TURUN KAUPPAKORKEAKOULU
Turku School of Economics

ABSTRACT

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Supervisor(s)	Ph.D Esa Stenberg, M.Sc Elina Pelto		

Abstract

The purpose of this study was to create a purchasing performance measurement and reporting system for Company Alpha procurement organization. Alpha is the leading bakery company in Russia and consists of five bakeries Russia, four in Saint Petersburg and one in Moscow. Being acquired by a Finnish multinational, The Group, only slightly more than a decade ago, in many cases Alpha can be considered purely a Russian company with processes and information systems being on a totally different level than in other business units of The Group.

In Chapter 2 The Balanced Scorecard by Kaplan & Norton and The Performance Pyramid by Lynch & Cross were discussed, as well as the key areas of purchasing performance measurement. On these four areas – cost, quality, logistics and personnel – evaluation of purchasing activities can be based. The measurements should be directly linked to the organizations strategy, and provide information from different perspectives, as was emphasised in both performance measurement models by Kaplan & Norton and Lynch & Cross.

The research was done as an action research during a ten months period in Alpha's bakeries in Saint Petersburg and Moscow, in order to ensure adequate data accession, good relations and an open atmosphere among researchers and local employees. As a full-time worker in the research site the researcher had access to people and data and was able to collect empirical data by analysing company documents, observing and discussing with stakeholders. Furthermore six theme interviews were carried out with five members of the The Group procurement organization, as well as with a representative of a Russian subsidiary of another Finnish multinational in food industry.

Based on the synthesis in Chapter 2 and empirical data collected, the purchasing performance areas to be measured at Alpha were defined to be internal process efficiency and supplier performance. The system consists of eight key performance indicators calculated and reported on regular intervals. However, due to the restrictions posed by information systems in use, the KPIs are currently calculated based on manually collected data, and therefore in the future the importance of data collection has to be further emphasised in order to ensure the reliability of the results. Performance measurement should be extended to new categories. Given more time and consequently improved possibilities for data collection and performance measurement, Alpha can built a scorecard which can then truly add value in performance management.

Key words	Performance measurement, purchasing, reporting, key performance indicator
Further information	

TURUN KAUPPAKORKEAKOULU
Turku School of Economics

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Tiivistelmä

Tutkimuksen tarkoituksena on kehittää ostotoiminnan mittarit ja raportointijärjestelmä yritys Alfan hankintaorganisaatiolle. Alfa on Venäjän johtava leipomoyritys ja sillä on viisi leipomoa Venäjällä; neljä Pietarissa ja yksi Moskovassa. Emoyritys Konserni osti Alfan noin kymmenen vuotta sitten, ja usein Alfaa voidaan pitää vieläkin lähes täysin venäläisenä yrityksenä, jossa prosessit ja informaatiojärjestelmät ovat vielä paljon Konsernin muita yksiköitä kehittymättömämpiä.

Luvussa 2 käsitellään Kaplan & Nortonin tasapainotettua tuloskorttia sekä Lynch & Crossin suorituskykypyramidia, sekä kirjallisuudessa useimmin mainittuja ostotoiminnan mittaamisen ulottuvuuksia. Näiden neljän ulottuvuuden – kustannusten, laadun, logistiikan ja henkilöstön – pohjalta voidaan johtaa oston avainmittarit ja luoda niille raportointijärjestelmä. Kaplan & Nortonin ja Lynch & Crossin mallien perusteella on valittujen mittareiden kuitenkin oltava linjassa organisaation strategian kanssa sekä kuvattava toimintaa useasta eri näkökulmasta.

Tutkimus toteutettiin kymmenen kuukauden mittaisena toimintatutkimuksena Alfan tehtailla Venäjällä. Valitsemalla toimintatutkimus tutkimusstrategiaksi varmistettiin se, että tutkimuksen tekijä pystyi keräämän mahdollisimman paljon aineistoa sekä luomaan tarvittavat kontaktit paikalliseen henkilöstöön. Työskennellessään täysipäiväisesti caseyrityksessa tutkija keräsi empiiristä aineistoa analysoimalla yrityksen asiakirjoja, havainnoiden ja keskustellen työntekijöiden kanssa. Lisäksi tutkija haastatteli viittä Konsernin hankinnan ammattilaista sekä erään toisen elintarviketeollisuudessa toimivan suomalaisyrityksen venäläisen tytäryhtiön hankintajohtajaa.

