



Developing a proposal of performance indicators for the Hospital District of South Ostrobothnia's pathology department

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Abstract

A pathology department in Finland, part of the organization Hospital District of South Ostrobothnia (also known as Etelä-Pohjanmaan sairaanhoitopiiri, EPSHP), lacked established performance indicators. Pathology is a field of medicine that plays a vital role in the cancer patient's care path with other healthcare units. Public healthcare organizations are expected to provide high-quality diagnoses effectively and efficiently within the approved time frames. To better meet this expectation, evaluate its performance, and improve operations, the EPSHP's pathology department contributed to this study.

The goal of this research was to develop a proposal of performance indicators and objectives for the EPSHP's pathology department. To accomplish the research objective, a framework to categorize performance indicators and objectives had to be discovered, EPSHP's performance reporting guidelines had to be identified, and a pathology department's core activities needed to be described. A qualitative case study research was applied in this research, and the data of this study was accumulated from secondary and primary data. Secondary data was compiled from the EPSHP's organizations and pathology department's documents via document analysis. EPSHP's pathology department's employees were interviewed in groups with semi-structured questions to assemble primary data.

The results of this study provided a proposal of performance indicators and objectives for the EPSHP's pathology department. The proposed performance indicators and objectives were categorized under the Balanced Scorecard (BSC) model's four perspectives in tables; learning and growth, process, customer, and financial. The EPSHP's strategy's objectives, structure, and performance information reporting categorization directed the selection of the BSC model as a framework. The EPSHP's budget, action and economic plan, and annual report serve as guidelines that guide the performance reporting of the pathology department and the selection of performance indicators. EPSHP's pathology department provides studies and diagnoses from tissue and cell samples to special healthcare units and healthcare centers within EPSHP. The pathology department has two customers, the units that request to study patients' samples and patients. The EPSHP's pathology department's goals are to guarantee competent employee resources and the well-being of staff, stay within turnaround times, have a cost-efficient process, provide high-quality services and products for customers, and aim to budget realization. The study's proposed 17 performance indicators help to provide a balanced understanding of the EPSHP's pathology department's performance, improve processes, and ensure its operations align with the EPSHP's strategy.

Keywords/tags (subjects)

Performance indicators, performance measurement system, performance management, balanced scorecard, healthcare, pathology

Monica Nieminen

Suorituskykymittaristo-ehdotelman kehittäminen Etelä-Pohjanmaan sairaanhoitopiirin patologian yksikölle

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Tiivistelmä

Suomessa sijaitsevalla Etelä-Pohjanmaan sairaanhoitopiirin (EPSHP) patologian yksiköllä ei ollut virallisesti määriteltyjä suorituskykymittareita. Patologia on lääketieteen osa-alue, jolla on merkittävä rooli syöpäpotilaiden hoitoketjussa yhdessä muiden terveydenhuollon yksiköiden kanssa. Julkisen terveydenhuollon organisaatioiden odotetaan tuottavan laadukkaita diagnooseja tehokkaasti ja vaikuttavasti hyväksytyissä aikarajasuosituksissa. EPSHP:n patologian yksikkö osallistui tähän tutkimukseen, jotta se täyttäisi paremmin edellämainitut odotukset, kykenisi arvioimaan suoriutumistaan ja kehittämään toimintojaan.

Tutkimuksen tavoitteena oli laatia ehdotelma suorituskykymittareista ja tavoitteista EPSHP:n patologian yksikölle. Jotta tutkimuksen tavoite kyettiin saavuttamaan, tutkimuksen aikana täytyi etsiä rakenne, jonka avulla suorituskykymittarit ja tavoitteet voidaan luokitella. Lisäksi täytyi identifioida EPSHP:n ohjeet suorituskyvyn raportointia varten sekä analysoida patologian yksikön ydintoimintoja. Kyseessä on laadullinen tapaustutkimus, jonka aineisto koostuu toissijaisesta ja ensisijaisesta aineistosta. Toissijainen aineisto kerättiin EPSHP:n organisaation ja patologian yksikön asiakirjoista sisällönanalysin avulla. Ensisijainen aineisto kerättiin puolistrukturoiduilla ryhmähaastatteluilla EPSHP:n patologian yksiköiden työntekijöiden kanssa.

Tutkimuksen tuloksina tuotettiin ehdotelma suorituskykymittareista ja tavoitteista EPSHP:n patologian yksikölle. Ehdotetut suorituskykymittarit ja tavoitteet järjestettiin tasapainotetun tuloskortin mukaisesti neljään eri näkökulmaan: oppiminen ja kasvu, prosessi, asiakas ja talous. EPSHP:n strategian tavoitteet, strategian rakenne ja suorituskyvyn raportointiohjeet ohjasivat tasapainotetun tuloskortin valitsemista rakenteeksi mittareiden ja tavoitteiden luokitteluun. Patologian yksikön suorituskyvyn raportointia ja suorituskykymittareiden valintaa ohjasivat EPSHP:n talousarvio, toiminta- ja taloussuunnitelma sekä vuosikertomus. EPSHP:n patologian yksikkö tuottaa tutkimuksia ja diagnooseja kudos- ja solunäytteistä muille EPSHP:n alueen erikoissairaanhoidon ja perusterveydenhuollon yksiköille. Patologian yksiköllä on kaksi asiakasta, yksiköt jotka pyytävät tutkimuksia potilaiden näytteistä ja potilaat. EPSHP:n patologian yksikön tavoitteina ovat taata riittävät henkilöstöresurssit ja henkilökunnan hyvinvointi, tuottaa tutkimuksia määritellyissä läpimenoajoissa mahdollisimman kustannustehokkaasti, tuottaa laadukkaita tuotteita ja palveluita asiakkaille, sekä tähdätä talousarvion toteutumiseen. Tutkimuksessa ehdotetut 17 suorituskykymittaria auttavat luomaan tasapainotetun ymmärryksen EPSHP:n patologian yksikön suoriutumisesta, parantamaan prosesseja ja takaamaan, että patologian yksikön toiminnot on linjassa EPSHP:n strategian kanssa.

Avainsanat (asiasanat)

Suorituskykymittarit, suorituskyvyn mittausjärjestelmä, suorituskyvyn johtaminen, tasapainotettu tuloskortti, terveydenhuolto, patologia

Contents

1	Introduction	3
1.1	Motivation for the thesis.....	4
1.2	Research questions	6
1.3	Structure of the thesis.....	7
2	Literature review	7
2.1	Performance measurement and management.....	8
2.2	Performance indicators.....	10
2.2.1	Aims and use of indicators.....	10
2.2.2	Classification of indicators	12
2.2.3	Properties of indicators	13
2.3	Performance measurement systems	14
2.3.1	Balanced scorecard.....	16
2.3.2	Building of performance measurement system.....	19
2.4	Characteristics of performance measurement systems in healthcare.....	22
2.4.1	The value proposition in healthcare.....	24
2.4.2	How to define performance measurement and management in public healthcare?	26
2.5	Theoretical framework.....	28
3	Methodology.....	30
3.1	Research approach.....	31
3.2	Research context.....	32
3.3	Data collection.....	33
3.4	Data analysis.....	37
3.5	Ethical consideration.....	39
3.6	Verification of the results.....	40
4	Results.....	42
4.1	Balanced scorecard as a framework for performance indicators and objectives	42
4.2	EPSHP’s guidelines for the performance information reporting of the pathology department	44
4.3	EPSHP’s pathology department’s core activities	45
4.4	A proposal of performance indicators and objectives.....	48
4.4.1	Learning and growth perspective	48
4.4.2	Process perspective	52

4.4.3	Customer perspective.....	55
4.4.4	Financial perspective	58
5	Discussion.....	60
5.1	Answers to the research questions.....	60
5.2	Assessment of the results in the light of the literature	63
5.3	Practical implications	69
5.4	Limitations of the Research.....	71
5.5	Recommendations for future research.....	72
	References	75
	Appendices	85
	Appendix 1. Documents analyzed in the document analysis	85
	Appendix 2. Background information questions for the interviews.....	86
	Appendix 3. Interview questions.	87
	Figures	
	Figure 1. Performance pyramid	16
	Figure 2. Balanced scorecard's (BSC) four perspectives and connections to vision and strategy	17
	Figure 3. Development of performance measurement system (PMS).....	20
	Figure 4. The development process of a traditional performance measurement system (PMS)	21
	Figure 5. The accountability relationships between different stakeholders in healthcare.....	24
	Figure 6. The theoretical framework of the study.....	29
	Tables	
	Table 1. Information about the interview grouping.	36
	Table 2. The learning and growth perspective indicators for the EPSHP's pathology department	49
	Table 3. The process perspective indicators for the EPSHP's pathology department.	53
	Table 4. The customer perspective indicators for the EPSHP's pathology department.	55
	Table 5. The financial perspective indicators for the EPSHP's pathology department.	59

1 Introduction

This study focuses on developing a proposal of performance indicators and objectives for the Hospital District of South Ostrobothnia's (also known as Etelä-Pohjanmaan sairaanhoitopiiri, EPSHP) pathology department in Finland. The EPSHP's pathology department currently does not hold established performance indicators.

In health care, performance management focuses on optimizing service delivery to be efficient and effective. It also focuses on creating and managing the organization's economic value. (Mettler & Rohner, 2009) Public healthcare organizations are expected to provide high-quality services equally to every patient without consuming more than the allocated resources (Vainieri et al., 2019). If healthcare organizations want to evaluate their performance critically, performance indicators should be implemented (Mettler & Rohner, 2009).

EPSHP provides healthcare services for 18 municipalities for 200 000 citizens in South Ostrobothnia, Finland. The pathology department is located in Seinäjoki central hospital and offers services to other departments within the hospital district. (Etelä-Pohjanmaan sairaanhoitopiiri, 2022a) The EPSHP's pathology department processes and provides diagnoses for 40 000 studies annually (Etelä-Pohjanmaan sairaanhoitopiiri, 2022c). The EPSHP's pathology department employs 14 biomedical laboratory scientists, an autopsy technician, a head physician, specializing physician, a specialized physician (also known as a pathologist), a head nurse, a head cell biologist, a medical biologist, and a cell biologist (Etelä-pohjanmaan sairaanhoitopiiri, 2022).

Pathology is a field of medicine and many times called the study of diseases. Pathology has an essential role in diagnosing, prognoses, and predicting human diseases, and they work closely with other special healthcare departments, such as oncology and surgery. (Funkhouser, 2018) Cancer is a national disease, and its diagnostics and care require national and international recommendations. The cancer patient's care path involves many departments within the hospital district, and pathology has a vital role in this care path. The cancer treatment budget in Finland is approximately 1,5 million euros annually. (Syövän hoitoa kehittävä työryhmä et al., 2010)

The Finnish government has stated that pathologic-anatomic-diagnosis has to be provided within five working days if the cancer diagnosis does not require special staining. If a cancer diagnosis

requires special investigation, the pathologic-anatomic-diagnosis should be delivered within two weeks. (Syövän hoitoa kehittävä työryhmä et al., 2010) For this to be fulfilled, the management in the EPSHP's pathology department requires evidence-based management and a cost-conscious laboratory process. The performance indicators will help to evaluate the EPSHP's pathology department's processes, and past performance, improve operations and plan its future operations.

1.1 Motivation for the thesis

Cancer diagnostics requires professionals in special healthcare departments. These include general medicine, surgery, oncology, gynecology, pulmonary, hematology, children's oncology, radiology, and pathology. The cancer treatment planning process should be efficient, and a combination of multiple special healthcare therapies should be implemented smoothly. At the same time, cancer diagnostics and therapies will become more and more personalized, requiring special healthcare experts. The communication and collaboration of special healthcare departments will become increasingly important. (Syövän hoitoa kehittävä työryhmä et al., 2010) In Finland, in 2020, 34 805 new cancer cases were diagnosed, and 13 201 cancer deaths were reported. In 2021 lead statistics, 34 403 new cancer cases were reported. (Suomen syöpärekisteri, 2022)

In 2035 the forecast of new cancer cases in Finland will be 46 200, and the annual growth rate of new cancer cases is expected to be 31 % (Pitkäniemi et al., 2021). The distribution of the Finnish population will change in the future; the expected lifespan will increase, and the number of elderly people will rise. At the same time, the working population will decrease. That is why the productivity and efficiency of special healthcare must be evaluated closely. (Syövän hoitoa kehittävä työryhmä et al., 2010) As mentioned earlier, the Finnish government has stated that pathologic-anatomic-diagnosis must be provided within five working days if the cancer diagnosis does not require special inquiries. The extra wait will cause an additional mental burden for the patient and a possible increased risk of disease burden. (Syövän hoitoa kehittävä työryhmä et al., 2010)

In healthcare, performance management of laboratory medicine has focused on quality, activity volumes, and delivery costs. Laboratories and their services are part of a patient's care path, where the results of studies help clinicians or other stakeholders make superior decisions. This has created a change in the value proposition of laboratory medicine. Many clinical decisions require laboratory medicine studies and play an essential role in patient's clinical outcomes. The effects can be seen in

the operational productivity of the care process and the resource level, which are critical for care delivery. (Price et al., 2016) Value proposition happens between the service provider and the customer. In laboratory medicine, the value proposition is composed of the service's form, unmet clinical needs, and the likely provided benefits. In the end, the results illustrate that improvements have been performed. (Price et al., 2016)

The EPSHP's pathology department is currently lacking established performance indicators. The department has utilized single key performance measures which have been used to describe the performance of the laboratory process (e.g., turnaround times) or the number of studies annually. But the department does not follow its performance on a systematic level. Performance measurements enable the definition of what is essential to measure and what is measured, evaluate the performance, and find areas of improvement (Shaw, 2003).

Quality and safety assessments have been part of the performance and measurements evaluated in the healthcare sector. If the measures have not been performed, it is impossible to prove that improvements have been made. (Shaw, 2003) Most Finnish pathology laboratories are accredited with the international standard (ISO) 15189 (FINAS, 2022). Accreditation is a quality standard showing that a clinical laboratory follows ISO15189 standard's requirements (Tzankov & Tornillo, 2017). ISO 15189 focuses mainly on evaluating the laboratory process and management. It is also essential to assess the interactions between patients, doctors, and the laboratory. It is difficult, or sometimes impossible, to measure the medical laboratory service on patient outcomes directly. (The Royal College of Pathologists, 2011) The Performance Measurement System (PMS), such as Balanced Scorecard (BSC) by Kaplan and Norton, can be utilized to evaluate the healthcare organization's total performance (Kaplan & Norton, 1992).

According to Pourmohammadi et al. (2018), hospitals use various categories of performance indicators to report their performance. The overall consistency in hospital performance management is lacking. Hospitals can achieve internal and external goals using performance measurements effectively. With performance indicators, EPSHP's pathology department managers can discover their expertise and areas of improvement and enhance operations (Khalifa & Khalid, 2015). Performance indicators promote evidence-based decision-making, measurable improvements, and quality assessment (Pourmohammadi et al., 2018). When a company or

organization establishes performance measurement indicators, learning what other organizations use indicators is beneficial (Walker & Dunn, 2006). There are no published articles about setting performance measurement indicators in the Finnish pathology department. This research can be used as reference material in other pathology departments in Finland and globally.

I chose this study because of the interdisciplinary expertise between biomedical science and business management. Medical cell biologists are professionals in the Finnish pathology departments, and their primary responsibilities are maintaining quality, increasing efficiency, and working safety in the pathology laboratory (Jyväskylän yliopisto, 2020). This master thesis process allows me to utilize my cell biologist's working experience in pathology and engross performance measurement and management theories. The process hopefully enlightens the best use of pathology laboratories' resources which can be translated into efficiency and effectiveness in performance indicators (Rasi et al., 2020).

1.2 Research questions

With the help of performance indicators, the EPSHP's pathology department could use and allocate its resources better, evaluate and communicate its performance, and identify areas of improvement (Francseshini, 2019). The efficiency and effectiveness of the pathology department should be reflected in the department's service delivery. When cancer patients receive their diagnosis within the preferred time frame, and patients' care paths flow without extra delays, it could prove value to Finnish healthcare.

The pathology department in the Seinäjoki central hospital is part of the EPSHP. The main objective of this research is to provide a proposal of performance indicators and objectives for EPSHP's pathology department. The following goals should be achieved when developing performance indicators and objectives to fulfill the research's main objective. Identify a framework that helps categorize selected indicators and objectives and distinguish what performance indicators should be chosen. The organization's strategy and performance information reporting guidelines should be discovered, understood, and followed in this process. The EPSHP's pathology department's core activities should be recognized. In this study, the main research question and subquestions are:

Which performance indicators and objectives are suitable for evaluating the performance of the EPSHP's pathology department?

- What kind of framework is suitable for categorizing performance indicators and objectives?
- What are the EPSHP's guidelines for the performance information reporting of the pathology department?
- What are the EPSHP's pathology department's core activities?

Qualitative research is applied to gain answers to the research questions. As secondary data, the EPSHP's organizational documents are studied. The primary data for this study is presented from the semi-structured interviews with the pathology department's managerial and non-managerial staff. With the help of a theoretical framework and literature, the answers to the research questions will be presented and decisively discussed after the data analysis. The research is limited to developing a proposal of performance indicators and objectives for the EPSHP's pathology department. The study will propose measurement units and evaluation periods for performance indicators. The pathology department's managers will choose which performance indicators they want to adapt, identify data collection and analysis, and plan how the indicators will be implemented.

1.3 Structure of the thesis

The thesis constructs six chapters. Chapter one introduces the research topic and briefly describes the research context and research questions. Chapter two contains a literature review focusing on performance measurement and management, performance indicators, and PMSs. In chapter three, the research methodology is justified. This research consists of primary data from interviews and secondary data from the organization's documents. Chapter four presents the results from the primary and secondary data. Chapter five contains conclusions from the results, combines them with the existing literature, evaluates practical implications, assesses the study's limitations, and provides suggestions for future research.

2 Literature review

The literature review has four sections: performance measurement and management, performance indicators, PMSs, and characteristics of PMSs in healthcare. The literature review starts by

discussing performance measurement and management at the general level. The main subject of this thesis, performance indicators, is described in detail in subchapter 2.2. This chapter aims to understand why and how performance indicators are used, how these indicators can be classified, and the essential properties of indicators. Performance indicators can be categorized into PMSs in subchapter 2.3. The BSC, one of the most frequently applied models and a building process of the PMS, are reviewed in detail. The characteristics of PMSs in healthcare are identified in subchapter 2.4. In the last subchapter, 2.5, the established theoretical framework for this research is reviewed.

2.1 Performance measurement and management

The term performance is widely used, and in different fields, it can be defined in multiple ways. One of the most recognized definitions of performance is from Otley's (2001, p. 251) with three 'E's: effectiveness, efficiency, and economy. He describes "effectiveness as delivering desired outputs and even outcomes, efficiency as using as few inputs as possible to obtain these outputs, and economy as buying inputs as cheaply as possible" (Otley, 2001). Neely et al. (2005, p. 1228) described performance as a procedure where the action is quantified, leading to performance. Lebas (1995, p. 23) defines performance as "the potential for future successful implementation of actions to reach the objectives and targets."

When discussing performance, it is essential to distinguish the performance levels (Melnyk et al., 2004). Businesses' performance can be evaluated on three levels: performance measure, performance measurement, and performance measurement system (PMS) (Neely et al., 2005). Performance measure can also be understood as a metric confirmed in qualitative or quantitative methods and then compared to a reference point (Melnyk et al., 2004). Performance measures are discussed in detail in section 2.2. Performance measurement uses performance measures and evaluates the process of achieving strategic goals. Performance measurement gives tools to monitor and control the recent issues within the organization and explain past performance. (Lebas, 1995; van Dooren et al., 2015) The PMS consists of individual performance measures that can be classified in different ways, e.g., BSC by Kaplan & Norton (1992). PMSs are discussed in detail in section 2.3. Performance measurement is one of the most studied fields in business. Different levels of performance can be used interchangeably in various contexts, which can be seen as a complex topic (Melnyk et al., 2004).

