and to implementation of the new ones. The evaluation process of the measurement practices should still be systematic even after the agreement of the set indicators. This systematic evaluation practice allows us to adjust correctly to the fast-evolving field.

The second study area would be to evaluate the benefits of expanding these measurement practices to similar functions in adjacent divisions. Having unified indicators and measurement systems would allow easier comparison between functions and provide better tools for decision making and resource allocation. How well the measurement system and practices translate to the need of the different business units even with similar processes and do the customers' share the same values regarding the service.

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APPENDICES

APPENDIX 1. Interview questions for case company's authority (Eng/Fin)

What does the customer value in the service they received? (E.g. Time/quality/accuracy etc.)

How do the available resources affect the revenue of the service?

Weaknesses/strengths of current process monitoring?

What would you like to emphasize in process monitoring?

Will the cause-and-effect relationship come up enough?

Increasing the monitoring of the customer's own activities?

How would it be possible to increase the collection of direct customer feedback?

Would expanding direct customer feedback add value to monitoring? (e.g. by adding a rating scale)

Mitä asiakas arvostaa saadussaan palvelussa? (Esim Aika/laatu/tarkkuus tms)

Miten kääytettävillä olevat resurssit vaikuttavat palvelun tuottoon?

Nykyisen prosessi seurannan heikkoudet/vahvuudet?

Mitä haluaisit painotettavan prosessinseurannassa?

Tuleeko esille tarpeeksi syy-seuraussuhde?

Asiakkaan oman toiminnan seurannan lisääminen?

Miten pystyttäisiin lisäämään suoran asiakaspalautteen keräämistä?

Toisiko suoran asiakaspalautteen laajentaminen lisäarvoa seurannalle? (esim lisäämällä arvosteluasteikko)

APPENDIX 2. Customer satisfaction questionnaire

Please rate your experience yes/no (alternative: 1 to 5, 1 to 4,)

1. Overall satisfaction for service (currently used)
 - What could we do to improve your experience?

2. Service speed (currently used)
 - Based on your product experience, how would you rate response times
 - How easy was to initiate service?

3. Service quality (currently used)
 - Based on your product experience, how would you rate process flexibility
 - Was the information regarding problem assessment requirements sufficient?
 - How would you rate the request platform?
 - Was the solution description provided easy to understand?
 - Would the solution provided benefit from follow-up?

4. Open section for more specific feedback (currently used)