Luvussa 2 luodun teoreettisen viitekehyksen ja kerätyn empiirisen aineiston perusteella määriteltiin Alfan ostotoiminnan mittaamisen ulottuvuuksiksi sisäisten prosessien tehokkuus ja toimittajien suorituksen arviointi. Näihin alueisiin kuuluviksi valittiin kahdeksan avainmittaria, joita mitataan ja raportoidaan säännöllisin väliajoin. Kuitenkin tietojärjestelmien kehittymättömyydestä johtuen mittarit lasketaan tällä hetkellä manuaalisesti kerätyn aineiston perusteella, ja siksi tulevaisuudessa onkin syytä korostaa tiedon tallentamisen merkitystä, jotta mittaamisen tuloksien luotettavuutta voitaisiin parantaa. Toiminnan mittaaminen pitäisi lisäksi laajentaa koskemaan useampia materiaali- ja palvelukategorioita. Tulevaisuudessa kun Alfalla on käytössään kehittyneempi tietojärjestelmä voidaan organisaatiolle rakentaa kehittyneempi oston tuloskortti, jolla on lisäarvoa ostotoiminnan johtamisessa.

Asiasanat	Toiminnan mittaaminen, ostot, raportointi, avainmittari
Muita tietoja	

TURUN KAUPPAKORKEAKOULU
Turku School of Economics

IMPROVING PURCHASING PERFORMANCE MEASUREMENT: AN ACTION RESEARCH IN A FINNISH MULTINATIONAL'S RUSSIAN BUSINESS UNIT

Master's thesis in international business

Author
Karita Tuominen 10256

Supervisors
Ph.D. Esa Stenberg
M.Sc Elina Pelto

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Turku

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TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 Why to measure purchasing performance? 1
1.2 Introduction of the case 3
1.3 Purpose of the research 5

2 PURCHASING PERFORMANCE MEASUREMENT AND REPORTING 6

2.1 Measuring performance 6
2.1.1 Performance measurement and strategy linkage based on two performance measurement models 6
2.1.2 Key Performance Indicators 11
2.1.3 Reporting the results of performance measurement 15
2.2 Measuring purchasing performance 19
2.2.1 The cost dimension 19
2.2.2 The quality dimension 23
2.2.3 The logistics dimension 24
2.2.4 The organizational dimension 26
2.2.5 Synthesis 26

3 EMPIRICAL RESEARCH DESIGN 29

3.1 Action research as a research approach 29
3.2 Data collection 31
3.3 Data analysis 34
3.4 Evaluation of the research 37

4 EMPIRICAL RESEARCH FINDINGS 40

4.1 The procurement strategy of Alpha 40
4.2 Current situation and the needs for performance measurement 42
4.2.1 The cost dimension 42
4.2.2 The quality dimension 47
4.2.3 The logistics dimension 51
4.2.4 The organizational dimension 53
4.2.5 Maximizing buying power - Operational efficiency 55
4.3 Purchasing performance measurement system suitable for Alpha 59
4.3.1 Dimension of the procurement strategy that can be measured at the operative level 59
4.3.2 KPIs possible to be implemented at Alpha 61

4.3.3 Summary of KPIs to be implemented at Alpha 70
4.3.4 Strategy linkage of the new performance measurement system 71
4.3.5 Performance measures for the future 72

5 CONCLUSIONS 76

5.1 Reporting needs vs current situation 76
5.2 Recommendations 79

REFERENCES 83

APPENDIX 1: INTERVIEW QUESTIONS 86

APPENDIX 2: SUPPLIER PERFORMANCE DATA COLLECTION PROCESS 88

APPENDIX 3: MONTHLY PURCHASING DASHBOARD 89

LIST OF FIGURES

Figure 1 Role of performance measurement in performance management 1

Figure 2 Balanced scorecard links performance measures (Kaplan & Norton 1992, 72). 7

Figure 3 Performance pyramid (Lynch and Cross 1991; Järvenpää et al. 2001)10

Figure 4 Defining critical success factors (Iloranta & Pajunen-Muhonen 2008)12

Figure 5 Requirements for a KPI (based on literature) 14

Figure 6 The difference between operative and strategic management (Lauslahti 2003) 17

Figure 7 Levels of internal reporting (Alhola&Lauslahti 2003) 18

Figure 8 The total profit-and-loss impact (based on Rudzki 2005, 68) 22

Figure 9 Purchasing performance measurement areas based on literature 27

Figure 10 The connection between theoretical framework and empirical data .. 36

Figure 11 How the procurement strategy is derived from the group strategy (from The Group's sourcing organization's strategy presentation) ... 41