Performance measurement is considered a part of the bigger context of performance management (Busi & Bititci, 2006). It isn't easy to separate performance measurement and management from each other. Instead, performance management can be thought to support performance measures. (Lebas, 1995) Amaratunga and Baldry (2002) represented the Procurement Executives' Association's description of performance management. Performance information can enhance positive influence on the organization's culture and processes. This can be achieved by establishing recognized goals by prioritizing and allocating the usage of resources. Managers can adjust or reinforce the current operations if the goals are met and utilize the performance information results in this process. (Amaratunga & Baldry, 2002)

If an organization wants to use effective performance measurement, it should be able to transform from measurement to management. Amaratunga & Baldry (2002, pp. 2019–2020) defined two components that are required in a change from performance measurement to management. At first, the organization should have a structure that enables the efficient application of performance measures. And second, the performance measurement information should be used, enhancing the change within the organization. Van Dooren et al. (2015) described performance management as a theoretical process that contains five steps. First, you must prioritize your measurement efforts, and based on this, you will choose your measurement indicators. Next, you have to gather and examine the data. And as the last step, you will report your findings. It is important to remember that real-life measurements may not be performed in this theoretical order, and there is no single way to do the performance measurement process. (van Dooren et al., 2015)

Van Dooren et al. (2015) reported over 40 different ways to use performance information for management practices, e.g., allocation of resources, strategic planning, reporting and monitoring, and performance auditing. Although performance management is used primarily for learning and improvement, it can be utilized for other reasons, such as explaining and monitoring. The learning target indicates problems, and measurement itself adds value to the organization. Managers use management scorecards to steer and control the organization, and the organization's divisions should provide some key performance indicators for managers to monitor their actions. (van Dooren et al., 2015) Cost parameters and requirements in quality and service improvements have modified the historical development of performance management (Amaratunga & Baldry, 2002).

2.2 Performance indicators

The journey of reaching a specific object can be described as a process and evaluated with performance measures. A performance indicator, measure, and metric can be used as synonyms. (Franceschini et al., 2019; van Looy & Shafagatova, 2016) In this thesis, the term performance indicator is utilized. Performance indicators can be used in communication when declaring a business's performance or differentiating it from its competitors. A company's most critical performance indicators are called key performance indicators. Quality and quality standards have established essential status within performance measurement and management. (Franceschini et al., 2019) The following chapters review the aims and usages of performance indicators, classification of indicators, and properties of indicators in detail.

2.2.1 Aims and use of indicators

If we want to evaluate performance, we first have to understand the reasons why we intend to measure something. And secondly, we have to identify the object we would like to measure. (Lebas, 1995). Performance indicator helps the company achieve information about its past performance and provides information on whether the organization is achieving its objectives. It also provides tools to analyze and understand the company's current state. (Lebas, 1995) The indicator helps an organization identify its strengths and weaknesses. Effective management utilizes measurements. (Amaratunga & Baldry, 2002)

Lebas (1995) has listed five reasons why the measurement of the business can be seen as important. These questions will help to identify answers to relevant business questions.

- 1) How have we performed in the past?
- 2) What is our current performance capacity?
- 3) What are our future objectives?
- 4) How are we going to achieve these objectives?
- 5) How will we know when the target is achieved?

Bourne & Bourne (2011) listed five functions for performance measurement: establishing the current position, communicating direction, influencing actions, enhancing operations, and accelerating learning. With the help of performance indicators, the company's current state is easier to establish. If the company lacks these starting point measures, how will it measure progress,

compare performance to competitors, and benchmark itself? With the help of performance indicators, companies can communicate their direction to stakeholders and customers. When the performance indicators are chosen in the correct way, they can influence employee actions to achieve goals. They also help to encourage people and give meaning to the employee. This also helps to measure the progress made. The search process of performance measures forces a company to identify what factors or processes are essential for the company's success. After revising the measured performance, it stimulates action in the company. The most significant benefit of performance measurement is the possibility of learning. Measured performances should be evaluated with the following questions. Are the performed tasks done correctly? And are you working on the right tasks? (Bourne & Bourne, 2011)

The application of performance information can be categorized into hard and soft use, depending on how the performance information is assessed. In soft use, the performance information does not directly impact the organizations' performance judgments. Soft usage allows dialogue and interpretation before the final decision-making. But if the performance information is the core of the business, then it's hard usage and has tight coupling to the judgment. (van Dooren et al., 2015)

It is valuable to remember that performance indicator describes the past performance, but the data needs to be analyzed, and indicators alone won't describe why certain things have happened (Amaratunga & Baldry, 2002). Poor results don't mean that the execution has been inadequate. Instead, it draws attention and involves further analysis to understand the reasons for the poor performance (Franceschini et al., 2019). For example, it is possible that the performance expectations were unrealistic (Franceschini et al., 2019) or the chosen performance indicator wasn't relevant (Neely et al., 2005). The performance indicator is only an estimate of the measurement and may not provide absolute information about the performance. It depends on the PMS model and how detailed information the indicators provide. Performance indicators are not synonyms to the laws or regulations. Laws and regulations should be considered when designing performance indicators, but they do not ensure that the laws and regulations are being followed. (Franceschini et al., 2019)

2.2.2 Classification of indicators

The performance indicators can be classified in multiple ways; in this chapter, different classifications are presented. One of the most general classifications of performance indicators is financial and non-financial categories, which have been described by Kaplan and Norton (1992). Customer satisfaction and employee perceptions are non-financial indicators, and budget, operating expense ratios, and cash flow are examples of financial indicators (Kaplan & Norton, 1996a; Melnyk et al., 2004). It is also possible to divide performance indicators into financial and operational indicators. Operational performance indicators include turnaround times, inventory levels, and setup times. (Kaplan & Norton, 1996a; Melnyk et al., 2004) Financial indicators specify the measurement elements in monetary resources, and operational indicators utilize resources or outputs as their measurement aspects. Time and people are examples of resources, and physical units describe an example of the output. (Melnyk et al., 2004)

It is possible to categorize indicators into leading and lagging indicators. With the help of leading measures (e.g., the number of new customers), the managers can improve and correct the bad historical performance identified with lagging measures. (Busi & Bititci, 2006) Non-financial indicators are usually lagging indicators and tell a story about past performance (Kaplan & Norton, 1996a). Performance indicators can be sorted into objective and subjective ones. With the help of objective indicators, it is possible to evaluate measured items with the help of some measurement devices, such as temperature measurement with a thermometer. Subjective indicators are based on opinions or estimations. For example, customer service can be seen as a subjective indicator since the experience depends on subjective observations or opinions. (Franceschini et al., 2019)

Dimensions of performance indicators can be classified into internal and external environments. The internal environment contains the business's internal information and can be measured, for example, with enterprise planning systems. The external environment describes the market where the organization operates, and usually, they focus on customers and competitors. (Bourne & Bourne, 2011; Neely et al., 2005)

2.2.3 Properties of indicators

When we want to measure performance, it is essential to specify performance criteria. If the criteria have been chosen poorly, it is challenging to plan and control an organization's operation or motivate its employees. It is essential to determine what level of performance we want to measure, e.g., individual, departmental, or organization. (Globerson, 1985) It is impossible to measure everything, so it is essential to prioritize your measurement efforts. In the organization, it is helpful to draw organizational charts, management models, or stakeholder lists that help you to understand your existing networks. These will help you to understand what is already being measured in the organization. (van Dooren et al., 2015) Critical success factors have been used as a selection process for performance criteria. Critical success factors are factors that companies require to prosper. (Globerson, 1985)

Business performance depends on the business's nature and how "success" is defined. Success can vary between different perspectives. Usually, perspectives in this context refer to the stakeholder groups. (Bourne & Bourne, 2011) As described earlier in chapter 2.1, efficiency and effectiveness are two main dimensions of performance measurement. Efficiency can be described as how economically certain actions can be performed, and effectiveness refers to achieving the set requirements. (Neely et al., 2005)

When developing performance indicators, it's essential to define what will be assessed and how it will be evaluated (van Dooren et al., 2015). The measurement unit, level of measurement, measurement accuracy, data collection, and data analysis must be considered when choosing performance indicators (Globerson, 1985). If the indicator definition is unclear, it may be misinterpreted, and the data collection is performed from the wrong source (Health Information and Quality Authority, 2010). The indicator should reflect everyday practices, and their usage should be relevant for directing timewise (van Dooren et al., 2015). The indicator should be clear to its users and associated with value delivery to customers or stakeholders (Melnik et al., 2004). The indicator should be derived from the strategy and be able to be traced and verified (Franceschini et al., 2019).

Bourne & Bourne (2011, p. 2) stated, "performance can only be relative, not absolute." Performance should always be compared to others in the same sector and to the company's historical performance. If you want to analyze the indicator, you must compare it to a set reference point.

The reference point can be internal or external. (Bourne & Bourne, 2011; Franceschini et al., 2019; Melnyk et al., 2004) The internally developed point can be, for example, an operating budget the organization has set. For example, environmental performance can be evaluated by external standards set by an organization or other third party (e.g., ISO). (Melnyk et al., 2004) It is also vital that the performance indicator shouldn't focus only on numbers but more on the achieved outcome itself (Bourne & Bourne, 2011).

In addition to the properties mentioned above, Globerson (1985) has listed the following criteria when choosing performance indicators. The indicator should be obtained from the business's goals, and the gathering and analysis of the information should be established. The indicators selection process must contain discussion and communication. Objective indicators should be preferred instead of subjective ones.

2.3 Performance measurement systems

As previously described in section 2.1, PMS consists of individual performance measures which can be categorized with a framework such as BSC from Kaplan and Norton (1992). The primary aim of a PMS is to help and support management. This can be achieved by measuring business performance and analyzing and improving operations. With the help of performance information, operation efficiency can be improved and provide better decision-making practices for managers. (Taticchi & Balachandran, 2008)

PMSs were initially developed to monitor and evaluate financial performance (van Looy & Shafagatova, 2016). The discussion about the selection of performance measures became popular between the 1980s and 1990s (Bourne et al., 2018). The changes in global culture, the development of the industrial sector, and shifts in the customers' demands have raised requirements for business performance. This has caused the increased utilization of non-financial measures. (Busi & Bititci, 2006) Taticchi & Balachandran (2008) described that the performance measurement framework helps to select the information which should be collected and analyzed. Define the analysis methods for performance data and understand how managers can utilize performance information to generate value. PMS measures the company's core processes, but it should also distinguish relationships and meaning to the overall business. (Taticchi & Balachandran, 2008) The PMSs assist

the organization in assessing if the strategy is being followed or is reaching its objectives (Amaratunga & Baldry, 2002).

The performance evaluation of healthcare organizations and hospitals is complex and requires understanding and adapting multiple dimensions of performance. There are several performance measurement models, frameworks, and systems such as BSC by Kaplan and Norton (1996b), Performance pyramid by Lynch and Cross (1995), and performance prism by Neely et al. (2001). The BSC model has been broadly used to estimate the hospital's operations (van Looy & Shafagatova, 2016). The BSC model is discussed in detail in section 2.3.1, and the following chapters will focus on producing a short overview of the performance pyramid and prism. The building process of a PMS is described in section Building of performance measurement system 2.3.2.

Lynch and Cross (1995) created the performance pyramid, where the objectives are drawn from the strategy to different organizational levels in hierarchical order. The objectives help to decide performance measures that support the company's strategy (Figure 1.). Neely et al. (2000) have highlighted that the performance pyramid combines the performance measurement and business process view from a hierarchical perspective. The pyramid's performance measures can be classified into external effectiveness and internal efficiency (Figure 1.). External effectiveness measures the ability to fulfill customers' needs, and internal efficiency describes the company's ability to perform internal processes efficiently. The pyramid shape represents the information stream about objectives from top to bottom, and performance measures are created from bottom to up in the organization. (Lynch & Cross, 1995) The performance pyramid has been criticized for being challenging to operationalize (Neely et al., 2000).

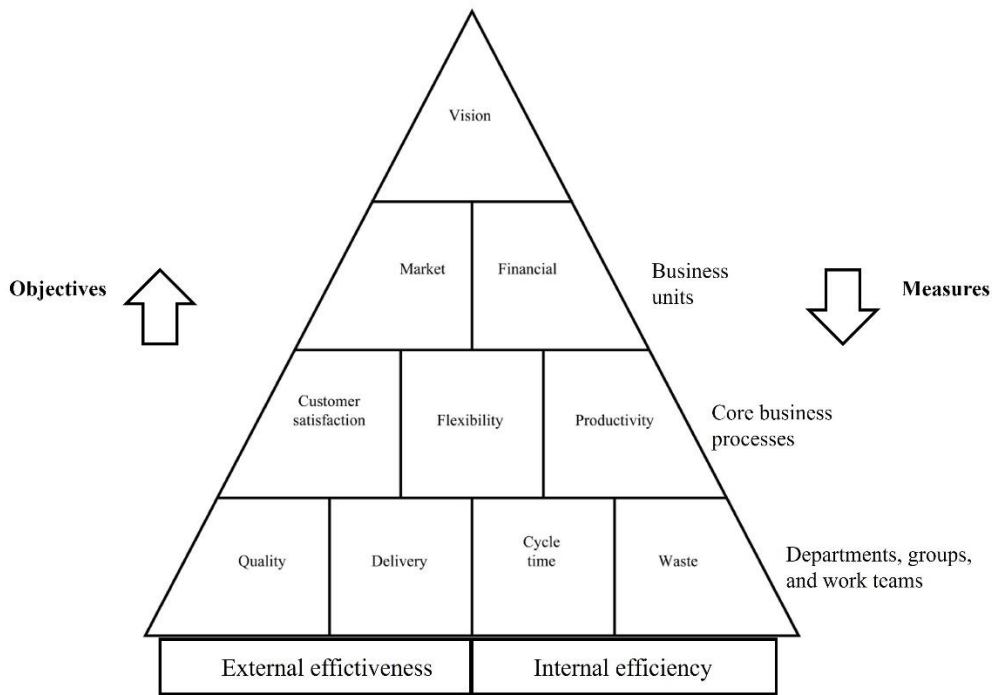


Figure 1. Performance pyramid (Adapted from Lynch & Cross, 1995, p. 65; Neely et al., 2001, p. 1126).

Performance Prism is a performance measurement framework developed by Neely, Adams, and Crowe (Neely et al., 2001). The prism derives the measures from stakeholders' needs, which is different from other models. Performance prism analyses performance from five facets of a three-dimensional framework. Facets assist the organization in selecting the performance measures for their PMS. Performance prism highlights the complementarity between stakeholders and the organization, whereas other PMSs focus on the organization's value-creation process for the stakeholders. Performance prisms also emphasize the interrelationships between five facets, and the organization's strategic process has to be integrated if the organizations want to reach stakeholders' satisfaction. (Neely et al., 2001)

2.3.1 Balanced scorecard

Kaplan and Norton established BSC to assess financial and non-financial measurements (1992). Originally, the BSC model was developed for private sector companies, but it is widely used in nonprofit and public sector enterprises. Before the BSC, the public sector mainly centered on financial measures such as budget, expenditures, and operating expense ratios. It is almost impossible to measure public performance only via financial measures. (Kaplan & Norton, 1992)

Traditional PMSs have challenges in combining long-term strategy with short-term activities. In many cases, this leads to a problem where strategy is being developed but is not implemented into everyday operations. (Kaplan & Norton, 1996b) BSC provides information for managers from four perspectives: customer, internal processes, learning, and financial. It helps to provide the most critical data from these four perspectives and connect them to vision and strategy (Figure 2.). (Kaplan & Norton, 1996b) In the following chapters, these perspectives are discussed in detail.

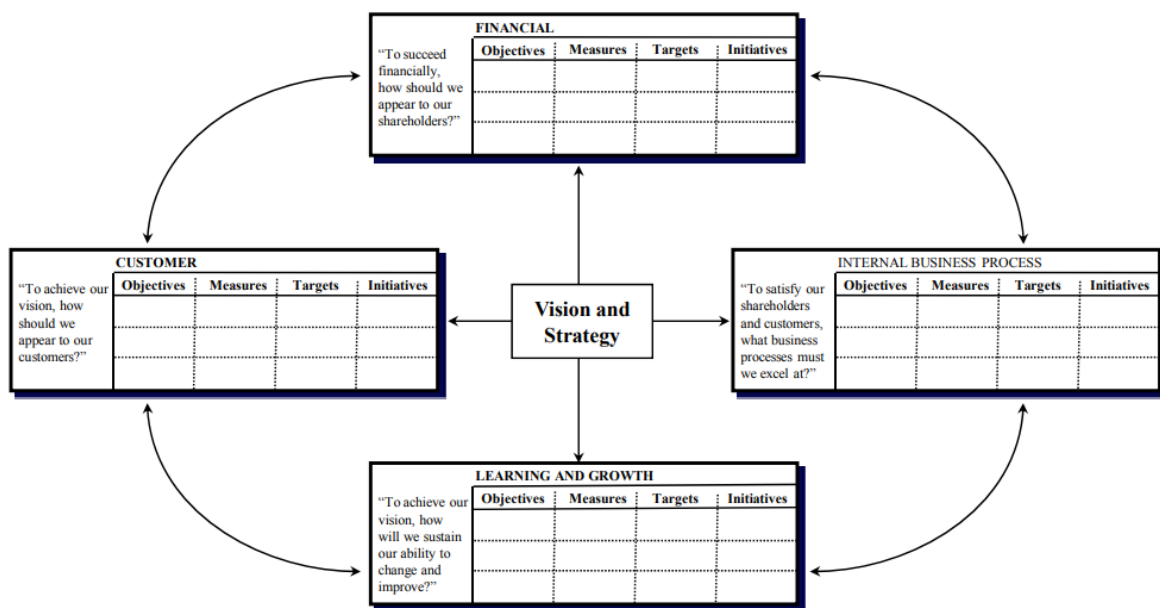


Figure 2. Balanced scorecard's (BSC) four perspectives and connections to vision and strategy. Adapted from Kaplan (2009, p. 4; originally published in Kaplan & Norton, 1996b, p. 76)

Financial perspective

Kaplan and Norton (1992) demonstrated that increased financial performance is the outcome of operational actions. Companies should not focus only on analyzing financial performance measures. Instead, they should focus on evaluating the operations from four perspectives. From the financial perspective of the BSC, the company's activities are considered in the eyes of shareholders. The most common financial performance indicators evaluate profitability, shareholder value, and financial growth. (Kaplan & Norton, 1992) Depending on the company's growth stage, the company

may choose different indicators to reflect the phase of financial growth. For example, a company in the growth phase may choose sales growth and the number of new customers as their performance indicators. For example, revenue growth, cost reduction rates, and working capital ratios are one of the most indicators from the financial perspective. (Kaplan & Norton, 1996a)

Customer perspective

The customer perspective in the BSC forces the company to estimate its performance in the eyes of the customer (Kaplan & Norton, 1992). Identifying the company's target customers or market segments and their current and future needs is essential. Value proposition helps to define the customer perspective's core measurements. Customer profitability, satisfaction and retention, and market share can be generic measures in this perspective. (Kaplan & Norton, 1996a)

Internal business processes perspective

The internal process perspective should focus on analyzing the measures that significantly impact customer satisfaction, e.g., cycle time, quality, cost, and throughput. It forces the company to evaluate which processes are the most important and what are the core competencies or technological capacities. (Kaplan & Norton, 1992) These processes have the most significant impact on customer satisfaction, leading to increased financial performance (Kaplan & Norton, 1996a). Traditional PMSs typically evaluate and improve the current processes. The BSC model helps companies recognize new processes that they will require to fulfill customers' expectations and meet financial objectives. BSC-model combines the innovation and controlling of current processes. In contrast, conventional PMSs emphasize monitoring and enhancing the current processes. This is considered a short-term evaluation. Innovation includes the development of new processes to create new products or services to fulfill the customer's upcoming needs. This can be viewed as a long-term evaluation. (Kaplan & Norton, 1996a)

Learning and growth perspective

The internal process and customer perspectives usually reveal the need for people, systems, technology, or facilities (Kaplan & Norton, 1996a). From the learning and growth perspective,

companies have to define the most critical factors for their competitive success. Usually, employee-based measurements such as employee satisfaction, employee retention, and employee training are common in this perspective. These reflect the specific skills required to serve the customer better in the future. (Kaplan & Norton, 1996a) But companies also must adapt to the competition and development of market changes and customer needs shifts (Kaplan & Norton, 1992).

The BSC model describes four perspectives, and business strategy can be implemented via four management processes (Kaplan & Norton, 1996b). By translating the vision, the BSC model helps to clarify the vision by setting clear objectives or goals. By communicating and linking the process, the managers can describe the strategy to the whole company. BSC helps to align the organization's strategy and departmental and individual objectives. It also helps to link reward programs to performance measures. In the business planning process, the BSC helps to set targets that are drawn from strategy and allocate resources. An organization's high-level strategic goals can be turned into smaller objectives and measures in the organization's departments, operating units, and even at the individual levels. When an organization wants to implement a BSC, its strategy and budget have to be analyzed together. Through feedback and the learning process, BSC allows managers to communicate the vision but also enables them to receive feedback on whether the strategy is understandable. This leads to a revision of strategy and promotes a learning process. (Kaplan & Norton, 1996b) Through communication, education, and goal setting BSC model participates employees to work towards organizational goals (Kaplan & Norton, 2009).

In the BSC planning process, managers have to select targets for every four perspectives and then identify what kind of drivers will help to reach those targets. Measures will be chosen based on chosen drivers. And then, managers have to agree on short-term milestones, which help to evaluate whether the strategic goals will be reached or not. (Kaplan & Norton, 2009) BSC enables managers to assess strategy throughout the year. Traditionally, the organization's performance has been weighed based on, e.g., quarterly financial results. BSC's performance drivers communicate causally to objectives which allows considering whether the strategy is valid or not. (Kaplan & Norton, 2009)

2.3.2 Building of performance measurement system

In the literature, multiple sources have stated that PMS has to be aligned with the strategy (Kaplan & Norton, 1996a; Lynch & Cross, 1995; Neely et al., 2001). Melnyk et al. (2004) described PMSs can

coordinate different performance measures from various functions. And at the same time, they can align operations from strategy to operational levels. The most demanding part is designing a structure for performance measurements so that overall performance can be evaluated. Neely et al. (2000) stated PMS creation process is beneficial for the management portal since it forces the managers to distinguish the most crucial elements in the business's performance and think about the relations between them. During this process, the possible hidden opinion differences may be revealed.

Multiple frameworks have been utilized for designing PMSs. There are critical elements for all of these frameworks: strategies should be connected to operations, different stakeholder perspectives are considered, both financial and non-financial are being applied, and external and internal measurement considerations should be employed. The PMS should follow the characteristics of the business. (Taticchi & Balachandran, 2008) Neely et al. (2000) visualized the creation of a PMS in a circle of four steps: design, implementation, usage, and maintenance (Figure 3.).

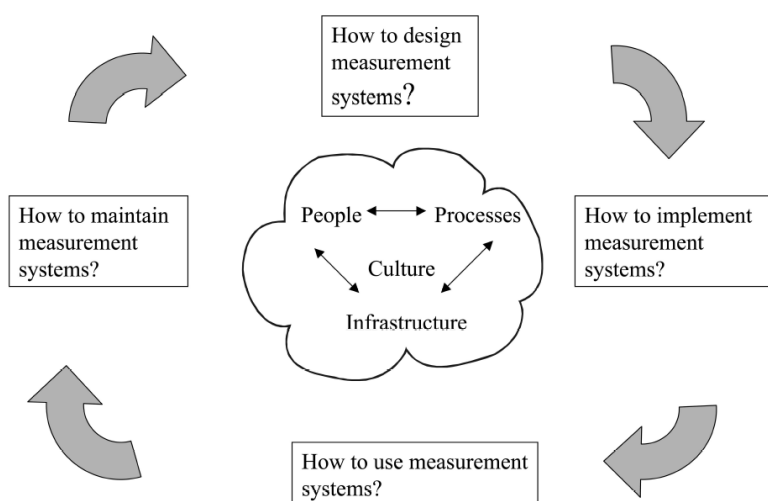


Figure 3. Development of performance measurement system (PMS) (Adapted from Neely et al., 2000, p. 1143).

Taticchi and Balachandran (2008) analyzed over 800 scientific research and described PMS development as a process (Figure 4.) that contains five steps: assessment, design, implementation, communication/alignment, and review. These steps are described in the following chapters.

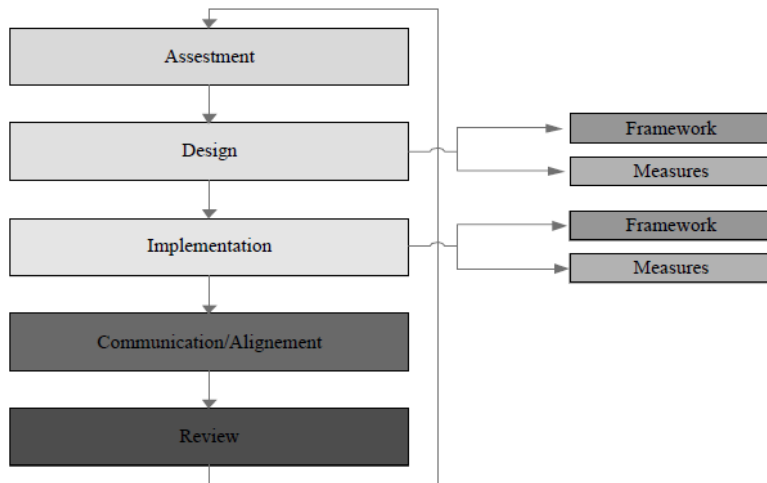


Figure 4. The development process of a traditional performance measurement system (PMS) (Adapted from Taticchi & Balachandran, 2008, p. 149).

Assessment and design

In the assessment step, the present PMS is revised; this creates the foundation to develop a new system. It is important to analyze the company's activities and its core drivers. (Taticchi & Balachandran, 2008) The key objectives are identified in the design phase, and the measurements are designed (Bourne et al., 2000). Many writers have highlighted in their articles that the measures should be withdrawn from strategy (Globerson, 1985; Kaplan & Norton, 1996a; Lynch & Cross, 1995). Performance measurement should be designed based on assumed usage, not vice versa. Literature has recognized that some PMSs are not adequate for their purpose. (van Dooren et al., 2015) Bourne et al. (2000) described designing a PMS as a process where the customers' and stakeholders' requests are converted into business objectives and performance measures.

Implementation

After the framework and measures have been designed, the implementation process should be defined (Taticchi & Balachandran, 2008). In this phase, the PMS is taken into action, and the data collection can be started. This may require the adaptation of new procedures, such as setting up customer satisfaction surveys. (Bourne et al., 2000) The performance measures are employed to improve processes and assist management (Neely et al., 2000). Neely et al. (2000) stated that

designing a PMS is not the most demanding part. Implementing and using measures have been considered the most challenging, and many businesses have failed in the past.

Communication and review

The PMS should communicate the chosen performance measures and results to the company's staff if the company's goals want to be fulfilled. There are multiple communication solutions for these, such as the use of dashboards. Compensation systems can help a company to align its goals and boost performance growth. (Taticchi & Balachandran, 2008)

The adopted and used performance indicators are applied in the review step to update and review the PMS. This step reviews the key targets, measures definitions, and measures sets accordingly. (Bourne et al., 2000) PMS should be open for review so that it can be adapted when businesses' strategy or environment changes (Taticchi & Balachandran, 2008). PMSs should be constantly developed and improved. Upgrades in data collection and management are critical. Big data and artificial intelligence provide opportunities to handle complex data streams in real-time and utilize the data in forecasts. (Vainieri et al., 2020) The review of PMS is important because it proves whether significant improvement in performance has happened (Taticchi & Balachandran, 2008).

Bourne et al. (2000) highlighted that these steps are only theoretical, and it is possible that different steps may be performed simultaneously. Especially implementation and use can overlap. They also highlighted that the PMS development process rarely linearly progresses from the design to the usage phase. Instead, the process may require numerous development and reviewing stages.

2.4 Characteristics of performance measurement systems in healthcare

This chapter describes the characteristics of performance measurement systems in healthcare, discusses value proposition (2.4.1), and illustrates how performance measurement and management are defined (2.4.2).

World Health Organization (WHO) has outlined universal health coverage, and it should guarantee that all individuals can get the required health services. The usage of services shouldn't cause

excessive financial challenges, and the service quality should be adequate. (WHO, 2022) All European countries are devoted to universal health coverage, but there are differences between countries. The biggest differences arise in who is included or which services are contained. And how the costs are shared and what kind of service qualities are required. Universal health coverage has faced challenges recently, such as the aging population, chronic diseases, and new effective but expensive treatments. (Commission & Safety, 2019)

Healthcare organizations provide healthcare services such as diagnoses, treatments, rehabilitation, and prevention. Healthcare organizations operate in the public and private sectors. The private sector's main aim is to increase profitability. (Coskun & Seneyigit, 2010) Public sector organizations do not maximize profits, and they do not have much potential to generate income. The financial motivation is usually "break-even" and cost reductions. (Sidney, 2004) The law defines the public sector's organizational objectives and goals (Coskun & Seneyigit, 2010).

Healthcare systems are complex structures with multiple stakeholders, e.g., patients, clinicians, provider organizations, government, purchaser organizations, and citizens. The relationships between different stakeholder groups have different accountabilities with each other, and this is represented in Figure 5. Accountability can be divided into two perspectives: information providing and holding of consequences for the accountable party. Consequences can be described as sanctions or rewards. Different stakeholders have different needs, and this causes challenges to PMSs in the healthcare sector. (WHO Regional Office for Europe et al., 2008)

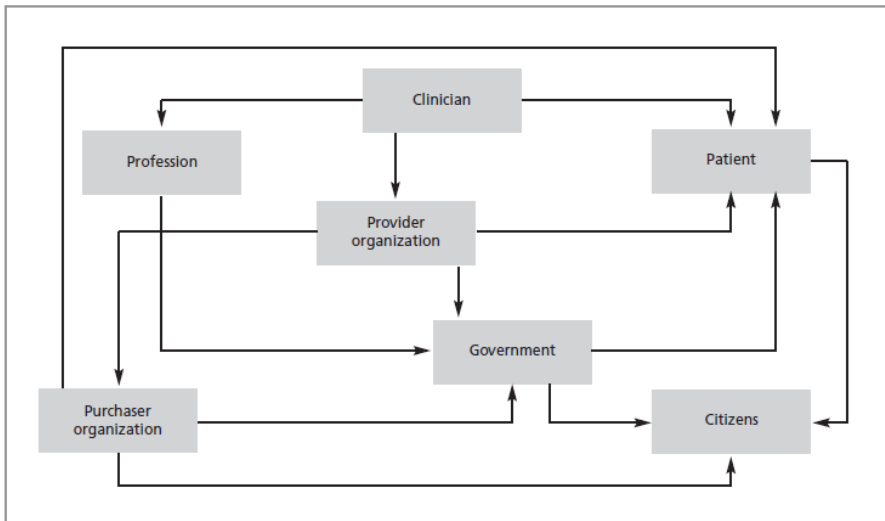


Figure 5. The accountability relationships between different stakeholders in healthcare. (Adapted from WHO Regional Office for Europe et al., 2008)

2.4.1 The value proposition in healthcare

In the context of performance measurement and management, value proposition defines the core of the company's strategy. Organizations should define their core value and understand the elements of which their core value consists. In this way, they can enhance the company's position in the competition and better meet their customers' needs. (Almquist et al., 2016) In the literature, it is acknowledged that healthcare lacks clarity about goals. Performance improvements should be tight around value, but the value is commonly misunderstood and unmeasured in healthcare. (Porter, 2010) The European commission's expert panel has stated that the definition of value-based healthcare and an explanation about value is missing (Commission & Safety, 2019).

The development of healthcare performance management started around the 1980s. The main focus was on budget control, financial results, and the number of provided services. In 2000, healthcare performance management got fragmented, and the definition of performance became complex. (Vainieri et al., 2020) During the past years, healthcare has shifted from activity-based service to patient-focused service. Improved quality and patient safety have become key drivers and efficient cost allocation. Healthcare stakeholders contain different groups: patients, policymakers, and organizations. All of these groups have different interests, and it is much more complicated to provide services to fulfill the expectations of each group. (Price et al., 2016) The value in healthcare

has been defined between the outcomes of healthcare processes, usually services and costs (Vainieri et al., 2020). In healthcare, health itself can be seen as a value, and it is also important to define health as a concept. Porter has highlighted that value and customer should be connected. (Porter, 2010) In the following text, it will be discussed what's the value of healthcare and how the value should be measured.

In medicine, the outcome is not easily defined since the outcome rarely describes the care the patient has received (Porter, 2010). A patient's healthcare cycle for a particular medical condition includes multiple experts and teams (Kaplan & Porter, 2011). The care cycle contains multiple intercessions from diagnosis to treatment. Also, costs consist of the process of patient care and not the cost of a single service. If the patient has many medical conditions, each of the condition's values should be measured separately. (Porter, 2010) If cost reductions want to be performed, it requires time spent on another service to reduce or prevent the need for other services (Porter, 2010). The earlier detection of the disease often leads to less complicated and costly care (Kaplan & Porter, 2011). Kaplan and Porter (2011) have explained that the value in healthcare should not be evaluated within the number of provided services.

Healthcare delivery's nature alone is complex, requiring multiple resources such as personnel, equipment, space, and supplies. The care process starts when the patient reaches the healthcare organization and continues with possible numerous clinical consultations and treatments. The process also contains administrative services until the patient's care is completed. Depending on their medical condition, the patients go through different care paths. (Kaplan & Porter, 2011) When measuring value, the measuring unit should consist of all services or activities the patient has received during the one's care path. Healthcare organizations and systems are structured as departments or hospitals. The costs are measured at the department level and not during the whole care cycle, where the value is created or determined. (Porter, 2010)

Vainieri et al. (2020) described that value in healthcare can be divided into three parts: personal, technical, and allocation value. Personal value characterizes the patient's preferences and experience. Quality standards define technical value. Allocative value assesses the appropriate distribution of resources. From this value perspective, the fundamental purpose of healthcare is to improve patients' experience. It happens via improved system design to maximize patients' health

benefits. Integrated pathways between different care units will guarantee cost-effective resource allocation. Here the need and equal distribution of resources have to be considered. The value perspective may be contradictory since the individual's value may be high, but it may not be translated to the society's value. Performance management has difficulties maintaining these diverse values, requiring actions to include patient perspectives. (Vainieri et al., 2020)

European Commission expert panel advises defining “value-based healthcare” with the help of four pillars; personal, technical, allocative, and societal value. The care should fulfill the patient’s individual objectives, and the care’s outcome should be performed without utilizing more than existing resources. The care and resources should be allocated to all patients equally. At the same time, healthcare should promote social contribution. (Commission & Safety, 2019)

2.4.2 How to define performance measurement and management in public healthcare?

Historically, performance measurement and management have paid attention to clinical processes and single individual's effects but have not managed to measure the health of populations. Population health should be applied in performance management since healthcare systems' primary responsibility is preventing illnesses. (Vainieri et al., 2020) An excellent example of preventative healthcare actions is cancer screening programs. Prevention provides the most significant outcome in population health, but it takes a long time to be realized and is almost intangible to measure. If health outcomes are wanted to be measured, more accurate definitions and measurements are required at the national and global levels. (Vainieri et al., 2020)

Performance in healthcare can be seen as a multidimensional phenomenon that consists of efficiency, economy, and effectiveness. The financial sector plays only a part in the whole performance. (Mettler & Rohner, 2009) Healthcare performance management has included multidimensional performance measurements to quantify financial and non-financial results (Vainieri et al., 2019). Performance measurement and management in hospitals and the healthcare sector have changed during the past 20 years. This has affected the literature, and different models and categories for performance indicators have been used. Even though the used performance models have varied, performance has been evaluated in the process format. Performance indicators can be classified under input, process, output, and impact categories. (Rasi et al., 2020)

Mettler & Rohner (2009) performed a study in Switzerland where their main aim was to understand better performance management adoption and how they will be developed in the future. They found that performance management is essential to understanding the organizational performance and fulfilling strategic targets. Different factors and regulatory settings influence performance management. These include the complexity of new technologies, the attitude of employees, and organizational structure. The main drivers of adapting performance management were changing regulations and increased market dynamics. (Mettler & Rohner, 2009)

Mettler & Rohner (2009) found that performance measurement is now more known in healthcare, but the field lacks sophisticated tools for measurement and analysis. As described previously, healthcare organizations' main characteristics include different organizational designs with numerous vertical and horizontal interconnections (Vainieri et al., 2019). Since individual professionals play a key role, corporate information sharing about goals and strategy gets highlighted. High formal control, individual autonomy, and influence in individual professionals are also evident. Physicians have a key role in transmitting high-quality care and creating value by interacting with patients. (Vainieri et al., 2019)

In the literature, it has been shown that employee perception and productivity are reflected in the organizational performance level. Satisfied employees are usually more productive and enthusiastic. (Vainieri et al., 2019) Besides employees, the top management plays an essential role in better performance. Top managers in healthcare should clearly define strategy and set goals. They should encourage knowledge-sharing, highlight conflict management, and give feedback. In the light of performance management, top managers are the key players. (Vainieri et al., 2019) Managers introduce tools and practices for distributing data about reaching the goals and achievements of performance outcomes. If the acquired info from organizations' performance is not shared, it does not motivate employees to perform better. In the healthcare environment, benchmarking may motivate healthcare professionals' actions, especially if they can participate in the performance indicator selection process. (Vainieri et al., 2019) Information-sharing competencies in the healthcare organization contain two measures: organizational performance and managerial competencies. Organizational-level information evaluates how well the strategy is delivered to the staff. Administrative competencies transfer information sharing to the individual level in the organization. E.g., how to manage conflicts or feedback. (Vainieri et al., 2019)

In the healthcare sector, the performance indicators have usually been classified into structure, process, and outcome. They aim to evaluate the quality of healthcare services. The structure consists of facilities or capacity to provide certain services, e.g., staff, training, facilities, and policies. (Hung & Jerng, 2014) The process consists of indicators measured during the service process and provides quality information, e.g., surgical operations number or average hospital days per patient. The process indicator should be linked to the outcome indicator, which evaluates how well the process indicator was designed. e.g., mortality rate. The healthcare sector has experienced a paradigm shift where patient safety, patient-centered and improved healthcare data technologies have become the center of quality in healthcare services. (Hung & Jerng, 2014)

Sustainability and resilience are challenges in the healthcare system's performance management. The healthcare system has three key resources: quality of care, equity level, and financial support. All these three resources are strongly linked together. If healthcare operates sustainably, it maintains quality and guarantees equal care to every patient. At the same time, healthcare does not consume more than the allocated resources. (Vainieri et al., 2020) The resilience factor in the healthcare systems has been tested during the COVID-19 pandemic. It describes the ability to respond and recover from sudden or extreme changes. If the healthcare system is resilient, it can react to increased healthcare demands caused by seasonal illness. (Vainieri et al., 2020)

2.5 Theoretical framework

This research aims to develop a proposal of performance indicators and objectives for the EPSHP's pathology department. The literature review's previous sections revised performance measurement and management, performance indicators, PMSs, and characteristics of PMSs in healthcare literature. The literature helped to gain information about building a theoretical knowledge base to create a theoretical framework for this study. When developing performance indicators for the EPSHP's pathology department, the indicator should be linked to an objective aligned with the organization's strategy.

The main research question is "Which performance indicators and objectives are suitable for evaluating the performance of the EPSHP's pathology department?". But before answering the main question, the answers to the three subquestions should be provided. The first subquestion is, "What kind of framework is suitable for categorizing performance indicators and objectives?". The second

subquestion is, “What are the EPSHP’s guidelines for the performance information reporting of the pathology department?”. And the third subquestion is, “What are the EPSHP’s pathology department’s core activities?”. Figure 6 was established to generate a theoretical framework for this study.