Figure 12 Purchasing performance measurement areas as derived from the case company's procurement strategy 60

Figure 13 Strategy linkage of the chosen KPIs 72

Figure 14 Purchasing KPIs in Alpha, based on literature and empirical findings77

LIST OF TABLES

Table 1 Clarification of the concepts procurement, sourcing and purchasing .. 4

Table 2 Advantages and disadvantages of money based and non-money based measurements 14

Table 3 Control of efficient incoming flow of purchased materials and services (Based on Haapanen et al. 2005; Van Weele 2005). 25

Table 4 Cost related performance measurement Business Unit C 43

Table 5 Cost dimension interview results..... 46

Table 6 Quality dimension interview results 50

Table 7 Logistics dimension interview results 52

Table 8 Personnel dimension interview results 55

Table 9 Operational efficiency dimension interview results 58

Table 10 Share of reclamations, as a percentage of all deliveries 62

Table 11 Delivery accuracy 63

Table 12 Lost production due to stock-outs 65

Table 13 Unplanned / emergency purchases 66

Table 14 Obsolete material count 67

Table 15 Call-off items in supply chain 68

Table 16 Written orders %..... 69

Table 17 Written order confirmation % 70

Table 18 Purchasing KPIs of Alpha 71

Table 19 The future improvements to the KPI system 75

1 INTRODUCTION

1.1 Why to measure purchasing performance?

Few areas are as important to company performance than measurement, yet it often remains one of the weakest areas in management (Lynch & Cross 1991, 88). Right strategic and tactical measures enable management to drive and verify continous improvement, and therefore such measures should be identified, defined and installed. However, this seemingly simple requirement is one of the most difficult areas of modern management. In reality, most large organizations have too many measures in place but, paradoxically, too few measures that matter. (Bourne 2004, 518.) Yet for managers who have a proper performance measurement system in place in their organization, performance measures form a powerful management tool and can play a critical role in developing a firm's competitive advantage (Lynch&Cross 1991, 88-89).

A performance measurement system typically comprises systematic methods of setting business goals, and periodic feedback reports that monitor what has been done and achieved (Axelsson et al. 2005; Simons 2000; Wouters 2008). Measurement draws attention to the figures and more importantly, to the underlying causes of them (Axelsson et al. 2005, 190-191). In case problems are identified corrective actions can be taken. The figure below summarizes the role of performance measurement in performance management.

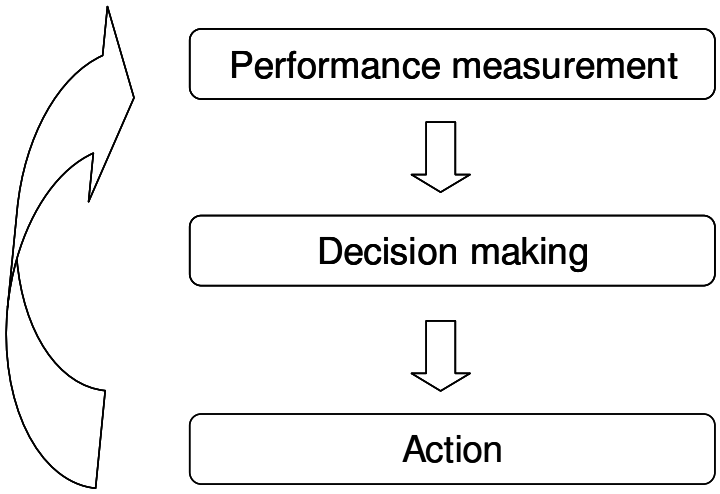

Figure 1 Role of performance measurement in performance management

As it can be seen from the picture, performance measurement has a significant role concerning decision making, as it provides the information of actual level of

performance compared to the target level. Problems areas can be identified, causes for them examined and action can be taken for further improvement.

Purchasing has a remarkable effect on the company profitability, as the largest part of the cost of goods sold appears to be taken up by purchased materials and services, and if other business costs which have an important purchasing component are added to the purchasing value, in other words the indirect purchases, the share of total costs is even more (Van Weele 2005, 16). Purchasing policies can therefore significantly improve sales margins through realizing substantial cost savings, as "a dollar saved in purchasing is a dollar added to the bottom line" (Rudzki 2005, 4). In other words increased purchasing efficiency it has direct effect on the company profit.