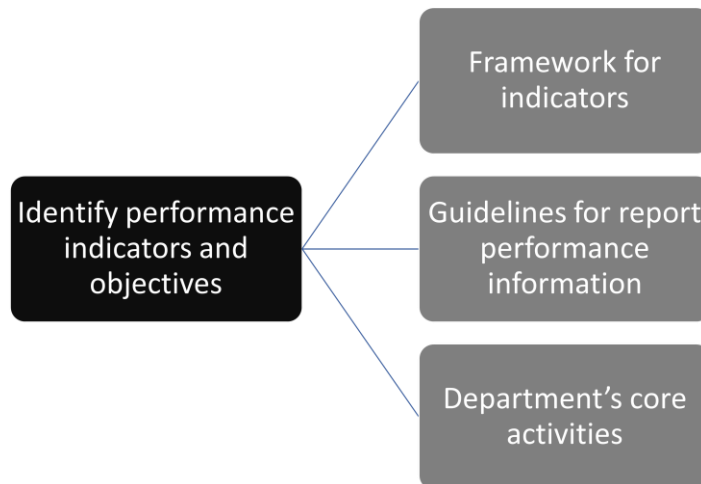


Figure 6. The theoretical framework of the study.

The researcher will identify a framework to categorize indicators and objectives during the research process and answer the first subquestion. It is beneficial that individual performance indicators are organized into a framework since it helps managers to monitor and maintain control (Amaratunga & Baldry, 2002). The framework will also guide the selection of performance indicators (Kaplan & Norton, 1992). The EPSHP’s strategy is analyzed in the process since it has been pointed out that it is essential that the performance indicators align with the strategy (Kaplan & Norton, 1996a; Lynch & Cross, 1995; Neely et al., 2001).

With the help of the second subquestion, the researcher will understand the EPSHP’s guidelines for performance information reporting that the pathology department has to follow. The EPSHP’s organization guides performance measurement and management; it is important to understand how this is translated to the EPSHP’s pathology department. When establishing performance indicators, the EPSHP’s departments must recognize the existing metrics within the organization. This will guarantee that the pathology department’s operations and objectives align with the EPSHP’s strategy (Kaplan & Norton, 1996a; Lynch & Cross, 1995; Neely et al., 2001). The third subquestion analyzes the EPSHP’s pathology department’s core activities. The pathology

department's critical operations, customers, value creation, and objectives will be described. (Kaplan & Norton, 1996a; Taticchi & Balachandran, 2008)

With the assistance of subquestions, the main research question, "Which performance indicators and objectives are suitable for evaluating the EPSHP's pathology department?" can be answered. With the help of this question, the researcher can identify the appropriate indicators and objectives for the EPSHP's pathology department.

3 Methodology

The main goal of this thesis is to create a proposal of performance indicators and objectives for the EPSHP's pathology department in a public healthcare organization. Existing academic knowledge and theories were studied, and with their assistance, the researcher was able to construct a theoretical framework for this study. In the following chapters, the empirical data collection and analysis are explained. Along with empirical data, document analysis from the organization's documents will be performed. The results of this research will be generated after the data collection and analysis.

By answering the research questions, the researcher will identify a framework for categorizing performance indicators, and understand the EPSHP's performance information reporting guidelines and the EPSHP's pathology department's core activities. And identify the performance indicators and objectives for the EPSHP's pathology department. The main research question and subquestions are the following:

Which performance indicators and objectives are suitable for evaluating the performance of the EPSHP's pathology department?

- What kind of framework is suitable for categorizing performance indicators and objectives?
- What are the EPSHP's guidelines for the performance information reporting of the pathology department?
- What are the EPSHP's pathology department's core activities?

3.1 Research approach

This study utilizes qualitative research method to find performance indicators and objectives for the EPSHP's pathology department. Qualitative research is a widely used research method in business and management (Eriksson & Kovalainen, 2008; Myers, 2009). The research was conducted since EPSHP's pathology department faced a practical issue; it lacked established performance indicators. The EPSHP's pathology department's executive committee has ordered this study, and the head physician has permitted conducting the research. This study analyzes the EPSHP's pathology department's operations, performance, and objectives. At the same time, the EPSHP's organization's strategy and performance information reporting requirements are evaluated. These points support the selection of case study research as a qualitative research method. (Eriksson & Kovalainen, 2008; Myers, 2009)

In business, case study research is defined in two parts. The first part is about defining 'a case', which studies a phenomenon in a real-life environment. A case must be investigated within its context; this way, the context is an integral part of the study. (Myers, 2009) The second part of the case study's definition is data collection methods. It is important to use data from different sources and theoretical framework to guide the research process. If a phenomenon is analyzed from the business' organization perspective, the organization directs the definition of a case. (Myers, 2009) A critical feature of case study research is that research questions aim to understand and unravel a particular problem of the case (Eriksson & Kovalainen, 2008). In this research, the case is the EPSHP's pathology department which is missing the performance indicators.

In qualitative case research, interviews and documentary evidence are used to provide information about the chosen case (Eriksson & Kovalainen, 2008; Myers, 2009). The document analysis will provide an understanding of the EPSHP's guidelines on how the pathology department is required to report performance information. With the help of document analysis, the researcher is able to identify a framework to categorize performance indicators and objectives. Qualitative research was chosen because it enables to interview of persons who are experts in the case study and empowers the interviewees' perspectives and voices in the research process (Eriksson & Kovalainen, 2008). The group interviews with the EPSHP's pathology department's employees will provide information about the department's core activities and help identify the most suitable performance indicators and objectives. The nature of this research was chosen to be intensive case study research since it

intends to understand the actual case of the EPSHP's pathology department's performance indicator development process. The research also aims to provide a comprehensive description of the issue. Intensive case study research seeks to create an exciting story worth telling. (Eriksson & Kovalainen, 2008).

3.2 Research context

The target organization of the research is the pathology department, located in Seinäjoki Central hospital, a part of the EPSHP, Finland. The EPSHP serves 18 municipalities with 200 000 people citizens. (Etelä-Pohjanmaan sairaanhoitopiiri, 2022a) Pathology is a field of medicine and can be described as a study of diseases (Funkhouser, 2018). EPSHP's pathology department analyses and provides diagnoses for 40 000 studies annually (Etelä-Pohjanmaan sairaanhoitopiiri, 2022c). In the EPSHP's organizational chart, the pathology department belongs under the service area of medical treatment services operations, together with nine other departments. The other departments are; clinical chemistry and microbiology, radiology, social work, pharmacy, psychology, clinical physiology and nuclear medicine, clinical neurophysiology, and nutrition therapy. (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b)

The EPSHP's pathology department is divided into smaller laboratory sections: histology, cytology, immunohistochemistry, and molecular pathology. Histology focuses on studying the tissues, and cytology examines cells, for example, from body fluids such as urine. In addition to this, the autopsy section is part of the pathology department. (Etelä-Pohjanmaan sairaanhoitopiiri, 2022b) The autopsy section's operations are not included in this research. The manager of the pathology department is the head physician, the head nurse is superior to the biomedical laboratory scientists, and the head cell biologist is superior to the cell biologists. The Head physician, head nurse, and head cell biologist create an executive committee of the pathology department. Along with the executive committee, the pathology department's staff contains a chief physician, specializing physician, 14 biomedical laboratory scientists, a medical cell biologist, a cell biologist, and an autopsy technician. Also, two secretaries work in the pathology department. (Etelä-Pohjanmaan sairaanhoitopiiri, 2022c)

The EPSHP's pathology department lacks established performance indicators. The department has utilized single key performance measures which have been used to explain the performance of the

laboratory process (e.g., turnaround times) or the number of studies annually. But the department does not follow its performance systematically with well-established indicators. Quality assessments play an essential role in clinical laboratories (Shaw, 2003). The EPSHP's pathology department is not an accredited laboratory; currently, any external body does not systematically evaluate the fulfillment of quality requirements. Most of the other Finnish pathology departments are accredited by ISO 15189 (FINAS, 2022). Previously, the EPSHP's pathology department held a pathology quality certificate, which Labquality Oy admitted, but this quality certificate was closed in 2018 (Aho, 2017). If the EPSHP's pathology department decides to apply for accreditation by ISO 15189, the established performance indicators will help the process.

The EPSHP's pathology department serves multiple professionals in different special healthcare departments, and especially cancer diagnostics is one of the most critical areas. The cancer treatment planning process requires the implementation of numerous different healthcare therapies. For this to be fulfilled, the pathology department must operate efficiently and provide diagnoses without extra delays. Adapting performance indicators will help the EPSHP's pathology department's managers and employees allocate resources effectively and find areas of improvement. Before the proposal of performance indicators and objectives is generated, it is essential to understand the pathology department's operations, organizational context, and what obligations the EPSHP's organization sets for the pathology department's performance measurements.

3.3 Data collection

The study aims to create a proposal of performance indicators and objectives for the EPSHP's pathology department in a public healthcare organization. With the help of a theoretical framework, group interviews and document analysis were used in this qualitative research setting to answer research questions. It has been reported that different data sources provide a more comprehensive description of the studied case (Myers, 2009). Data collection started with secondary data collection and continued with primary data collection. Primary data consists of semi-structured group interviews, and secondary data originates from document analysis. These are described in detail in the following sections.

Secondary data collection

The EPSHP's pathology department's and organization's documents were analyzed as secondary data. Document analysis is often used in qualitative research to help plan interview questions, supplement interview data, and support the theoretical framework. In this research, document analysis helps to understand organizational performance measurement and management, EPSHP's organization's strategic objectives, and identify a framework to categorize performance indicators and objectives. (Bowen, 2009; Myers, 2009) With the help of document analysis, the researcher will understand the research problem, support interview data, and help define the interview questions (Bowen, 2009; Eriksson & Kovalainen, 2008; Myers, 2009).

The documents were searched on the EPSHP's internal servers and EPSHP's websites, and some documents were requested from the manager's secretary. The selection criteria for the document analysis were based on the publication years and the document's content. (Bowen, 2009; Myers, 2009) The documents were included for analysis if they were published in 2020-2021. Some older documents were included if the content was relevant or a newer version wasn't available. The documents had to contain information about strategy, strategic objectives, performance measurements, performance indicators, or quality. The list of selected and analyzed documents is represented in Appendix 1.

Primary data collection

In qualitative research, interviews are one of the most frequently used methods to collect primary data (Denzin & Lincoln, 2018; Eriksson & Kovalainen, 2008; Myers, 2009). Interviews allow data collection from different people (Myers, 2009) and interviewees to describe their experiences and provide detailed information (Denzin & Lincoln, 2018). Semi-structured group interviews were used in this research to collect the primary data, and they have been used in many qualitative business management studies. (Eriksson & Kovalainen, 2008)

Research questions, theoretical framework, literature review, and information from document analysis were used when planning the interview questions, the grouping of interviews, and the selection of interviewees (Eriksson & Kovalainen, 2008; Hirsjärvi & Hurme, 2008). Group interviews

allow participants to interact, producing versatile points on the research subject. In group interviews, employees' and managers' opinions were discussed to understand the department's core activities, performance measurements, organization's and department's goals. (Hirsjärvi & Hurme, 2008) The semi-structured interviews were employed to keep the tone of the interviews informal and conversational. This also allowed flexibility during the interviews, and the researcher could change the order of questions. (Denzin & Lincoln, 2018; Eriksson & Kovalainen, 2008; Hirsjärvi & Hurme, 2008)

The primary data collection consists of three group interviews. The group interviews were grouped based on the participants' managerial position and interview content (Table 1.). The research content, managerial or non-managerial position, and participants' expertise in the pathology field guided the interviewees' selection (Eriksson & Kovalainen, 2008; Hirsjärvi & Hurme, 2008). Two factors defined the participants for the interviews: first, whether they had a managerial position or not, and second, their area of expertise. The managerial interviewees' expertise contained laboratory processes, quality, human resources, procurement, management, and diagnostics. The managerial interviewees' administrative working experience varied from five to 16 years. The non-managerial interviewees had expertise in the following areas: histology, laboratory information system, molecular pathology, immunohistochemistry, special stainings, cytology, and procurements. The non-managerial interviewees working experience varied from three to 15 years. The managerial interviewees participated in two interviews, and non-managerial interviewees were only interviewed once.

Table 1. Information about the interview grouping.

Interview groups' number	Participant's position	Number of participants	Interview content	Date of interview
1.	Managerial	3	Organization's strategy, action plan, annual reports, department's core activities and goals	11.11.2021
2.	Non-managerial	4	Department's and organization's goals, department's core activities, and performance measurements with BSC-model	9.12.2021
3.	Managerial	3	Department's performance measurements with BSC-model	12.1.2022

Each of the interviewees was asked to participate in the interviews at face-to-face conversation. In the conversations, the preliminary time for interviews was chosen. For each, the researcher described the research subject, the research's purpose, the context, and the information interview will be recorded. (Eriksson & Kovalainen, 2008; Myers, 2009) A week before the interview date, the participants were sent an email invitation containing the same information described in the live conversations. The email also included documents such as the department's action plan, annual report, the organization's strategy, and the latest organization's budget, action, and economic plan. This allowed the participants to familiarize themselves beforehand. (Eriksson & Kovalainen, 2008; Myers, 2009) The background information from the participants was requested in the email. The email contained background information questions from the participants, and the participants were asked to respond to the questions via email. The background questions were slightly modified between managerial and non-managerial groups. The background information questions are described in Appendix 2.

Group interview questions followed the clustering of interviews (Table 1.). Interview questions are represented in Appendix 3. Interview questions also contained open-ended questions, reflective and clearing questions. Open-ended questions enabled participants to provide detailed answers,

and reflective and clearing questions enabled the researcher to summarize specific responses from interviewees. (Eriksson & Kovalainen, 2008) All the interviews started with an introductory question related to the most significant factors affecting the interviewees' working environment. The first interview's questions focused on the organization's strategy, action plan, annual reports, pathology department's activities, and goals with managerial position interviewees. The second interview's questions were sorted by department and organization goals and the department's core activities. Also, the performance information with four perspectives of the BSC model was discussed. The third interview questions about the pathology department's performance information were categorized by BSC-model's four perspectives: learning and growth, internal process, customer, and financial.

Interviews were held face-to-face at the interviewee's and interviewer's workplace during office hours. The interview times were during the Covid-19 pandemic, and all participants wore masks, which can affect communication and recording voice quality. The interview language was Finnish since all participants were native Finnish speakers. The interviews took place in November-December 2021 and January 2022. The interview times were 60-90 minutes. At the beginning of each interview, the interviewer described the purpose and context of the research subject. Interviews were recorded with the participants' approval for research purposes. The recording was performed with double devices, Microsoft Teams, and a Philips voice recorder phone application.

3.4 Data analysis

The data of this research consists of secondary and primary data. The collection and analysis of secondary data were performed before conducting the primary data collection and analysis. The interviews and documents were in Finnish, and information was freely translated into English by the researcher. After the data analysis, the primary and secondary data were combined to generate the results.

Secondary data

The organization's and department's documents were investigated by document analysis. The documents' content was analyzed, and patterns were identified. A specific framework or classification of performance measurement information was examined from the documents. The documents were explored for performance information used in the organization's and department's

budget, action and economic plans, annual reports, and strategy. Also, quality and safety, staff, and customership reports were studied. The notes were written, and similarities were grouped on the Microsoft word document. (Bowen, 2009; Eriksson & Kovalainen, 2008; Myers, 2009) From the notes, the researcher identified that the EPSHP's organization guidelines reporting of performance information in the department's budget, action, and economic plans, and annual reports. The research questions and theoretical framework were used in analyzing the data collected from the document analysis. The pathology department's possible performance indicators and objectives were identified and themed under the BSC model's four perspectives from the organization's and department's documents. Also, measurement units and evaluation periods for indicators were proposed. This was done in a Microsoft Word document, and no other software was used. (Bowen, 2009; Eriksson & Kovalainen, 2008; Myers, 2009)

Primary data

The group interview questions were aimed at answering the research questions, and the questions were clustered into themes, which followed the theoretical framework. The group interview recordings were transcribed into a Microsoft Word document within two days after the interviews. This enabled the researcher to change and adjust the research questions for the next interview session. (Eriksson & Kovalainen, 2008; Myers, 2009)

After the interviews, the recordings were transcribed into a Microsoft Word document. The interview questions provided descriptive answers. The raw data from interviews was simplified, and data from the non-managerial and managerial groups were combined. Theoretical evidence about performance indicators was used in simplifying. (Bernard et al., 2017; Myers, 2009) These are described in the literature review sections 2.2 and 2.3. Also, information about the BSC model was utilized, described in the literature review section 2.3.1. In the simplifying, similar answers were combined. The researcher identified the main points, indicators, and objectives from long sentences. In the data analysis, similarities between managerial and non-managerial interviewees were compared. From the interview data, the researcher developed patterns about EPSHP's strategy, EPSHP's pathology department's operations, customers, stakeholders, and how values drive their actions. From the interview data, the possible performance indicators and objectives were themed under the BSC model's four perspectives in a Microsoft Word document. Also,

measurement units and evaluation periods for indicators were proposed. No other software was used. (Bernard et al., 2017; Myers, 2009)

3.5 Ethical consideration

Ethical issues were considered during the research, and the following points were regarded in the process. In the interviews, the interviewer explained why certain participants were chosen for the interviews. There was no need to introduce interviewees to each other since they were colleagues. The interviewer described the structure, duration of the interview, what happened after the interview, and confidentiality issues. (Eriksson & Kovalainen, 2008; Myers, 2009) The interviewer informed that the interview will be recorded, and she will also write notes during the interview. The permission for this was received orally from the participants. All of the participants in the interview are workers of EPSHP and are bound to professional confidentiality. The interviewer stated that the research supervisor from JAMK is also bound by professional secrecy. (Eriksson & Kovalainen, 2008; Myers, 2009)

In the interviews, the interviewer explained how the data will be processed (recording, transcribing, analyzing the results) and stored. The interviewees' names will be transformed into pseudocode in the transcribing process. However, it was pointed out that identifying certain persons may still be possible due to the small department size. (Eriksson & Kovalainen, 2008; Myers, 2009) Recordings will be stored in the organization's drive location and the interviewer's personal computer. The recording copy will be deleted from the interviewer's computer after the thesis has been accepted. The original recording copy will be stored in the organization's drive location, and only authorized pathology department staff can access the file. (Eriksson & Kovalainen, 2008; Myers, 2009)

Interviewees can also deny the usage of interview material. The interviewer informed that if participants feel some questions are too personal or they do not want to answer them, they have the right not to answer these certain questions. The researcher informed that participants have the right to cancel their participation at any point, even though they have been permitted to interview. (Eriksson & Kovalainen, 2008; Myers, 2009)

The selection of documents is a critical step in document analysis. In this study, the researcher has closely evaluated the "authenticity, credibility, representativeness and meaning of the document"

(Myers, 2009, p. 161). Ethical issues were also considered in the data collection from data analysis. The documents used for the document analysis are listed in Appendix 1. This ensured that no silencing or plagiarism of other authors was conducted (Eriksson & Kovalainen, 2008).

Confidentiality in the research process will be evaluated closely. The content of the research paper will be assessed and discussed with the EPSHP's pathology department's representative before the research is published. This will guarantee that no sensitive material or strategic information will be issued. (Eriksson & Kovalainen, 2008; Myers, 2009)

3.6 Verification of the results

In qualitative research, verifying the results from different perspectives is essential. In the following chapters, reliability, internal validity, and external validity are discussed in detail.

Reliability

In qualitative research, it has been acknowledged that the researcher has a significant role in conducting the study, and one's background, such as age, history, and experiences, outlines the research. The researcher decides how she defines the research process and performs data collection and analysis. In case study research, the organization also limits the research. (Eriksson & Kovalainen, 2008) As an EPSHP pathology department employee, I consider myself a researcher and an insider. I have gained experience and an understanding of the organization, the pathology department's social relationships, and cultural norms. This can be seen as an enabler in conducting the research since it helped to gain data access and perform the interviews. (Eriksson & Kovalainen, 2008) If the researcher had been an outsider of the EPSHP's organization, the data access would have been limited, and setting up interviews would have been challenging. The interviews were organized among colleagues in the EPSHP's pathology department. As an employee of the EPSHP's pathology department and interviewer, it was possible to create a relaxed environment for the interviews, and interviewees could express their opinions freely. (Eriksson & Kovalainen, 2008)

This research used triangulation data collection via interviews and data analysis. The interview data and the document analysis gained data that could crosscheck with one another. The interviews developed an understanding of the perspectives of the people working in the EPSHP's pathology

department. The results from the document analysis were used when planning the collection of primary data. The primary and secondary data combined to create answers to the research questions. After the data analysis, the gained information was compared to international literature and other Finnish hospital districts' documents. This ensured that the gained performance indicators were reliable. (Myers, 2009)

Internal Validity

In this study, the theoretical framework was developed with the assistance of the academic literature and aimed to answer the research questions. A case study aims to provide a descriptive story about a real-life research problem. The research was initiated from the EPSHP's managers' practical situation where the EPSHP's pathology department lacks established performance indicators. Based on this, a qualitative case study was selected as a research method. The literature guided the building of a theoretical framework that would help to answer the real-life case's practical research questions. Academic information about case studies as a research method channeled the selection of data collection and analysis techniques. Secondary data, theoretical framework, and literature guided the creation of interview questions. In order to gain insight information from the department's managers and employees, qualitative group interviews were chosen. Secondary data and interview's primary data were cross-checked to provide answers to the research questions. In the end, the results were compared to the existing literature. In other words, this research has utilized triangulation at many points during the research process, which assures internal validity. (Eriksson & Kovalainen, 2008; Myers, 2009)

External Validity

This research aims to develop a proposal of performance indicators and objectives for the EPSHP's pathology department. Following the theoretical framework and literature, the developed EPSHP's pathology department's performance indicators align with the EPSHP's strategy and requirements for performance reporting. Therefore, this study's results are not generalized to other pathology departments in Finland or globally. Currently, there are no published works about establishing performance indicators for pathology departments in Finland. For example, this research can be

used as a reference in other Finnish pathology departments when they are evaluating their performance measurements.

4 Results

The main aim of this research was to develop a proposal of performance indicators and identify objectives for the EPSHP's pathology department. This chapter represents the answers to the research questions with the help of the theoretical framework. The first subchapter describes the selected framework to categorize performance indicators and objectives. The second subchapter introduces the EPSHP's organization's guidelines which guide the performance information reporting in the pathology department. The third subchapter describes the EPSHP's pathology department's core activities. In the last subchapter, the answer to the main research question is revealed, and the proposal of performance indicators and objectives for EPSHP's pathology department is presented.

4.1 Balanced scorecard as a framework for performance indicators and objectives

The researcher performed documentary analysis during the secondary data collection, and EPSHP's strategy was analyzed. This research focuses on the pathology department, part of the EPSHP's organization. When developing performance indicators for a department that is part of the bigger organization, it is vital to guarantee that the indicators align with the organization's strategy and current performance measurement practices. The EPSHP's strategy's structure and main goals are similar to the BSC model, which is why the BSC model was chosen as a framework to categorize the pathology department's performance indicators and objectives. In the next chapter, the organization's strategy will be described on a general level so that the reader will understand the EPSHP's main goals and where the chosen performance indicators and objectives will be associated. Similarities with the BSC model are also described. The performance indicators and objectives are described in chapter 4.4. BSC model and academic information about the model are described in the literature review's section 2.3.1.

The EPSHP's strategy changed in 2021. The previous strategy was for 2013-2020 (Etelä-Pohjanmaan sairaanhoitopiiri, 2013). EPSHP's strategy's mission is "Collaborate for the sake of human beings." And its vision is "We aim to provide efficient and customer-oriented welfare and health care services

for the hospital district in the integrated social and healthcare services environment.” (Etelä-Pohjanmaan sairaanhoitopiiri, 2021a, p. 1) The EPSHP’s 2021-2025 strategy has three objectives: competent and well-being personnel, effective and cost-efficient care, and customer-oriented services. The qualified and well-being personnel can provide services via a customer-oriented approach and operate efficiently. The hospital district can strengthen and enhance the operations when the personnel is competent. Effective and cost-efficient care and customer services will gain coterminous and smooth care paths for patients. This ensures that the patient will receive the appropriate care, at the appropriate time, with the right procedures, and cost-efficiently. Customer-oriented services guarantee that the customer comes first and they will receive good quality care with integrated care paths. (Etelä-Pohjanmaan sairaanhoitopiiri, 2021a)

The EPSHP’s strategy’s three main objectives are similar to the BSC model’s perspectives. Competent and well-being personnel objective is similar to the BSC model’s learning and growth perspective. Effective and cost-efficient care objective can be assimilated into the BSC model’s process perspective. Customer-oriented services objective aims to fulfill the customers’ needs and is similar to the BSC-model’s customer perspective. EPSHP requests departments to report their past year’s performance under the following categories: customer, human resources, operation, and finance. EPSHP’s strategy highlights the cost-efficiency and operating within the planned budget, which translates to the BSC model’s financial perspective. (Etelä-Pohjanmaan sairaanhoitopiiri, 2021a; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021) Based on this, the BSC model was chosen as a framework to categorize EPSHP’s pathology department’s performance indicators.

The researcher discussed the EPSHP’s strategy in the interviews to determine whether the pathology department’s employees are familiar with it and its main goals. In the interviews, the pathology department’s employees knew the EPSHP’s strategy, mission, and vision. Interviewees also knew the main three objectives of the strategy. All participants considered the new strategy for the years 2021-2025 to be easier to read and understand since it is represented in table format. They highlighted the strategy’s main points: "customer comes first mentality, cost-efficiency, high-quality care, and well-being personnel.”

4.2 EPSHP's guidelines for the performance information reporting of the pathology department

This chapter explains the guidelines and how the EPSHP's organization drives the reporting and planning of EPSHP's pathology department's performance measures. EPSHP requests that its departments create a budget, action, and economic plans for preparing for the upcoming years. The past year's performance is asked to be reported via annual reports. These are two main guidelines that guide the pathology department's performance measures reporting and planning of future operations, and they are described in the following chapters.

Annually EPSHP expects departments to create a budget, action, and economic plan for the following years. During the previous years, the period has been for three years. Although the budget, action, and economic plan period are for three years, the budget is approved for one year at a time. Departments receive instructions for creating the budget and plans. The plan should follow the EPSHP's strategy and its goals. The budget, action, and economic plan consist of future perspectives, goals, and plans for the future, significant changes in the operations and operating environment, and critical development areas within the processes. The departments are advised to utilize the past year's realized performance in the planning process. (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Rajakorpi et al., 2021)

EPSHP's pathology department's executive committee is responsible for creating the budget, economic and action plan. The EPSHP's organization has been divided into seven service areas. The pathology department belongs to the medical treatment operations service area in the EPSHP's organization chart. The pathology department provides its budget and plans to the service area leader. The service area leader summarizes the department's budget and action reports. EPSHP's manager and executive committee create EPSHP's document about EPSHP's budget, economic, and action report. This report contains sections for each service area. (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Patologian yksikkö, 2020)

Departments receive instructions from EPSHP to develop annual reports. The pathology department's executive committee creates an annual report about the department's past year's

realized operations and budget. The annual reports have to summarize the department's past year's performance under the following divisions; customer, human resources, processes, finance, significant changes within the department's operations, and estimation about the future. They are advised to utilize the previous budget, action, and economic plan when creating the annual reports. The departments provide their annual reports to their service area leader. The service area leader summarizes the department's annual reports, and EPSHP's manager and executive committee create EPSHP's paper called 'EPSHP's annual report.' (Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021; Rajakorpi et al., 2021)

Budget, action, and economic plans, together with the annual reports, create guidelines for reporting and planning the pathology department's performance information reporting. When developing performance indicators, following these guidelines and their demands is essential. The proposal of performance indicators and goals is reported in chapter 4.4, and these guidelines' detailed requirements for performance information are represented within this chapter. In addition to budget, action and economic plans and annual reports the EPSHP's has created separate reports for customership, staff report, quality and patient safety plan (Etelä-Pohjanmaan sairaanhoitopiiri & HR-palvelut, 2021; Etelä-Pohjanmaan sairaanhoitopiiri & Laatupäällikkö, 2013; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä & Laatupäällikkö, 2021). These reports' information is also considered in the proposed performance indicators.

4.3 EPSHP's pathology department's core activities

In order to establish performance indicators and objectives for the pathology department, its' core activities were identified in the interviews. The subsequent chapters discuss the following subjects in detail: the pathology department's main purpose, services and products, customers, values, stakeholders, and the most recent actions that affect the pathology department's activities. The help of these assisted in selecting the performance indicators and objectives for the EPSHP's pathology department, which are described in section 4.4.

The EPSHP's pathology department provides diagnoses and studies to other special healthcare departments and healthcare centers in the South Ostrobothnia area. The primary purpose of the pathology was clear to the interviewees. Interviewees described the pathology department's

operating intentions: "Provide high-quality diagnoses and study results as quickly as possible, cost-efficiently and together with other health care units who participate to patient's care path." Interviewees reinforced the pathology department works to EPSHP's strategy's common goal "To provide the appropriate care at the appropriate time."

The pathology department processes cell and tissue samples onto the stained slides in the laboratory process. The pathologist dictates the diagnoses for the patient's tissue or cell sample from the slide. In these terms, the pathology department provides services and products. Interviewees said, "The slide is considered an end product of the laboratory process. And the diagnosis which is created from the slide can be considered as provided service." Non-managerial interviewee complemented, "the patient's diagnoses are important since, without them, the doctors are not able to plan and execute the patient's further treatments." On top of these, the pathology department provides inquests for clinicians on studies. The managerial interviewee described, "We conduct inquests for doctors, such as oncologists and surgeons. And here the customer is the doctor who treats the patient". The pathology department provides services when they set up a new study arising from doctors' needs. Managerial interviewees described an example, "when oncologists request a new study which result is a requirement for patient's medication." In terms of providing services and products, the managerial interviewee emphasized, "Our responsibility is to provide the most current expertise in the field of pathology."

Identifying the EPSHP's pathology department's customers is not always clear, but a coarse customer classification is possible. The pathology department has two customers: units requesting studies and patients. Interviewees described, "From the financial perspective, our customer is the department that pays for the requested study. These are special healthcare departments and regional healthcare centers." The interviewees also highlighted, "a study has been requested to diagnose the patient's sample" and "doctors who request studies serve the patients, and we are working here for the patients." The interviewees highlighted that if the pathology department's staff needs extra information, they communicate and operate with the department's doctors and staff, not directly with the patient.

EPSHP's values are respect for human dignity and responsibility (Etelä-Pohjanmaan sairaanhoitopiiri, 2013). The interviewees acknowledged EPSHP's values and said they guide

employees' daily actions. The interviewees described: "Although the patients do not visit our department, the sample represents the patient in the pathology department. Every patient sample is unique, and you must acknowledge this fact when handling the samples." The non-managerial interviewees highlighted the responsibility: "The individual employee's responsibility is important in every step in the pathology laboratory process. It is important to recognize your limits and capabilities and work within them. The employee must be ready to take responsibility." Managerial interviewees described how values guide the department's daily operations: "Sometimes a patient's study is reported to be urgent by a doctor when the study has been registered in the pathology department. Based on this, the study is processed and diagnosed faster. This needs efforts in multiple steps of the pathology department's process. Our employees bend over backward so that the patient will receive the diagnosis in the right time frame."

The EPSHP's pathology department has many stakeholders. These include customers, suppliers, consulting pathologists, other hospital districts, other hospitals, and their departments. One important stakeholder group is EPSHP's service departments, which provide support services, such as logistics, cleaning, procurement, pharmacy, and technical services. Interviewees stated, "patient's care path requires multiple professionals, and the pathology department's actions depend on our stakeholders; without them, we wouldn't be able to operate. And due to this, it is difficult to identify the most important stakeholders for the pathology department".

The most significant factors affecting the pathology department's operations were discussed at the beginning of the interviews. When establishing performance indicators for the pathology department, it is important to assess its current state. During the past year, EPSHP's pathology department has had an urgent situation with human resources, and this has caused delays in the studies' turnaround times and declined the employee's well-being. During the past year, the EPSHP's pathology department's laboratory process has encountered significant changes in the workflow, and new appliances have been harnessed, which has changed the working habits. Also, the covid-19 pandemic has caused changes. In 2018 pathology department moved into a new property that provides a new and modern workspace. Also, the EPSHP's pathology department has invested in new appliances and technology. The interviewees thought that these had increased operational convenience.

The pathology department is part of the EPSHP's organization, and in the summer of 2021, it was announced that public healthcare organizations, social welfare, and rescue services will be reformed in 2023. The managerial interviewees ratified that the pathology department will be operating in the reformed service area and provide diagnoses for the patient's cell and tissue samples. Hospital districts and regions' healthcare centers will transfer under the same organization in 2023. The future reformation has caused uncertainty, especially about the future and upcoming budget.

4.4 A proposal of performance indicators and objectives

This chapter presents a proposal of performance indicators and objectives for the EPSHP's pathology department. The indicators and objectives are categorized according to the BSC model's four perspectives: 4.4.1 learning and growth, 4.4.2 process, 4.4.3 customer, and 4.4.4 financial. The classification is aligned with the EPSHP's strategy, as described in chapter 4.1. Each perspective has EPSHP's strategic objective, derived from the strategy, and the pathology department's objective, identified in the interviews. The measurement unit and evaluation period are also suggested for the performance indicators in each perspective. Only from the process perspective targets for indicators are represented.

4.4.1 Learning and growth perspective

The EPSHP's strategic objective from the learning and growth perspective is to maintain competent and well-being personnel (Etelä-Pohjanmaan sairaanhoitopiiri, 2021a). The pathology department's main objectives are guaranteeing competent employee resources, enhancing employees' well-being, and supporting education. In the learning and growth perspective, the staff's well-being and expertise were evaluated in terms of the pathology department's ability to produce products and services. In the learning and growth perspective, the staff satisfaction rate, employee absence, education days, employee resources, and working safety HaiPro-notifications were selected as performance indicators (Table 2.) and are described in detail in the following chapters.

Table 2. The learning and growth perspective indicators for the EPSHP's pathology department.

Learning and growth perspective				
EPSHP's strategic objective	Pathology department's objective	Indicator	Measurement unit	Evaluation period
Competent and well-being personnel	Guarantee competent employee resources and enhance the well-being of employees, support education	Staff satisfaction rate (on the organization level)	Organization determinates (e.g., grade or satisfaction %)	Organization determinates
		Employee absence	%*	Annually
		Education days	Number of education days	At least annually
		Employee resources	Number of employees	Daily and annually
		Working safety HaiPro-notifications	Number of notifications	Annually

* The employee absence percentage is calculated as the absence days divided by the service days and multiplied by a hundred.

Staff satisfaction rate

Staff satisfaction rate was selected as the performance indicator in the learning and growth perspective, measurement unit, and evaluation period should be determined by the organization. The EPSHP's pathology department has identified the importance of satisfied employees, and it can be monitored via the staff satisfaction performance indicator. The EPSHP organizes the survey about staff satisfaction, and the pathology department's employees also take part in this survey; based on this, the EPSHP's organization determines the measurement unit and evaluation period for this indicator. The latest staff satisfaction rate was organized in 2020 (Etelä-Pohjanmaan sairaanhoitopiiri & HR-palvelut, 2021). The pathology department's managerial interviewees identified the connection between employee satisfaction and quality; "If staff is not doing well, the mistakes will increase, and this has direct effects on quality." The staff satisfaction rate was selected as an indicator in the EPSHP's action and economic plan (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b). And also it was reported in the annual reports and staff reports (Etelä-Pohjanmaan sairaanhoitopiiri & HR-palvelut, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021).

Employee absence

Employee absence was selected as a performance indicator in the learning and growth perspective, the measurement unit as a percentage, and the evaluation period is annual. The employee absence percentage is calculated as absence days divided by the service days and multiplied by a hundred percent. The EPSHP's pathology department goal is to guarantee competent employee resources, which also translates to the organization's goal to have competent and well-being personnel. The employee absence performance indicator can be used to describe if there are delays in the pathology department's processes. The interviewees described, "The employee absence is connected to the employee resources. If there are a lot of sick leaves, it describes that a lower amount of employee resources have been available." The employee's absence was noted to be an indicator partially representing the employee's resources, but it's not perfect alone.

EPSHP has requested its' departments to report annual employee absence percentage on the department's annual reports and for the EPSHP's staff report. The employee absence percentage was written as an indicator in the action and economic plans. (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & HR-palvelut, 2021; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021)

Education days

Education days was selected as the performance indicator in the learning and growth perspective, the measurement unit is the number of education days, and the evaluation period should be at least annual. With the help of this indicator, the pathology department can evaluate whether its goal to support education will be realized. It also helps to assess how much education employees have gained during the year. Pathology is a field of medicine that requires constant learning and education. The EPSHP's pathology department's employees emphasize that education days represent the staff's learning and expertise well. The managerial interviewee highlighted education's importance: "Continuous education is important. We shouldn't think our current know-how will be enough in the future." Currently, the education days are assessed annually, but it was pointed out in the interviews that it would be beneficial to evaluate them twice a year. EPSHP has requested its' departments to report staff's education days on department's annual reports and for

the EPSHP's staff report, action, and economic plans (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021).

Employee resources

Employee resources were selected as the performance indicator in the learning and growth perspective, the measurement unit is the number of employees, and the evaluation periods are daily and annual. The pathology department evaluates employee resources daily since it helps the day-to-day management of the laboratory processes. Employee resources were considered one of the most critical indicators for the learning and growth perspective of the EPSHP's pathology department in the interviews. EPSHP's pathology department has encountered a staff shortage during the past year. A managerial interviewee described, "It is seen that there is a correlation between staff's well-being and adequate employee resources. That's why we must ensure the adequate amount of employee resources." During the interviews, both managerial and non-managerial participants highlighted that it is essential to guarantee adequate employee resources.

The pathology department has reported annual employee resources as a part of its annual report (Rajakorpi et al., 2021). Employee resources were reported on EPSHP's staff report, action, and economic plans, and asked to report on annual report (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021). In these reports, the description of employee resources contained information about the annual staff quantity within job titles and annual staff changes.

Working safety HaiPro-notifications

Working safety HaiPro-notifications was selected as the performance indicator in the learning and growth perspective, and the measurement unit is the number of notifications and the annual evaluation period. EPSHP's organization utilizes HaiPro-system to report working safety declarations, and departments are obligated to report these. The written declaration is called a HaiPro-notification. Employee safety is considered an essential factor in the EPSHP's pathology department, and the number of safety HaiPro-notifications can be utilized to describe how many

safety declarations have happened during the past year. The managerial interviewee described, “Working safety HaiPro-notifications is a good indicator since it shows, for example, an amount of incised wounds.” A high number of HaiPro-notifications could lead to the evaluation of working safety and find areas of improvement.

EPSHP has requested its departments to report working safety HaiPro-notifications on the department’s annual reports and for the EPSHP’s staff report. It is also used as an indicator in action and economic plans. (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & HR-palvelut, 2021; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Rajakorpi et al., 2021)

4.4.2 Process perspective

From the process perspective, the EPSHP’s strategic objective is to have effective and cost-efficient care. In this perspective, the pathology department's objectives are to stay within turnaround times and have a cost-efficient process. From the process perspective, the most important operations of the pathology department were identified. The success of these processes will gain customer satisfaction. The chosen indicators in this perspective are turnaround time histology, turnaround time cytology, number of diagnosed studies, and quality indicators (Table 3.). These are described in the following chapters.

Table 3. The process perspective indicators for the EPSHP's pathology department.