Purchasing performance measurement is a challenge (Axelsson et al. 2005, Iloranta & Pajunen-Muhonen 2008, Scharf 2006, Van Weele 2005). Purchasing managers contend with a lack or absence of standards in measurement, conflict between overlapping priorities, confusion between strategic goals and operational performance, and the challenge of coherently measuring a very wide range of goods and services (Scharf 2006, 2). Objective performance measurement is in many cases a difficult matter due to poor definitions and poor planning, and additionally, information systems may not support the data gathering and reporting structures required (Van Weele 2005, 264). This is however a problem that should not be overlooked given the impact on purchasing efficiency on the company profit. Melnyk & Calantone (2005, 314) even state rather strongly "no firm or a supply chain can succeed without having in place an effective and efficient metrics system".

There has to be a well-functioning procedure to report the measurement results as well (Axelsson et al. 2005, Van Weele 2005, Wouters 2008). Without a functioning control system it is impossible to manage operations and their development (Haapanen et al. 2005, 238). Reporting makes things visible. This provides constructive feedback to the personnel at the operational level as well as information to management about individual and group effectiveness. The absence of a management reporting structure often is a prime reason why managers do not understand what purchasing has contributed to the company's bottom line. (Van Weele 2005, 253.)

Measuring and evaluating purchasing performance is a one of major concern for many companies. The question of how to measure and evaluate purchasing performance is not easily answered. A major problem is that to date no single, practical approach that produces consistent results in different types of companies has been found. It is highly uncertain whether such a yardstick or method of universal application could be developed. (Van Weele 2005, 251.) The problem in purchasing performance measurement is the fact that there are many different variables involved, and therefore the first principle of evaluation is that it needs to be done on an individual company

basis. Comparisons are significant only to the extent that the type of industry and the size of the unit are comparable. (Heinritz et al. 1991, 401.)

1.2 Introduction of the case

The case in this study is the procurement organization of business unit Alpha. It is the leading bakery company in Russia and consists of five bakeries – four in Saint Petersburg and one in Moscow. Alpha is a Russian business unit of The Group, a multinational company which operates in 8 countries, in bakery, confectionary and restaurant business. Business unit Alpha is responsible for The Group's bakery operations in Russia. In addition to Alpha, The Group has three other business units; in this study they are referred to as business unit B, C and D.

Being acquired by The Group only slightly more than a decade ago, in many cases Alpha can be considered purely a Russian company with processes and information systems being on a totally different level than in other business units of The Group. Additionally, Alpha consists of five different production sites, which have been acquired one after another after the first acquisition during the past 10 years. At their time of acquisition, all of the sites were traditional Russian bakeries with strong Soviet history and organizational culture. Even though a lot has already been changed and modernized, the Soviet past can still be seen in facilities, systems and personnel.

The Group procurement organization has a matrix structure. The Group category managers work on their material categories across the business units and countries. Due to the special characteristics of the Russian business environment and the remarkable size of Alpha's Russian operations, Alpha has local category managers for each significant material category. These local category managers manage their categories together with the group level category manager. The category managers (both group and local managers together) are responsible for supplier selection and contracting of materials for all Alpha production sites. On the operative purchasing level the ordering of materials is concentrated on three different purchasing departments on three production sites, two in Saint Petersburg and one in Moscow. In addition to placing orders according to the contracts made by category managers, the operative purchasers manage some small material categories, which have not been regarded as such were category manager's work would be seen to add value. Local category managers and head of purchasing departments all report to the sourcing director of Alpha. Additionally the heads of purchasing also report to the directors of their production sites, as the sites are separate legal entities.

It is necessary to clarify the terminology and explain what is meant by procurement, sourcing and purchasing in the case company as well as consequently in this study, as

the use of the terms procurement, sourcing, and purchasing vary in literature. Greasley (2006) defines procurement as "acquisition of all the materials needed by an organization". He also states that procurement is a process which also includes activities such as selecting suppliers, approving orders and receiving suppliers – of which some authors (Rudzki 2005; Van Weele 2005) use the term sourcing. The term purchasing refers to the actual purchase of the raw materials. The three terms are often used almost interchangeably in literature, and what is really meant depends on how the author defines it. To avoid confusion, the terminology used in this study is illustrated in the table below.

Table 1 Clarification of the concepts procurement, sourcing and purchasing

Procurement	
Strategic level	Sourcing
Operational level	Purchasing

In this study the terms are used in a similar way as they are used in the case company. The sourcing personnel in the case company define the term sourcing as an on-going process to manage assortment, information, contracts and suppliers. Sourcing activities are for example maintaining and improving internal customer relationships, challenging and identifying business needs, managing compliance, managing supplier relationships and joint performance improvements, building and managing category strategies, analyzing and making outsourcing and off-shoring decisions. On the other hand, purchasing means the operative order-delivery process to ensure, manage and control the inbound material flow, warehousing and supplier performance. Thus the term purchasing refers to the operational level, and the term sourcing is used when referring to the strategic level. The concept of procurement covers both of them. The focus in this study is on the operative – purchasing – level.

Regardless of the business unit or country, The Group procurement organization has a common strategy. Based on this strategy, procurement scorecard has been built and strategic (sourcing) level key performance indicators have been defined, although not fully implemented. However, operative level purchasing performance measurement areas and their key performance indicators still remain undefined in most business units, event though according to the procurement personnel, the need for purchasing performance measurement exists.

Even though a lot of work on centralization already been done on the strategic level of direct material procurement in Alpha, from the purchasing performance management

point of view the setting is far from ideal. Firstly, in some cases procurement processes are not harmonized across sites, secondly, not all of the five production sites share a common information system, and thirdly, but perhaps more importantly, the depth at which the sites were integrated to Alpha after their acquisition varies. This leads to the processes of different sites either being out of control or even non-existing. Furthermore, resistance to change according to the requirements set from the headquarters is high.

1.3 Purpose of the research

As Alpha's processes and information systems are on a different level than in the other business units, it was decided that if purchasing performance should be measured at Alpha, the exact performance indicators should be developed specially for it in order to ensure their relevance and analyze their implementation possibilities. If a whole set of performance measures would be designed for the whole group, given Alpha's different development stage, most likely not many of them could actually be implemented and therefore would not add value in performance management.

Consequently, **the purpose of this study is to create a purchasing performance measurement and reporting system for Alpha.** The system is to be based on a set of defined key performance indicators, which can be used as a tool in measuring progress toward organizational goals. To accomplish this, the main purpose is divided into the following two sub-objectives:

- to define what are the purchasing key performance indicators relevant for Alpha
- to analyze which of the chosen key performance indicators can be already implemented and which of them are left for future development.

The report starts by discussing purchasing performance measurement from the theoretical point of view in Chapter 2. The most well-known models for performance measurement are taken a look at, as well as the basic areas of procurement performance. After that methodology of the research is explained in Chapter 3, followed by analysis of the collected empirical data in Chapter 4. Conclusions are presented in Chapter 5.

2 PURCHASING PERFORMANCE MEASUREMENT AND REPORTING

In this chapter a look is taken on what is discussed about purchasing performance measurement in literature. The chapter is divided into two parts. The first part discusses performance measurement in general, and after that the main dimensions of purchasing performance measurement are discussed. The essentials of both parts are summarized into a purchasing performance measurement model in the end of the chapter.

2.1 Measuring performance

2.1.1 Performance measurement and strategy linkage based on two performance measurement models

In order to understand what is meant by performance measurement system it is useful to take a look at few of the most well-known performance measurement models. The purpose is to understand the basic idea of a performance measurement system as well as to understand what issues are focused on when designing a performance measurement. In the beginning of the 1990's two performance measurement models were created which have later become the basic models in the performance measurement literature. They are the balanced scorecard by Kaplan & Norton and the performance pyramid by Lynch and Cross are discussed next.

2.1.1.1 The Balanced Scorecard

The Balanced Scorecard (BSC) is probably one of the most well known performance measurement models. It is often described not only as a performance measurement system but as a tool for strategy execution (Bourne 2004, Järvenpää et al 2001, Niven 2006 etc). A prerequisite for constructing a performance measurement system such as a balanced scorecard is that a company has a well-defined, clear strategy and goals. From the strategy can then be derived key success factors, which describe the cause-effect relationships and when being a subject to regular measurement, can ensure effective strategy execution (Järvenpää et al. 2001; Niven 2006). Thus a balanced scorecard is a carefully selected set of quantifiable measures which are derived from an organizations strategy. The measures selected to the scorecard represent a tool for leaders to use in communicating to employees and external stakeholders the outcomes and performance

drivers by which the organization will achieve its mission and strategic objectives. (Niven 2006, 13.) The concept is built on the premise that what is measured is what motivates organizational stakeholders to act (Bourne 2004, 523).