Process perspective					
EPSHP's strategic objective	Pathology department's objective	Indicator	Measurement unit	Target	Evaluation period
Effective and cost-efficient care	Stay within turnaround times and cost-efficient process	Turnaround time histology	Percentage of studies diagnosed in 10 working days	80 %	Monthly
		Turnaround time cytology	Percentage of studies diagnosed in 5 working days	80 %	Monthly
		Number of diagnosed studies	Number of diagnosed studies	Not set in this study	Annually
		Quality indicators	Not reported in this context		

Turnaround time histology & turnaround time cytology

For the process perspective, turnaround time histology and turnaround time cytology were selected as the performance indicators. Histology studies the tissues, and cytology studies the cell samples, and these are the main laboratory divisions within the EPSHP's pathology department. For the histology turnaround time indicator, the measurement unit is the percentage of studies diagnosed in ten working days, the target is 80 %, and the evaluation period is monthly. For the cytology turnaround time indicator, the measurement unit is the percentage of studies diagnosed in five working days, the target is 80 %, and the evaluation period is monthly. Turnaround time is calculated in days which starts when a study is registered to the laboratory information system and ends when the study's diagnosis is reported in the laboratory information system.

The EPSHP's pathology laboratory is already measuring turnaround times for histological and cytological studies. And established measurement units, targets, and evaluation periods have been

set for both of them. The established turnaround time indicators were selected to represent the essential operations of the pathology department. Both managerial and non-managerial interviewees described, "Existing measured turnaround times in histology and cytology are relevant." A non-managerial interviewee described that "Turnaround times describe our competence." The percentage was considered a good measurement unit by interviewees since it shows the portion of studies that have been diagnosed. Turnaround times interrelate to employee resources since the turnaround times will increase if there's a shortage in employee resources. The interviewees also thought that turnaround time indicators reflect customer satisfaction. If the studies are not diagnosed within turnaround times, the doctors must wait for the patient's diagnosis. They cannot plan treatments for the patients, which may cause delays in the patients' care paths. This can cause dissatisfaction for doctors and patients.

Number of diagnosed studies

The number of diagnosed studies was selected as the performance indicator in the process perspective, the measurement unit is not set in this study, and the evaluation period is annual. The number of diagnosed studies will reflect the overall workload of the pathology department. EPSHP has requested its' departments to report key numbers, translated to the number of diagnosed studies in the pathology department, on the department's annual reports. Departments are also required to register their estimation about the upcoming years' number of diagnosed studies for the action and economic plans. (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämissyksikkö, 2021)

Quality indicators

Quality indicators were selected as the performance indicator in the process perspective. This research does not report this indicator's measurement unit, target, or evaluation period. Quality is a crucial factor in the laboratory processes, and it was highlighted in the interviews by managerial and non-managerial interviewees. The managerial interviewee stated: "Our laboratory process is not efficient and cost-effective if the quality is low. The laboratory process contains many steps, and evaluating quality in these different steps is important." Interviewees also acknowledged that if the pathology department applies for accreditation with ISO15189, it will increase the quality

requirements. Quality indicators are not a core of this research and won't be identified closely. But since quality is an essential element in the pathology department's operations, it is described as a performance indicator.

4.4.3 Customer perspective

EPSHP's strategic objective for customers is to provide customer-oriented services. The pathology department aims to provide high-quality services and products for customers. For the customer perspective, the following indicators were chosen: patient feedback, customer satisfaction rate, clinical customers' contacts, patient safety HaiPro-notifications, and information security HaiPro-notifications (Table 4.). The following chapters represent these indicators in detail.

Table 4. The customer perspective indicators for the EPSHP's pathology department.

Customer perspective				
EPSHP's strategic objective	Pathology department's objective	Indicator	Measurement unit	Evaluation period
Provide customer-oriented services	Provide high-quality services and products for customers	Patient feedback	Number of patient feedback	Annually
		Customer satisfaction rate	Have to be established	Have to be established
		Customer's contacts	Number of reported contacts	Have to be established
		Patient safety HaiPro-notifications	Number of notifications	Annually
		Information security HaiPro-notifications	Number of notifications	Annually

Patient feedback

Patient feedback was selected as the performance indicator in the customer perspective, the measurement unit is the number of patient feedback, and the evaluation period is annual. As described earlier in section 4.3, EPSHP's pathology department has two customers; units requesting studies and patients. The patient feedback indicator represents the patients' satisfaction. A managerial interviewee described that EPSHP's pathology receives only a few patient feedbacks annually, and it's common that the feedbacks are different from each other. Non-managerial interviewees highlighted that it would be beneficial if the annual number of patient feedback were reported within the EPSHP's pathology department since "it would increase transparency in the department."

Departments were requested to report a conclusion about the annual received patient feedback in annual reports (Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Rajakorpi et al., 2021). The patients have a right to give feedback during their care paths, and it is an important quality factor in the EPSHP's quality and patient safety plan (Etelä-Pohjanmaan sairaanhoitopiiri & Laatupäällikkö, 2013). The amount of annual received patientfeedback at EPSHP is reported in EPSHP's customer report (Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä & Laatupäällikkö, 2021). Patients' perspectives are highlighted in the action and economic plans (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020), and patient feedback was reported as an indicator in action and economic plans (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b).

Customer satisfaction rate and customer's contacts

Customer satisfaction rate and customer's contacts were selected as the performance indicator in the customer perspective. The customer satisfaction rate indicator's measurement unit and evaluation period have to be established. The customer's satisfaction rate indicator's measurement unit is the number of reported contacts, and an evaluation period has to be established. EPSHP's pathology department's direct customers are special healthcare departments and regional healthcare centers that pay and request the studies from the patients' samples, as described in chapter 4.3. The customers' satisfaction is evaluated with customer satisfaction rate and customer's contact indicators. The interviewees described, "It would be beneficial to perform a customer

satisfaction survey at some point, but due to the reform of healthcare, social welfare, and rescue services, it is not relevant to act now.” Especially managerial interviewee highlighted that performing a customer satisfaction survey for the special healthcare departments would be most beneficial. Both interviewee groups highlighted that response rates would probably be low since gaining answers from other departments is challenging. With the help of a customer satisfaction survey, the customer satisfaction rate could be realized. EPSHP’s pathology department would receive information on whether its customers are satisfied with their turnaround times, for example.

EPSHP’s pathology department receives customer requests via email, phone calls, and meetings. When these customer contacts are reported, they can be used as an indicator to evaluate how the EPSHP’s pathology department has served the customers’ requests. The managerial interviewee highlighted that it is essential to consider, “Are the services that we provide suitable for our customers? Are we able to fulfill the customers’ needs?” Customer contacts could also reveal areas of improvement in the pathology department’s operations. EPSHP has requested its’ departments to report customer feedback on the department’s annual reports. Customer feedback is also used as an indicator in action and economic plans. (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020, 2021b; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021)

Patient safety and information security HaiPro-notifications

Patient safety and information safety HaiPro-notifications were selected as the performance indicator in the customer perspective. For both indicators, the measurement unit is the number of notifications, and the evaluation period is annual. EPSHP’s organization utilizes HaiPro-system to report patient safety and information safety declarations; departments are obligated to report these. The written declaration is called a HaiPro-notification. The same system is used to report patient safety and information safety events. A patient HaiPro-notification is created when a violation or a deviation is observed in the patient’s care path.

EPSHP’s pathology department has established procedures when the department’s employees should write a patient HaiPro-notification and information security HaiPro-notification. For example, a tissue sample received in the pathology department with imperfect patient identification

information. In this situation, patient safety is endangered, and the customer who has sent the sample will receive a patient Haipro-notification. Similarly, the pathology department receives patient Haipro-notifications if the department's stakeholders or customers consider that the pathology department has endangered patient safety in its operations. Information security Haipro-notification is written when a patient's information security is threatened. During the interviews, the participants highlighted that the number of patient safety and information safety Haipro-notifications reflects the customer's perspective on the pathology department's operations.

Departments were requested to report a conclusion about the annual patient and information security Haipro-notifications in annual reports (Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Rajakorpi et al., 2021). Haipro-notifications are considered an essential quality factor in the EPSHP's quality and patient safety plan (Etelä-Pohjanmaan sairaanhoitopiiri & Laatupäällikkö, 2013). Annual Haipro-notifications are reported in EPSHP's customer report (Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä & Laatupäällikkö, 2021), and Haipro-notifications are selected as indicators in the action and economic plan (Etelä-Pohjanmaan sairaanhoitopiiri, 2021b).

4.4.4 Financial perspective

EPSHP's strategic objective in financial information is budget realization since it is a public organization and does not aim to maximize its profits. The pathology department has the same objective, budget realization. From the financial perspective, revenues, expenditures, and the capital expenditure plan were chosen as performance indicators (Table 5.). Selected indicators are described in the following chapters.

Table 5. The financial perspective indicators for the EPSHP's pathology department.

Financial perspective				
EPSHP's strategic objective	Pathology department's objective	Indicator	Measurement unit	Evaluation period
Budget realization	Budget realization	Revenues	Realization %	Monthly
		Expenditures	Realization %	Monthly
		Capital expenditure plan	Realization %	Annually

Revenues and expenditures were selected as the performance indicators from the financial perspective. The measurement unit is the realization percentage for both indicators, and the evaluation period is monthly. The capital expenditure plan was selected as the performance indicator in the financial perspective, the measurement unit is the realization percentage, and the evaluation period is annual. As described earlier, in section 4.2, the EPSHP's departments are requested to create and plan budgets for the next three years, but the annual budgets are approved one year at a time (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020). The revenues and expenditures must be balanced to achieve the objective and budget realization. EPSHP has Exreport-software to assess the revenues and expenditures. The realization percentage is reported automatically and is created when the realized value is compared to the budget's value.

The capital expenditure plan is part of the budget and includes the acquisitions of over 10 000 €. The pathology department's capital expenditure plan includes equipment and device purchases. The capital expenditure plan's realization percentage is received when the realized acquisition value is compared to the planned value. Managerial interviewees said, "It is important that the price list and budget have been designed carefully." The budget and capital expenditure planning have been introduced to the employees annually; otherwise, the financial terms were unfamiliar to the pathology department's non-managerial staff. The department's capital expenditure plans are reported in EPSHP's action and economic plans. EPSHP has requested its' departments to report

financial key numbers on the department's annual reports. In the EPSHP's annual report, the hospital district's income statement is reported. (Etelä-Pohjanmaan sairaanhoitopiiri, 2019, 2020, 2021b, 2022c; Etelä-Pohjanmaan sairaanhoitopiiri & Kehittämisyksikkö, 2021; Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, 2021; Rajakorpi et al., 2021)

5 Discussion

This research aimed to develop a proposal of performance indicators and objectives for the EPSHP's pathology laboratory. The following chapters discuss how the conducted research answered the research questions, evaluate the study's results with the help of literature, highlight the practical implications, evaluate the research's limitations, and provide suggestions for future research.

5.1 Answers to the research questions

This research was conducted because the EPSHP's pathology department was missing established performance indicators. The pathology department has an essential role in patients' care paths, especially cancer diagnostics in the South Ostrobothnia service area. As described in the literature review, if the organization lacks performance indicators, it is difficult to establish its current state, evaluate its past performance, find areas of improvement, present the realized improvements, benchmark, or ensure that it is reaching its objectives (Bourne & Bourne, 2011). This research aimed to create a proposal of performance indicators and objectives for the EPSHP's pathology department. The main research question and subquestions were:

Which performance indicators and objectives are suitable for evaluating the performance of the EPSHP's pathology department?

- What kind of framework is suitable for categorizing performance indicators and objectives?
- What are the EPSHP's guidelines for the performance information reporting of the pathology department?
- What are the EPSHP's pathology department's core activities?

The EPSHP's organization and pathology department defined 'a case', which had encountered a practical dilemma with lacking established performance indicators, which is why a qualitative case

study research was selected. The data of this research consist of secondary and primary data. Secondary data was composed from EPSHP's document analysis and primary data from semi-structured interviews with the EPSHP's pathology department's employees. The secondary and primary data results were cross-checked with one another. After the data analysis, the researcher could identify answers to the research questions.

Before the main research question could be answered, the answers to the subquestions had to be discovered. The first subquestion was responded to via secondary data. The EPSHP's organization's strategy provided a structure that guided the BSC model selection as a framework to categorize performance indicators and objectives. At the same time, the BSC model offered theoretical support to answer the main research question and helped to select suitable performance indicators. EPSHP also requests its departments to report their past performance under similar headings as BSC-model; customer, human resources, operation, and finance. This supported the BSC model's selection.

The conclusion of the second subquestion identified EPSHP's main guidelines, which direct the pathology department's reporting of past performance. These are budget, action, and economic plan, and annual reports. The answers were identified from secondary data. The budget, action, and economic plans are created for the next three years, and the budget is approved only one year at a time. The pathology department receives instructions to create a budget, economic and action plans, which consist of future goals, changes in the operations, development areas, and plans for the future. It should follow the EPSHP's strategy and its goals. The EPSHP requests its departments to report their past year's performance in the following categories: customer, human resources, processes, finance, significant changes within the department's operations, and estimation about the future. EPSHP's departments are advised to use the previous budget, action, and economic plan when creating the annual reports. Detailed requirements about performance information in the budget, action, economic plans, and annual reports were utilized in the performance indicators and objectives selection process and assisted in answering the main research question.

The answers to the third subquestion were gathered from primary data, and the EPSHP's pathology department's core activities were identified. This information helped to answer the main research question. The pathology department serves its customers by providing diagnoses and

studies to special healthcare departments and healthcare centers within EPSHP. Studies and diagnoses can be considered products and services. Pathology has an essential role in the patient's care path with other healthcare units. It aims to provide high-quality diagnoses and studies within turnaround times and cost-efficiently. The EPSHP's pathology department processes patients' tissue and cell samples. The EPSHP's pathology department has two customers, units who request the studies and patients. The EPSHP's values, respecting human dignity and responsibility, guide the pathology department's actions and processing of patient samples. Patients' care path requires several professionals; the EPSHP's pathology department has multiple stakeholders and cannot operate alone. The EPSHP's pathology department has suffered a shortage in employee resources during the past year, and this has caused delays in the studies' turnaround times and lowered the employee's welfare. It was announced in 2021 that the public healthcare organizations will be reformed in 2023, and the EPSHP's organization will transform into an organization called the wellbeing services county of South Ostrobothnia. The reform will cause changes and has raised uncertainty in the pathology department about the future and upcoming budget.

The research's subquestions' answers helped resolve the main research question and reach the study's main goal. The main research question's results are derived from primary and secondary data. The EPSHP's pathology department's performance indicators and objectives are categorized under the BSC model's four perspectives: learning and growth, process, customer, and financial. For each of the four perspectives, EPSHP's strategic and pathology departments' objectives were recognized. The measurement units and evaluation periods were proposed for the performance indicators. The proposed EPSHP's pathology department's 17 performance indicators contain financial and non-financial indicators, which help to provide a balanced understanding of the pathology department's operations. Quality is an essential factor in the EPSHP's pathology department's operations, and if it decides to apply for accreditation by ISO15189, the performance indicators will assist in the process. Proposed objectives and performance indicators are shortly repeated in the following chapters.

From the learning and growth perspective, EPSHP's strategic objective is to have competent and well-being personnel. The pathology department's goal is to guarantee competent employee resources, enhance the well-being of employees, and support education. With the help of the

following indicators, the pathology department can evaluate its operations; staff satisfaction rate, employee absence, education days, employee resources, and working safety HaiPro-notifications.

From the process perspective, EPSHP's strategic objective is to have effective and cost-efficient care. In the pathology department, this is translated to a goal of staying within turnaround times and having a cost-efficient process. For this perspective, turnaround time histology and cytology, number of diagnosed studies, and quality indicators were selected as performance indicators.

From the customer perspective, EPSHP's strategic goal is to provide customer-oriented services. The pathology department aims to serve customers by providing high-quality services and products. The pathology department will gain information from the customers' perspective with the following performance indicators; patient feedback, customer satisfaction rate, clinical customers' contacts, patient safety, and information security HaiPro-notifications.

From the financial perspective, EPSHP's and pathology department's objective is budget realization. To evaluate the economic operations of the EPSHP's pathology department, revenues, expenditure, and the capital expenditure plan were chosen as performance indicators.

5.2 Assessment of the results in the light of the literature

This research provided a proposal of performance indicators and objectives for the EPSHP's pathology department. As stated in the literature review chapter 2.2.3, the performance should always be compared to others in a similar sector. In the case of EPSHP's pathology department, it would be beneficial to compare what performance indicators other pathology laboratories or departments in Finland or globally have utilized. No published literature was available about setting up performance indicators for the pathology department from the performance measurement and management perspective. Although many pathology departments in Finland are also part of public organizations, their performance information is not publicly available. Due to this limitation, the results of this research are compared to global literature about performance indicators in the healthcare sector, other Finnish hospital districts' performance indicators, literature about pathology laboratories' productivity, and ISO15189 quality standard.

Framework to categorize indicators

The performance indicators from other hospital districts in Finland were explored. The performance indicators of this study were compared to the Northern Savo hospital district, Pirkanmaa hospital district, Central Finland Health Care district, and Northern Ostrobothnia hospital district. These hospital districts' budgets and action plans are publicly available, and similarly to EPSHP, they develop action and economic plans for the next three years. The hospital district's objectives are written in the budget, economic and action plans and indicators are reported. In budget and plans, other hospital districts have commonly categorized their indicators into customer, process, employees, and financial sectors (Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020).

Central Finland Healthcare district has categorized its indicators into customers, processes, and employees (Keski-Suomen sairaanhoitopiiri, 2020). Northern Ostrobothnia Hospital District has seven main objectives derived from its strategy. Indicators are organized under these headlines: customer, processes, financial, attractive workplace, education, research, and future. (Pohjois-Pohjanmaan sairaanhoitopiiri, 2020) The other Finnish hospital district's performance indicators categorization is similar to the BSC model. The Finnish hospital districts have categorized their performance indicators under their strategy's objectives.

Seventeen performance indicators for the EPSHP's pathology department were identified during this research under the learning and growth, process, customer, and financial perspectives. Typically hospitals utilize 20-30 performance indicators to report their performance with the BSC model (Rahimi et al., 2017). It is stated in the literature that the BSC model is commonly used to assess the hospital's performance (Rahimi et al., 2017; van Looy & Shafagatova, 2016) and is widely used in the public sector also (Kaplan & Norton, 1992). The BSC model is described in detail in the literature review's section 2.3.1. It is also common for performance information in the healthcare sector to be categorized in other ways, as described in chapter 2.4.2. The EPSHP's pathology department's number of performance indicators and performance indicator categorization aligns with the literature and is similar to other organizations in the same sector. The minor differences in the performance information categorization are derived from the hospital district's different strategies. Although this proves that the performance indicators have been designed so that the indicators are

derived from the organization's strategy (Kaplan & Norton, 1996b). The following chapters compare EPSHP's pathology department's performance indicators from the BSC model's four perspectives to the literature.

Learning and growth perspective

From the learning and growth perspective, the staff satisfaction rate, employee absence, education days, employee resources, and working safety HaiPro-notifications were selected as indicators for the EPSHP's pathology department. Similarly, the staff satisfaction rate, sick leave or absence numbers, and training or education of the staff have been reported as performance indicators at the clinical laboratory, hospital, or healthcare organization level literature (Alvarez et al., 2019; Coskun & Senyigit, 2010; Rahimi et al., 2017).

Other Finnish hospital districts also use these same indicators and employee resources. Other hospital districts have highlighted their goal to be attractive employers, which describes why they also monitor reasons for leaving the workplace, staff turnover rate, student satisfaction rate, and the number of applicants to work positions. Northern Savo, Pirkanmaa, and Northern Ostrobothnia hospital districts have university hospitals and a lot of healthcare sector students in practice; this could explain the usage of the student satisfaction indicator. (Keski-Suomen sairaanhoitopiiri, 2020; Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Pohjanmaan sairaanhoitopiiri, 2020; Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020) The pathology literature reported that the histology laboratory utilizes staff available time, and staff used time performance measures to evaluate workload (Buesa, 2010). The histology laboratory is part of the pathology department, described in section 3.2.

Process perspective

From the process perspective, the turnaround time histology and cytology, the number of diagnosed studies, and quality indicators were selected as performance indicators for the EPSHP's pathology department. Laboratory test time or average length of stay has been used as performance indicators under the process perspective on the hospital and healthcare organization levels (Coskun & Senyigit, 2010; Koudoua & Burlea-Schiopoiu, 2020; Rahimi et al., 2017).

Other Finnish hospital districts used patient safety Haipro-notifications (Keski-Suomen sairaanhoitopiiri, 2020) and in pathology turnaround time (Pohjois-Pohjanmaan sairaanhoitopiiri, 2020), safety issues (Pirkanmaan sairaanhoitopiiri, 2020) as indicators in the process perspective. This differs from EPSHP's pathology department since safety issues are used as an indicator under the learning and growth perspective, and patient safety Haipro-notifications indicator is under the customer perspective. Other hospital districts have also used indicators that concentrate on patients' treatments: number of operations, number of covering notes, number of infections linked to treatments, number of patients waiting for treatment, and waiting time. (Keski-Suomen sairaanhoitopiiri, 2020; Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Pohjanmaan sairaanhoitopiiri, 2020; Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020) These indicators describe the most important processes of hospital districts, and they shouldn't be straight compared to EPSHP's pathology department's operations. Instead, the EPSHP's pathology department's process indicators should be compared to another pathology department or literature about pathology laboratories.

As described in chapters 2.1 and 2.4, performance is translated to efficiency, effectiveness, and economy. There are no reported benchmarks or standards to evaluate the performance of the histology laboratory, which is part of the pathology laboratory (Buesa, 2010). When considering the workload in the histology laboratory, Buesa (2010) reported that assessing the total number of cases per year is essential. Turnaround time has been used for medical laboratories for benchmarking, and it can be used as an indicator of effectiveness and efficiency. Turnaround time is affected by sample size and type, staff expertise, and availability of adequate resources. Turnaround time also serves as a quality indicator and reflects the satisfaction of doctors and patients. (Hawkins, 2007) These same points were highlighted by the EPSHP's staff in the interviews. There are differences in measuring laboratories' turnaround times. Still, the turnaround time is usually calculated as a time that starts when a sample is registered in the laboratory and ends when the laboratory reports result is reported in the laboratory information system (Hawkins, 2007; Vollmer, 2006). Turnaround time is critical for doctors and is commonly used for clinical pathology laboratories (Hawkins, 2007); this supports the reasons why turnaround times for histology and cytology and a number of diagnosed studies were selected as performance indicators for the EPSHP's pathology department. There are published studies on how the turnaround times can be shortened to increase the efficiency of sample flow in the pathology laboratory (Alshieban & Al-Surimi, 2015; Laiho, 2015).

Customer perspective

From the customer perspective, patient feedback, customer satisfaction rate, customers' contacts, patient safety, and information security HaiPro-notifications were selected as performance indicators for the EPSHP's pathology department. The patients' satisfaction rate or percentage and rate of complaints have also been reported as performance indicators at the clinical laboratory, hospital, or healthcare organization level (Alvarez et al., 2019; Coskun & Seneyigit, 2010; Koudoua & Burlea-Schiopoiu, 2020; Rahimi et al., 2017). Other Finnish hospital districts also use some kind of patient satisfaction rate and patient feedback as their leading indicators to evaluate the customer's perspective (Keski-Suomen sairaanhoitopiiri, 2020; Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Pohjanmaan sairaanhoitopiiri, 2020).

Similarly to EPSHP, HaiPro-system is utilized in other hospital districts to report dangerous situations, occupational accidents, close shaves, information security deviation, and other safety deviations, and development discussions (Keski-Suomen sairaanhoitopiiri, 2020; Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Pohjanmaan sairaanhoitopiiri, 2020; Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020). There are differences between the hospital districts in which perspective they report their HaiPro-notifications. In action plans, the hospital districts also describe that patient safety HaiPro-notifications are evaluated to maintain patient safety in patient's healthcare processes (Keski-Suomen sairaanhoitopiiri, 2020; Pirkanmaan sairaanhoitopiiri, 2020; Pohjois-Pohjanmaan sairaanhoitopiiri, 2020; Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020). Central Finland Healthcare district has mentioned patient safety as a performance indicator under the customer perspective (Keski-Suomen sairaanhoitopiiri, 2020).

It's been acknowledged in the literature that laboratory accreditation requires a customer satisfaction survey for pathology laboratories (Zarbo, 2006). As described in chapter 4.3, the pathology department operates with the doctors and does not communicate directly with patients. That's why it is essential to discover their opinions when developing customer-oriented services and help improve quality. The satisfaction surveys should include a section where the customers can evaluate whether they are satisfied with the pathology department's turnaround times. (Zarbo, 2006) The correlation between the laboratory's turnaround times and customer satisfaction was highlighted in the interviews by the EPSHP's pathology department staff. It is also possible that

doctors may have unrealistic expectations for turnaround times, this can be revealed in the surveys, and some education may be required. The customer satisfaction surveys also help to recognize what services the laboratory provides and help to understand the current state and compare it to the benchmark objectives. (Zarbo, 2006)

The results also informed that EPSHP's pathology department should evaluate whether the produced services satisfy the customers. The EPSHP's staff reported that response rates might be low for the customer surveys, and it would be most beneficial to perform surveys only to limited customers. This limitation has been acknowledged in the literature, and Zarbo (2006) also supported that the survey should be pointed only to preselected doctors.

Financial perspective

From the financial perspective, revenues, expenditures, and the capital expenditure plan were selected as performance indicators for the EPSHP's pathology department. At the clinical laboratory, hospital, or healthcare organization level cost of personnel, materials, and drugs, total budget, and profit have been reported as performance indicators (Alvarez et al., 2019; Coskun & Seneyigit, 2010; Koudoua & Burlea-Schiopoiu, 2020; Rahimi et al., 2017). Other Finnish hospital districts use as financial indicators; result from the last fiscal year (Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020), costs per treated patient (Pohjois-Savon sairaanhoitopiiri kuntayhtymä, 2020) and a realization of capital expenditures, budget realization (Pirkanmaan sairaanhoitopiiri, 2020). Central Finland Healthcare district has cost efficiency as an objective and indicator to lower department expenses (Keski-Suomen sairaanhoitopiiri, 2020). The EPSHP's pathology department's financial indicators align with the existing literature. The EPSHP's pathology department is a public organization, and it doesn't aim to increase its profits, and that's why it wouldn't be relevant to compare its financial indicators to pathology laboratories that operate in the private sector.

Quality standard ISO15189

As described in chapters 2.2 and 2.4 and the sections above, quality is an important factor in performance measurement and management, especially in the healthcare sector. Quality standards can be used to develop performance indicators and enhance performance measurement and

management (Franceschini et al., 2019; Health Information and Quality Authority, 2010; Shaw, 2003). The EPSHP's pathology department doesn't hold a quality management system, and if the EPSHP's pathology department applies for accreditation, it will follow the ISO15189:2012 quality standard for medical laboratories (International Organization for Standardization, 2013).

The ISO15189:2012 standard contains a section for management requirements. It is pointed out that laboratory management is accountable for establishing and applying the quality management system. Management review should be held accordingly, e.g., customer feedback, monitoring of complaints, changes in the workload and staff, and usage of quality indicators should be reviewed. ISO15189 demands that the laboratory clarifies the customers' needs and the clinicians who treat the patient. (International Organization for Standardization, 2013) The EPSHP's pathology department needs employee absence, employee resources, and the number of diagnosed studies indicators to cover this performance information. Also, the pathology department needs performance information from patient feedback, customer contacts, and customer satisfaction rate indicators. ISO15189 includes a section for personnel, and their training must be guaranteed and assessed. For the staff, continuous education and professional development should be guaranteed. (International Organization for Standardization, 2013) The EPSHP's pathology department's education days indicator reflects the standard's requirements.

Quality indicators should contain indicators that evaluate the laboratory's and employees' safety and working safety. The laboratory should have established turnaround times and reflect the clinical requirements. The laboratory's director should also evaluate budget planning and financial control. Risk management must be performed to identify risks affecting patient safety. (International Organization for Standardization, 2013) The EPSHP's pathology department needs patient safety, information security, and working safety Haipro-notifications, turnaround times, customer contacts, and customer satisfaction rate indicators to gather this performance information. It is also essential that the financial indicators are established.

5.3 Practical implications

This research has created a proposal of performance indicators and objectives for the EPSHP's pathology department. The following chapters discuss the practical implications for the EPSHP's pathology department and its managers. In the end, the value proposition is described shortly.

The benefits of the performance indicators are described in section 2.2.1. In conclusion, with the help of performance indicators, the EPSHP's pathology department's management could use and allocate its resources better, aiming for continuous improvement of the laboratory processes and communicating about its performance. Performance indicators also help the EPSHP's pathology department's managers to assess the department's historical performance and prepare potential objectives. With the help of this research, the pathology department's managers can be confident that the performance indicators and objectives are aligned with the EPSHP's strategy and performance reportage requirements. The results of this study are a proposal, and the EPSHP's pathology department should evaluate and decide whether they will continue establishing and implementing the performance indicators. Section 5.5 describes how the EPSHP's pathology department could continue establishing and implementing the performance indicators.

If the EPSHP's pathology department decides to apply for accreditation for ISO15189, this study's results will support the process. ISO15189 sets requirements for the pathology laboratory's management. Pathology laboratories should work efficiently, fulfill the customers' needs, constantly find new ways to improve operations, and aim to prevent problems before they even arise. (International Organization for Standardization, 2013) It is possible that with the ISO15189 standard, the EPSHP's pathology department may save costs by optimizing the processes and achieving customers' needs (Schneider et al., 2017). The ISO15189 requirements were reviewed during this research, and the obligations were acknowledged in the indicator's selection process. These are described in section 5.2. If the EPSHP's pathology department decides to apply for the ISO15189, the suggested performance indicators are aligned with the standard's requirements.

It was pointed out in the interviews that the EPSHP's pathology department has multiple stakeholders, and it is difficult to define which are the most important ones. The literature has acknowledged the same information in the healthcare sector, as described in section 2.4. Typically, healthcare organizations have many stakeholders, and value definition is a complex subject. If the EPSHP's pathology department operates efficiently, utilizes the allocated resources, and provides pathologic-anatomic-diagnoses within preferred turnaround times, patient care paths can continue smoothly. This provides value to the patients, the pathology department's customers, and stakeholders who participate in the patients' care path. The EPSHP is a public organization and operates with public funding. As described earlier, the EPSHP's pathology department has a crucial

role in cancer patients' care paths. In theory, if the cancer is detected earlier and the tumor is surgically removed in the early stage, this could lead to less complex and expensive care. This provides value to Finnish society.

5.4 Limitations of the Research

This research is a qualitative case study where the starting point was a practical issue; the EPSHP's pathology department lacked established performance indicators, as described previously. The study created a proposal of performance indicators and objectives for the EPSHP's pathology department. The researcher identified the BSC model as a framework to categorize indicators during the research process. The EPSHP's main guidelines were identified, which guide the performance information reporting of the pathology department. The researcher also described EPSHP's pathology department's core activities. Understanding and creation of descriptions are typical for qualitative case study research (Eriksson & Kovalainen, 2008; Myers, 2009). The reliability and limitations of this research are described in the following text.

One of the typical limitations of the case study is the limited access to the organization's data (Myers, 2009). In the EPSHP's pathology department's case, this wasn't a limitation since the researcher is EPSHP's pathology department's staff and could gain access to the required documents for the document analysis. In case study research, gathering information from different perspectives is essential (Eriksson & Kovalainen, 2008; Myers, 2009), and this was enabled with the interviews. The interviewees represented diverse expertise within the pathology department, and it has been acknowledged that the performance indicator selection process requires discussion and participation of the staff (Globerson, 1985; Vainieri et al., 2019). Triangulation of the interview and document analysis data provided information from different perspectives and enabled crosschecking (Eriksson & Kovalainen, 2008; Myers, 2009). These factors support the reliability of the results.

Language can be considered a limitation of this research (van Nes et al., 2010). The operating language is Finnish within the EPSHP and pathology department. The interviews were held in Finnish, and the EPSHP's documents were written in Finnish. This research was written in English, and the results from the interviews and documents were freely translated into English by the researcher. Specific terms and words were complicated to translate into English, and some

information may be lost in this process (van Nes et al., 2010). When the research is written in English, it provides global information for a wider audience. At the same time, it loses some information within the Finnish pathology departments.

The available literature on pathology laboratories' performance measures and management can be described as a limitation of this research. There wasn't publicly available reference literature about developing performance indicators for the pathology laboratory. Literature about specific performance indicators provided information about pathology laboratory's efficiency, quality management, and customer satisfaction (Buesa, 2010; Schneider et al., 2017; Vollmer, 2006; Zarbo, 2006). As described in section 5.2, comparing the EPSHP's pathology department's performance indicators to other Finnish pathology departments would be beneficial. Instead, the other Finnish hospital districts' budget and action plan information were used to assess this study's results.

This study's results can be used as a reference in other Finnish or global pathology departments when they are weighing or selecting their performance indicators. It is essential to highlight that this study's results shouldn't be straight away generalized to other pathology departments since the performance indicators are aligned with EPSHP's strategy, EPSHP's pathology department's objectives, and EPSHP's performance information reporting guidelines.

5.5 Recommendations for future research

This research created a base for a PMS for the EPSHP's pathology department by identifying a BSC model as a framework to categorize indicators and providing a proposal of performance indicators and objectives. The subsequent chapters offer suggestions for future research.

The results of this research provided a proposal of performance indicators and identified objectives for the EPSHP's pathology department. The indicators are not ready to be implemented in the EPSHP's pathology department. A good indicator should have an established goal, measurement unit, evaluation period, target, comparison value, and the determined data source. It is also beneficial that the person in charge of collecting and analyzing the data would be decided. The properties of a good indicator are described in the literature review section 2.2.3. The established indicators could be represented in a table, indicators in rows, and set definitions in columns. Within these terms, the assessment work of indicators should be continued by the EPSHP's pathology

department's executive committee. The researcher reported objectives, measurement units, and evaluation periods for performance indicators. The researcher is not authorized to gain the information required to create a complete definition of performance indicators. For example, access and understanding of the laboratory information system, human resources data source, and financial reporting tools are restricted for the researcher.

Suppose the EPSHP's pathology department proceeds to complete definitions for the indicators and establish performance indicators. After this step, the EPSHP's pathology department could continue implementing a PMS. After the implementation step, the PMS should be later on reviewed. (Neely et al., 2000; Taticchi & Balachandran, 2008) The building process of a PMS is described in section 2.3.2.

The EPSHP's strategy was renewed in 2021. During the interviews, the participants described the new strategy 2021-2025 is easier to understand since it is represented in table format. If the EPSHP's pathology department proceeds to adapt the performance indicators and implement a PMS, it would be beneficial to create a strategy map for the pathology department. The department's objectives and performance measures are easier to visualize in a strategy map (Coskun & Seneyigit, 2010; Kaplan & Norton, 2000). During the interviews, it was pointed out that the performance indicators from different perspectives are linked to other perspectives' indicators. For example, employee absence, employee resources, turnaround times, and customer satisfaction rates are connected. With the help of strategy maps, the objectives and performance information communication within the EPSHP's pathology department would become easier to identify and understand (Kaplan & Norton, 2000).

To gain different angles to study performance measurement indicators and PMSs. It would be beneficial to replicate a similar study within another Finnish public organization's context since it would gain comparison for this research's results. Also, learning how the BSC model's performance measurement works in a different context would be beneficial. For example, the opinions and benefits of the BSC model's PMS could be studied in the organization utilizing the BSC model. A quantitative research method could be applied when learning the experiences of using the PMS. This research supported the literature's information that quality and performance measurements

are closely connected, as described in the results chapter 5.2. In the future, it would be beneficial to study what PMSs organizations utilize if they follow the ISO15189:2012 quality standard.

References

- Aho, H. (2017, May 2). *Patologian laatutunnuksen lopettaminen* [Termination of the pathology's quality identifier]. <https://iap.yhdistysavain.fi/@Bin/190529/PATOLOGIAN+LAATUTUNNUKSEN+LOPETTAMINEN.docx>.
- Almquist, E., Senior, J., & Bloch, N. (2016). The Elements of Value Measuring-and delivering-what consumers really want. *Harvard Business Review*, September, 46–53. <https://hbr.org/2016/09/the-elements-of-value>
- Alshieban, S., & Al-Surimi, K. (2015). Reducing turnaround time of surgical pathology reports in pathology and laboratory medicine departments. *BMJ Quality Improvement Reports*, 4. <https://doi.org/10.1136/bmjquality.u209223.w3773>
- Alvarez, L., Soler, A., Guiñón-Muñoz, L., & Mira, A. (2019). A balanced scorecard for assessing a strategic plan in a clinical laboratory. *Biochemia Medica*, 29. <https://doi.org/10.11613/BM.2019.020601>
- Amaratunga, D., & Baldry, D. (2002). Moving from performance measurement to performance management. *Facilities*, 20, 217–223. <https://doi.org/10.1108/02632770210426701>
- Bernard, H., Wutich, A., & Ryan, G. (2017). *Analyzing Qualitative Data: Systematic Approaches* (2nd ed.). SAGE Publications Inc.
- Bourne, M., & Bourne, P. (2011). *The Handbook of Corporate Performance Management*. John Wiley & Sons, Ltd.
- Bourne, M., Franco-Santos, M., Micheli, P., & Pavlov, A. (2018). Performance measurement and management: a system of systems perspective. *International Journal of Production Research*, 56(8), 2788–2799. <https://doi.org/10.1080/00207543.2017.1404159>
- Bourne, M., Mills, J., Wilcox, M., Neely, A., & Platts, K. (2000). Designing, implementing and

updating performance measurement systems. *International Journal of Operations and Production Management*, 20(7), 754–771. <https://doi.org/10.1108/01443570010330739>

Bowen, G. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9, 27–40. <https://doi.org/10.3316/QRJ0902027>

Buesa, R. J. (2010). Productivity standards for histology laboratories. *Annals of Diagnostic Pathology*, 14(2), 107–124.

<https://doi.org/https://doi.org/10.1016/j.anndiagpath.2009.12.005>

Busi, M., & Bititci, U. S. (2006). Collaborative performance management: Present gaps and future research. *International Journal of Productivity and Performance Management*, 55(1), 7–25.

<https://doi.org/10.1108/17410400610635471>

Commission, E., & Safety, D.-G. for H. and F. (2019). *Defining value in 'value-based healthcare' : report of the Expert Panel on Effective Ways of Investing in Health (EXPH)*. Publications Office.

<https://doi.org/doi/10.2875/35471>

Coskun, A., & Seneyigit, B. (2010). The Balanced Scorecard for the Healthcare Organizations. In N. C. Shil & A. K. Pramanik (Eds.), *Contemporary Research in Cost and Management Accounting Practices: The 21st Century Perspective* (pp. 138–151). North American Business Press.

Denzin, N. K., & Lincoln, Y. S. (2018). *The landscape of qualitative research: theories and issues* (5th ed.). Sage.

Eriksson, P., & Kovalainen, A. (2008). *Qualitative methods in business research*. Sage.

Etelä-Pohjanmaan sairaanhoitopiiri. (2013). *Etelä-Pohjanmaan sairaanhoitopiirin strategia 2013 – 2020* [The Hospital District of South Ostrobothnia's strategy 2013-2020].

Etelä-Pohjanmaan sairaanhoitopiiri. (2019). *Talousarvio 2020 ja Toiminta- ja taloussuunnitelma 2021-2022* [Budget 2020 and action and economic plans 2021-2022].

https://www.epshp.fi/sairaanhoitopiiri/organisaatio/vuosi- ja_henkilostokertomukset

Etelä-Pohjanmaan sairaanhoitopiiri. (2020). *Talousarvio 2021 ja Toiminta- ja taloussuunnitelma 2022-2023* [Budget 2021 and action and economic plans 2022-2023].

https://www.epshp.fi/sairaanhoitopiiri/organisaatio/vuosi- ja_henkilostokertomukset

Etelä-Pohjanmaan sairaanhoitopiiri. (2021a). *Etelä-Pohjanmaan sairaanhoitopiirin strategia 2021-2025* [The Hospital District of South Ostrobothnia's strategy 2021-2025].