The balanced scorecard captures activities from throughout the organization. It gives top managers a fast but comprehensive view of the business, and balances the historical accuracy of financial numbers with the drivers of future performance (Niven 2006, 12.) It includes financial measures that tell the results of actions already taken, and it complements the financial performance indicators with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities. These operational measures that are stated to be the drivers of future financial performance by the designers of BSC (Kaplan & Norton 1992, 71.)

The balanced scorecard allows managers to look at the business from four important perspectives. This is illustrated in the figure below.

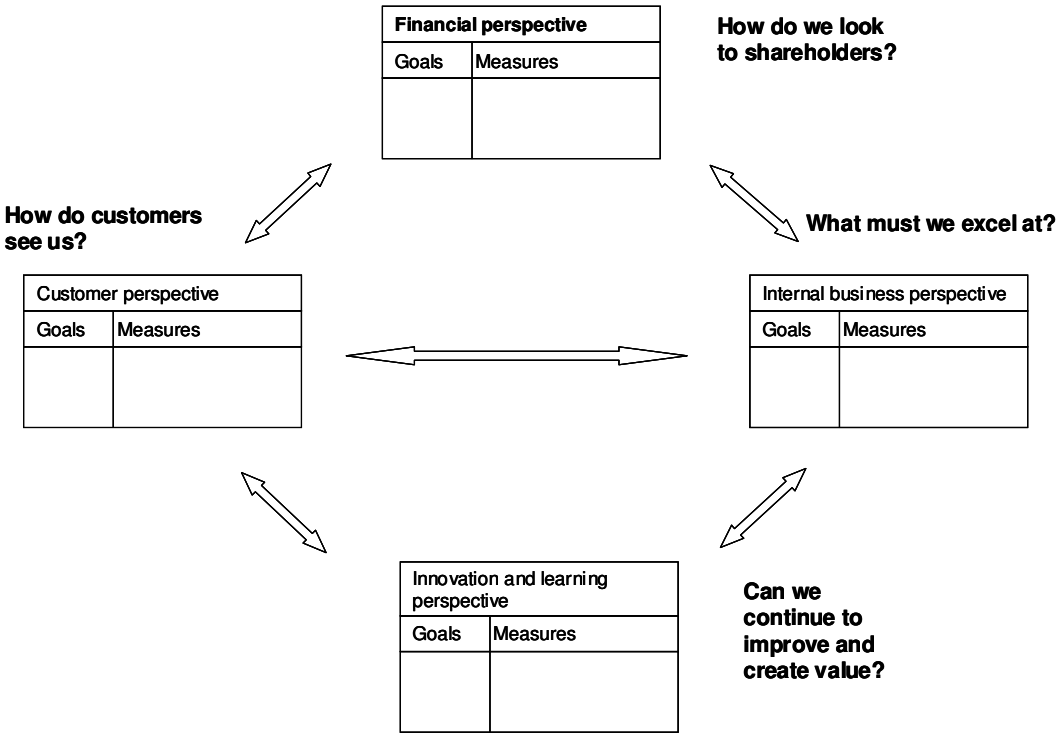

Figure 2 Balanced scorecard links performance measures (Kaplan & Norton 1992, 72).

From the above figure it can be seen that a balanced scorecard provides answers to four different questions. *Financial perspective* measures are targeted to the organization's shareholders. *Internal business perspective* measures measure performance of processes that the organization must excel at. Measures of *innovation and learning perspective* indicate whether the organization is still able to continue and

create value. By looking at the measures in *customer perspective,* managers can gain information on how the customers see the organization. While giving senior managers information from four different perspectives, the BSC also minimizes the information overload by limiting the number of measures used. It forces managers to focus on a handful of measures that are most critical. (Kaplan & Norton 1992, 73.) The different dimensions of the BSC are next discussed in more detail.

The financial dimension reflects the consequences of a strategy instead of the strategy itself (Järvenpää et al. 2001, 198). A company can focus all efforts on improving customer satisfaction, quality, on-time delivery, or any number of things, but without an indication of their effect on the organizations financial returns, they are of limited value. The measures of the financial perspective are a critical component of the BSC, especially for the for-profit world. (Niven 2006, 16.) The objectives and measures in this perspective indicate whether the strategy execution – which is detailed through objectives and measures chosen in the other perspectives, is leading to improved bottom-line results. Kaplan and Norton (1992, 78) state that a failure to convert improved operational performance, as measured in the scorecard, into improved financial performance should make executives to re-think their strategy or its implementation plans.