<https://www.epshp.fi/sairaanhoitopiiri/organisaatio/strategia>

Etelä-Pohjanmaan sairaanhoitopiiri. (2021b). *Talousarvio ja toimintasuunnitelma 2022* [Budget 2022 and action and economic plans 2022].

https://www.epshp.fi/sairaanhoitopiiri/organisaatio/vuosi- ja_henkilostokertomukset

Etelä-Pohjanmaan sairaanhoitopiiri. (2022a). *Etelä-Pohjanmaan sairaanhoitopiiri* [The Hospital District of South Ostrobothnia]. <https://www.epshp.fi/sairaanhoitopiiri>

Etelä-Pohjanmaan sairaanhoitopiiri. (2022b). *Patologia* [Pathology].

https://www.epshp.fi/ammattilaiselle_ ja_opiskelijalle/ammattilaiselle/patologia

Etelä-Pohjanmaan sairaanhoitopiiri. (2022c). *Patologian yksikön toimintakertomus vuodesta 2021* [Pathology department's action report 2021].

Etelä-Pohjanmaan sairaanhoitopiiri, & HR-palvelut. (2021). *Henkilöstökertomus 2020. Henkilöstön määrä, rakenne, kustannukset, osaaminen ja työhyvinvointi* [Staff report 2020. The amount of staff, staff's distribution, expences, expertise and well-being].

Etelä-pohjanmaan sairaanhoitopiiri, J. M. R. E. (2022). *Valmiussuunnitelma patologia* [Emergency plan pathology].

Etelä-Pohjanmaan sairaanhoitopiiri, & Kehittämisyksikkö. (2021). *Vuoden 2021 toimintakertomuksen laatiminen* [Instructions for departments on creating action and

economic plans for the year 2021].

Etelä-Pohjanmaan sairaanhoitopiiri, & Laatupäällikkö. (2013). *Laatu- ja potilasturvallisuussuunnitelma* [Quality and patient safety plan].

Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä. (2021). *Vuosikertomus 2020* [Annual report 2020].

Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä, & Laatupäällikkö. (2021). *Asiakkuuskertomus* [Customership report].

FINAS. (2022). *Akkreditoidut toimijat* [Accredited operators].

<https://www.finas.fi/toimijat/Sivut/default.aspx>

Franceschini, F., Galetto, M., & Maisano, D. (2019). *Designing Performance Measurement Systems Theory and Practice of Key Performance Indicators*. Springer International Publishing.

<https://doi.org/10.1007/978-3-030-01192-5>

Funkhouser, W. K. (2018). Pathology: The Clinical Description of Human Disease. In W. B. Coleman & G. J. Tsongalis (Eds.), *Molecular Pathology: The Molecular Basis of Human Disease* (2nd ed., pp. 217–229). Academic Press. <https://doi.org/10.1016/B978-0-12-802761-5.00011-0>

Globerson, S. (1985). Issues in developing a performance criteria system for an organization.

International Journal of Production Research, 23(4), 639–646.

<http://search.ebscohost.com.ezproxy.jamk.fi:2048/login.aspx?direct=true&db=bsh&AN=5782572&site=ehost-live>

Hawkins, R. (2007). Laboratory Turnaround Time. *The Clinical Biochemist. Reviews / Australian Association of Clinical Biochemists*, 28, 179–194.

Health Information and Quality Authority. (2010). *Guidance on developing key performance indicators and minimum data sets to monitor healthcare quality*. Health Information and

Quality Authority (HIQA). <http://hdl.handle.net/10147/111538>

Hirsjärvi, S., & Hurme, H. (2008). *Tutkimushaastattelu: teemahaastattelun teoria ja käytäntö* [Research interview: theme interview's theory and practice]. Gaudeamus.

Hung, K.-Y., & Jerng, J.-S. (2014). Time to have a paradigm shift in health care quality measurement. *Journal of the Formosan Medical Association*, 113(10), 673–679. <https://doi.org/10.1016/j.jfma.2014.06.003>

International Organization for Standardization. (2013). *Medical laboratories. Requirements for quality and competence (ISO 15189:2012, Corrected version 2014-08-15)*.

Kaplan, R., & Norton, D. (1992). The Balanced Scorecard--Measures That Drive Performance. *Harvard Business Review*, 70(1), 71–79. <http://search.ebscohost.com.ezproxy.jamk.fi:2048/login.aspx?direct=true&db=bsh&AN=9205181862&site=ehost-live>

Kaplan, R., & Norton, D. (1996a). Linking the Balanced Scorecard to Strategy. *California Management Review*, 39(1), 53–79. <http://search.ebscohost.com.ezproxy.jamk.fi:2048/login.aspx?direct=true&db=bsh&AN=9707112887&site=ehost-live>

Kaplan, R., & Norton, D. (1996b). Using the Balanced Scorecard as a Strategic Management System. *Harvard Business Review*, 74(1), 75–85. <http://search.ebscohost.com.ezproxy.jamk.fi:2048/login.aspx?direct=true&db=bsh&AN=9601185348&site=ehost-live>

Kaplan, R., & Norton, D. (2000). Having Trouble with Your Strategy? Then Map It. *Harvard Business Review*, 78, 167–176, 202.

Kaplan, R., & Norton, D. (2009). Conceptual Foundations of the Balanced Scorecard. *Handbooks of Management Accounting Research*, 3, 1253–1269. <https://doi.org/10.1016/S1751->

3243(07)03003-9

Kaplan, R., & Porter, M. (2011). How to Solve The Cost Crisis In Health Care. *Harvard Business Review*, 89(9), 46–64.

<http://search.ebscohost.com.ezproxy.jamk.fi:2048/login.aspx?direct=true&db=bsh&AN=64495985&site=ehost-live>

Keski-Suomen sairaanhoitopiiri. (2020). *Toiminta- ja taloussuunnitelma vuosille 2021-2021 ja talousarvio vuodelle 2021* [Action and economic plans for years 2020-2021 and budget for the year 2021]. https://www.sairaanova.fi/fi-FI/Sairaanhoitopiiri/Talous_ ja _suunnittelu/Toiminta_ ja _taloussuunnitelma

Khalifa, M., & Khalid, P. (2015). Developing Strategic Health Care Key Performance Indicators: A Case Study on a Tertiary Care Hospital. *Procedia Computer Science*, 63, 459–466. <https://doi.org/10.1016/J.PROCS.2015.08.368>

Koudoua, F., & Burlea-Schiopoiu, A. (2020). The Managerial Implications of the Key Performance Indicators in Healthcare Sector: A Cluster Analysis. *Healthcare*, 9, 19. <https://doi.org/10.3390/healthcare9010019>

Laiho, M. (2015). *Viraustehokkuudeen lisääminen patologian laboratoriossa - Lean-toimintastrategian implementointi* [Increasing efficiency of sample flow in the pathology laboratory – Implementation of Lean operation strategy]. Turun ammattikorkeakoulu.

Lebas, M. J. (1995). Performance measurement and performance management. *International Journal of Production Economics*, 41(1–3), 23–35. [https://doi.org/10.1016/0925-5273\(95\)00081-X](https://doi.org/10.1016/0925-5273(95)00081-X)

Lynch, R., & Cross, K. (1995). *Measure Up! Yardsticks for Continuous Improvement* (2nd ed.). Blackwell Publishers .

Melnyk, S., Stewart, D., & Swink, M. (2004). *Metrics and Performance Measurement in Operations*

Management: Dealing With the Metrics Maze. *Journal of Operations Management*, 22, 209–218. <https://doi.org/10.1016/j.jom.2004.01.004>

Mettler, T., & Rohner, P. (2009). Performance Management in Health Care: The Past, the Present, the Future. *Conference: Proceedings Der 9. Internationalen Tagung Wirtschaftsinformatik*.

Myers, M. D. (2009). *Qualitative research in business & management*. Sage.

Neely, A., Adams, C., & Crowe, P. (2001). The performance prism in practice. *Measuring Business Excellence*, 5(2), 6–13. <https://doi.org/10.1108/13683040110385142>

Neely, A., Gregory, M., & Platts, K. (2005). Performance measurement system design: A literature review and research agenda. *International Journal of Operations and Production Management*, 25(12), 1228–1263. <https://doi.org/10.1108/01443570510633639>

Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M., Bourne, M., & Kennerley, M. (2000). Performance measurement system design: Developing and testing a process-based approach. *International Journal of Operations and Production Management*, 20(10), 1119–1145. <https://doi.org/10.1108/01443570010343708>

Otley, D. (2001). Extending the Boundaries of Management Accounting Research: Developing Systems for Performance Management. *The British Accounting Review*, 33(3), 243–261. <https://doi.org/10.1006/bare.2001.0168>

Patologian yksikkö. (2020). *Patologian toimintasuunnitelma 2021-2023* [Pathology department's action plan 2021-2023].

Pirkanmaan sairaanhoitopiiri. (2020). *PSHP:n toiminta- ja taloussuunnitelma 2021 – 2023 ja talousarvio 2021* [Pirkanmaa hospital district's action and economic plan 2021-2023 and budget 2021]. https://www.tays.fi/fi-fi/sairaanhoitopiiri/toiminta_ja_talous

Pitkänieniemi, J., Malila, N., Tanskanen, T., Degerlund, H., Heikkinen, S., & Seppä, K. (2021). *Syöpä*

2019. *Tilastoraportti Suomen syöpätilanteesta* [Cancer 2019. Statistics report about Finland's cancer situation].

Pohjois-Pohjanmaan sairaanhoitopiiri. (2020). *Talousarvio 2021 ja taloussuunnitelma 2021–2023* [Budget 2021 and economic plan 2021-2023]. <https://oys.fi/tietoa-meista/toiminta-ja-talous/>

Pohjois-Savon sairaanhoitopiiri kuntayhtymä. (2020). *Taloussuunnitelma 2021-2023* [Economic plan 2021-2023]. <https://www.psshp.fi/suunnitelmat-ja-hinnastot>

Porter, M. E. (2010). What Is Value in Health Care? *New England Journal of Medicine*, 363(26), 2477–2481. <https://doi.org/10.1056/NEJMp1011024>

Pourmohammadi, K., Hatam, N., Shojaei, P., & Bastani, P. (2018). A comprehensive map of the evidence on the performance evaluation indicators of public hospitals: A scoping study and best fit framework synthesis. *Cost Effectiveness and Resource Allocation*, 16(1). <https://doi.org/10.1186/s12962-018-0166-z>

Price, C. P., John, A. S., Christenson, R., Scharnhorst, V., Oellerich, M., Jones, P., & Morris, H. A. (2016). Leveraging the real value of laboratory medicine with the value proposition. *Clinica Chimica Acta*, 462, 183–186. <https://doi.org/10.1016/j.cca.2016.09.006>

Rahimi, H., Kavosi, Z., Shojaei, P., & Kharazmi, E. (2017). Key performance indicators in hospital based on balanced scorecard model. *Health Management & Information Science*, 4(1), 17–24. https://jhmi.sums.ac.ir/article_42683.html

Rajakorpi, E., Kärki, P., & Jumppanen, M. (2021). *Vuoden 2020 toimintakertomus patologian yksikkö* [Pathology department's annual report 2020].

Rasi, V., Delgoshaee, B., & Maleki, M. (2020). Identification of common indicators of hospital performance evaluation models: A scoping review. *Journal of Education and Health Promotion*, 9(1). https://doi.org/10.4103/jehp.jehp_563_19

- Schneider, F., Maurer, C., & Friedberg, R. (2017). International Organization for Standardization (ISO) 15189. *Annals of Laboratory Medicine*, 37, 365–370.
<https://doi.org/10.3343/alm.2017.37.5.365>
- Shaw, C. (2003). *How can hospital performance be measured and monitored?* Copenhagen, WHO Regional Office for Europe. <http://www.euro.who.int/document/e82975.pdf>,
- Suomen syöpärekisteri. (2022, July 4). *Syöpätilastosovellus* Cancer statistics].
<https://syoparekisteri.fi/tilastot/tautilastot/>
- Syövän hoitoa kehittävä työryhmä, Hermanson, T., Vertio, H., & Mattson, J. (2010). *Syövän hoidon kehittäminen vuosina 2010-2020* [Development of cancer treatments in years 2010-2020]. *Työryhmän raportti*. www.stm.fi/julkaisut
- Taticchi, P., & Balachandran, K. R. (2008). Forward performance measurement and management integrated frameworks. *International Journal of Accounting & Information Management*, 16(2), 140–154. <https://doi.org/10.1108/18347640810913807>
- The Royal College of Pathologists. (2011). *Key performance indicators in pathology. Recommendations from the Royal College of Pathologists*.
- Tzankov, A., & Tornillo, L. (2017). Hands-on experience: Accreditation of pathology laboratories according to ISO 15189. *Pathobiology*, 84(3), 121–129. <https://doi.org/10.1159/000449254>
- Vainieri, M., Ferrè, F., Giacomelli, G., & Nuti, S. (2019). Explaining performance in health care: How and when top management competencies make the difference. *Health Care Management Review*, 44(4), 306–317. <https://doi.org/10.1097/HMR.0000000000000164>
- Vainieri, M., Noto, G., Ferre, F., & Rosella, L. C. (2020). A performance management system in healthcare for all seasons? *International Journal of Environmental Research and Public Health*, 17(15), 1–10. <https://doi.org/10.3390/ijerph17155590>

van Dooren, W., Bouckaert, G., & Halligan, J. (2015). *Performance Management in the Public Sector*. Routledge. <https://doi.org/10.4324/9781315817590>

van Looy, A., & Shafagatova, A. (2016). Business process performance measurement: a structured literature review of indicators, measures and metrics. *SpringerPlus*, 5(1).
<https://doi.org/10.1186/s40064-016-3498-1>

van Nes, F., Abma, T., Jonsson, H., & Deeg, D. (2010). Language differences in qualitative research: is meaning lost in translation? *European Journal of Ageing*, 7(4), 313–316.
<https://doi.org/10.1007/s10433-010-0168-y>

Vollmer, R. T. (2006). Analysis of Turnaround Times in Pathology: An Approach Using Failure Time Analysis. *American Journal of Clinical Pathology*, 126(2), 215–220.
<https://doi.org/10.1309/YTEKD0CNUBKJVFTW>

Walker, K. B., & Dunn, L. M. (2006). Improving hospital performance and productivity with the Balanced Scorecard. *Academy of Health Care Management Journal*, 2, 85–110.
DOI:10.7759/cureus.24866

WHO. (2022). *Universal Health Coverage*. https://www.who.int/health-topics/universal-health-coverage#tab=tab_1

WHO Regional Office for Europe, European Observatory on Health Systems and Policies, Smith, P. C., Mossialos, E., & Papanicolas, I. (2008). *Performance measurement for health system improvement: experiences, challenges and prospects: background document 2*. World Health Organization. Regional Office for Europe. <https://apps.who.int/iris/handle/10665/350328>

Zarbo, R. J. (2006). Determining Customer Satisfaction in Anatomic Pathology. *Archives of Pathology & Laboratory Medicine*, 130(5), 645–649. <https://doi.org/10.5858/2006-130-645-DCSIAP>

Appendices

Appendix 1. Documents analyzed in the document analysis

Document analysis contained the following documents:

- Instructions for departments on creating action and economic plans for the year 2021 (Vuoden 2021 toimintakertomuksen laatiminen)
- EPSHP's budget 2020 and action and economic plans 2021-2022 (Etelä-Pohjanmaan sairaanhoitopiiri Talousarvio 2020 ja Toiminta- ja taloussuunnitelma 2021-2022)
- EPSHP's budget 2021 and action and economic plans 2022-2023 (Etelä-Pohjanmaan sairaanhoitopiiri Talousarvio 2021 ja Toiminta- ja taloussuunnitelma 2022-2023)
- EPSHP's budget 2022 and action and economic plans 2022 (Etelä-Pohjanmaan sairaanhoitopiiri Talousarvio 2022 ja Toiminta- ja taloussuunnitelma 2022)
- EPSHP quality and patient safety plan (Etelä-Pohjanmaan sairaanhoitopiiri Laatu- ja potilasturvallisuussuunnitelma)
- EPSHP customership report 2020 (Etelä-Pohjanmaan sairaanhoitopiirin kuntayhtymä Asiakkuuskertomus 2020)
- EPSHP annual report 2020 (Etelä-Pohjanmaan sairaanhoitopiirin vuosikertomus 2020)
- EPSHP staff report 2020 (Etelä-Pohjanmaan sairaanhoitopiirin Henkilöstökertomus 2020)
- EPSHP strategy 2013-2020 (Etelä-Pohjanmaan sairaanhoitopiirin strategia 2013-2020)
- EPSHP strategy 2021-2025 (Etelä-Pohjanmaan sairaanhoitopiirin strategia 2021-2025)
- Pathology department's action plans 2021-2023 (Toimintasuunnitelma 2021-2023 Patologian toimintayksikkö)
- Pathology department's annual report 2020 (Vuoden 2020 toimintakertomus patologian yksikkö)

Appendix 2. Background information questions for the interviews

Background information questions for managerial interviewees:

1. What is your current position in the pathology department? And what are your main areas of responsibility?
2. How long you have been working in your current position?
3. How is your area of responsibility connected to the laboratory processes?

Background information questions for non-managerial interviewees:

1. What is your current position in the pathology department?
2. How long you have been working in your current position?
3. What is your main area(s) of expertise?

Appendix 3. Interview questions.

First interview questions

1. Introduction question: What's currently happening in the pathology department? What are the biggest factors which affect daily operations?
2. What's the main purpose of the pathology department?
3. The pathology department is part of the EPSHP organization. What are the mission and vision of EPSHP?
4. The pathology department is part of the EPSHP organization. What are the core values of EPSHP?
5. How are the EPSHP's core values visible in the pathology department's daily activities?
6. What are the core products or services of the pathology department? Could you describe or explain why?
7. Who are the main customers of the pathology department? Can you describe or explain why?
8. Who are the most important stakeholders for the pathology department?
9. What are the main strategic objectives of the EPSHP?
10. What are the strategic objectives of the pathology department's action plan?
11. How are the department's action plan's strategic objectives actualization being measured? And in what timeframe?
12. Is the action plan's actualization or achievement of strategic objectives reported to the upper management level in the organization?

Second interview questions

1. Introduction question: What's currently happening in the pathology department? What are the biggest factors which affect daily operations?
-

Department's and organization's goals & strategy, department's core activities

2. What's the main purpose of the pathology department?
 3. Who are the main customers of the pathology department? Can you describe or explain why?
 4. What are the core products or services of the pathology department? Could you describe or explain why?
 5. Who are the most important stakeholders for the pathology department?
 6. What kind of values guide your daily operations? Can you share an example?
 7. The pathology department is part of the EPSHP organization. What are the main strategic objectives of the EPSHP?
 8. What are the strategic objectives of the pathology department's action plan?
-

Learning and growth perspective

9. How can the staff's well-being and expertise be seen in the pathology department's services or products?
 10. What kind of expertise is important currently? How about in the future?
 11. Could you describe how the staff's well-being and expertise should be measured?
-

Internal process

12. What are the most important operations for the pathology department?
 13. How should these processes be measured or evaluated?
 14. What kind of goals could be set for these operations?
-

Customer perspective

15. What are the most important indicators that should be monitored for our customers? Or what kind of results should be achieved if we want to satisfy our customers?
 16. What kind of goals could be set related to our customers?
-

Financial perspective

17. What's the role of the finance in the pathology department's actions?
18. What kind of financial factors have the biggest effect on the pathology department?
19. What are the financial goals of the pathology department?

Third interview questions

1. Introduction question: What's currently happening in the pathology department? What are the biggest factors which have an effect on daily operations?
-

Learning and growth perspective

2. How can the staff's well-being and expertise be seen in the pathology department's services or products?
 3. What kind of expertise is important currently? How about in the future?
 4. Could you describe how the staff's well-being and expertise should be measured?
-

Internal process

5. What are the most important operations for the pathology department?
 6. How should these processes be measured or evaluated?
 7. What kind of goals could be set for these operations?
-

Customer perspective

8. What are the most important indicators that should be monitored for our customers? Or what kind of results should be achieved if we want to satisfy our customers?
 9. What kind of goals could be set related to our customers?
-

Financial perspective

10. What's the role of finance in the pathology department's actions?
11. What kind of financial factors have the biggest effect on the pathology department?
12. What are the financial goals of the pathology department?