Those critical internal operations that enable them to satisfy customer needs need to be focused on. The task is to identify those internal processes and develop the best possible objectives and measures to track progress (Järvenpää et al. 2001; Kaplan & Norton 1992; Niven 2006). Bourne (2004) emphasizes that the key to linking strategy to action is not the balanced scorecard itself but the underlying process focus. Additionally, Niven (2006,15) states that to satisfy customer and shareholder expectations, a company may have to identify entirely new internal processes rather than focusing the efforts on incremental improvement of existing activities.

Company's ability to innovate, improve and learn ties directly to the company's value (Kaplan & Norton 1992, 76). The objectives and measures in the innovation and learning perspective are the enablers of the other three perspectives. In essence, they are the foundation upon which the BSC is built (Niven 2006, 16). Once a company identifies objectives, measures, and related initiatives in its customer and internal process perspectives, gaps between the current organizational infrastructure of employee skills (human capital), information systems (informational capital) and the environment required to maintain success (organizational capital), will be discovered. The objectives and measures that are designed in this perspective will help in closing that gap and in ensuring sustainable performance in the future. As with the two earlier mentioned perspectives, a mix of core outcome (lag measures) and performance drivers (lead measures) will represent the innovation and learning perspective. (Niven 2006, 16.)

Many companies nowadays have a corporate mission that focuses on the customer, and therefore, the company's performance from the customer point of view has become a priority for top management (Kaplan & Norton 1992, 73). When choosing measures for the customer perspective, companies must answer three critical questions: Who are target customers? What is our value proposition in serving them? What do our customers expect and demand from us? (Niven 2006, 14-15.) The BSC demands that managers translate their general mission statement on customer service into specific measures that reflect the factors that really matter to the customers. As customers' concerns usually fall into four categories – time, quality, performance and service, and cost – in order to put the BSC to work, companies should articulate goals for these and then translate them into specific measures. (Kaplan & Norton 1992, 73.)

Niven (2006) sees BSC a tool of three objectives – it is a communication tool, measurement system and strategic management system. In order to have measurements assisting in successful strategy execution, the company has to define which processes and things it has to excel at. It has to communicate to all audiences, internal and external, what they must do well in order to achieve the ultimate goals. This kind of a "strategy map" is a powerful communication tool, signaling to everyone within the enterprise what must occur should they hope to execute the strategy successfully. (Niven 2006, 18.) Niven (2006, 20) states that while strategy maps communicate the strategic destination, performance measures in the BSC monitor the course allowing it to remain on track. Balanced scorecard can also be considered a strategic management system: while the original intent of the scorecard system was to balance historical financial numbers with the drivers of future value of the firm, as more and more organizations experimented with the concept, they found it to be a critical tool in aligning short-term actions with strategy as well.

2.1.1.2 The Performance Pyramid

As well as the balanced scorecard, the Performance pyramid is also developed to be an operational level performance measurement system (Lynch & Cross 1991, 66). The system monitors performance form both the internal efficiency perspective as well as from the point of view of external influence. (Järvenpää et al. 2001, 194.) The performance pyramid represents the linkage in the new information network - a four-level pyramid of objectives and measures ensures an effective link between strategy and operations by translating strategic objectives from the top down (based on customer priorities) and measures from the bottom-up. (Lynch & Cross 1991, 66.) This is illustrated in the figure below.

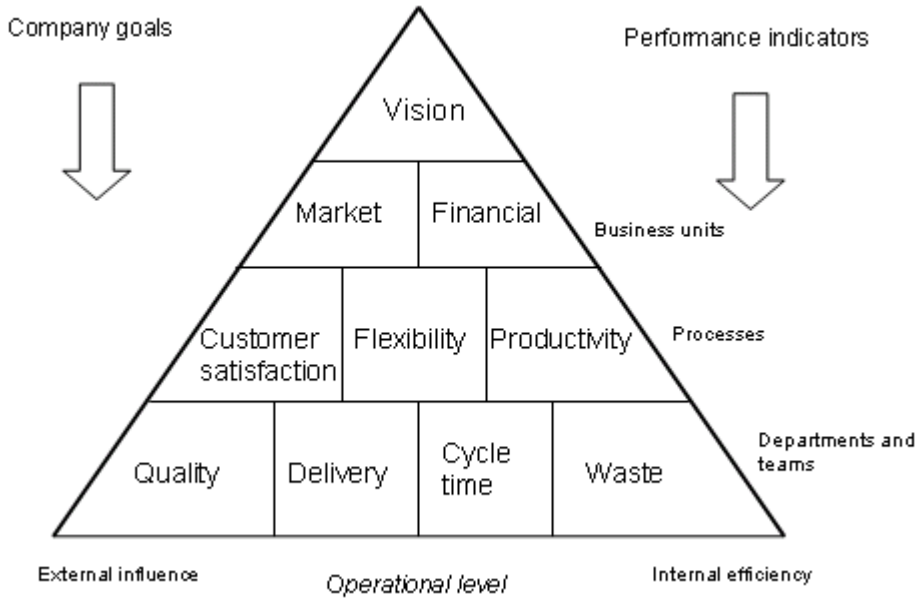

Figure 3 Performance pyramid (Lynch and Cross 1991; Järvenpää et al. 2001)

Vision is the basis for strategic goals of the company. These goals are then communicated to all levels in the organizations. For each parts of the organization different performance dimensions can be defined. At business unit level, performance is monitored from market and customer point of view and with financial measures. At process level, more tangible operating objectives and priorities can be defined. From external influence perspective, customer satisfaction and flexibility paid attention to, as well as productivity is considered from internal efficiency viewpoint. At the base of the pyramid, the department/team level performance can be divided to four dimensions: quality, delivery, cycle time and waste. Items of financial and non-financial information are integrated and filtered so that operating managers can use the information as a catalyst for process development. Key measures in terms of quality, delivery, and cycle time are viewed alongside cost performance. (Lynch & Cross 1991; Järvenpää et al. 2001.)

What is common to all levels of the pyramid is the performance monitoring from both the customer and financial perspective. However, more detailed performance dimensions and concrete performance indicators can vary significantly between different levels (Järvenpää et al 2001, 196). It is essential to communicate of goals from top-down and to collect performance indicator data bottom-up. The pyramid is a useful model to describe how objectives are communicated down to the troops and how measures can be rolled up at various levels in the organization. (Lynch & Cross 2001; Järvenpää et al. 1999.) However, a feedback system must be flexible in enough to capture the changing dynamics of the process it is modeling. At any given time, both the

priorities of the business unit and how the individual departments can best contribute must be understood. (Lynch&Cross 1991, 64.)

In order to build a performance pyramid, or framework for evaluating operations, managers must

- fully understand their organization's vision and strategic objectives
- foster learning in the organization by continually relating actions to strategic objectives
- give added emphasis to the *market-driven* side of the pyramid; interpret the driving force in the organization (customer satisfaction, flexibility, or productivity) in order to set priorities and action agendas for operations
- evaluate operations against four performance criteria quality, delivery, cycle time and waste
- simultaneously do more than identify critical success factors, but develop and implement a framework for a consistent set of measures that extends down to the departmental level. (Lynch & Cross 1991, 88-89.)

The two measurement models, the two models described above have do have common characteristics. **The most obvious similarity is the control of strategy execution by measuring performance with strategy-linked performance indicators from different perspectives, to get a thorough view on performance.** Strategy connection can be seen not only in the actual indicators being chosen to reflect strategy, but also in the fact that in the models it is assumed that the measurements used provide a basis for rather extensive strategic management. Especially combining the use of financial and non-financial measurements provides the audience with measurement results from different perspectives and time dimensions. Additionally, for both models the connections between different performance indicators, not only different perspectives but also different organizational levels are considered important. (Järvenpää et al 2001, 196-197.)

2.1.2 Key Performance Indicators

Both the BSC and the performance pyramid are performance measurement models that are based on strategy. The strategy execution is measured on a carefully designed set of performance indicators. The requirements for a key performance indicators are next discussed.

There are several definitions for a key performance indicator. According to Balanauskiene & Slizyte (2007, 13) , a key performance indicator, KPI, is a quantifiable measurement, agreed beforehand, that reflects the critical success factors of the

company. According to Scharf (2006), KPIs are derivations that accurately reflect a prediction of the future state or an assessment of the current state.

KPIs help the company define and measure progress toward company goals within the identified strategy. Defining the appropriate KPIs for a corporate strategy can be as important as defining the strategy itself. Almost anything can be given a status of a KPI as long as it reflects company goals. (Bose 2006, 50.) The challenge is to design a structure to the metrics and extracting an overall sense of performance from them (Melnyk & Calantone 2005, 314). KPIs will differ depending on the organization. However, even though key performance indicators can be almost freely designed to the company with its targets in question, authors have given several requirements that a KPI has to fulfill before it can be useful in performance measurement. These requirements can be grouped into three main categories: firstly, to requirements concerning strategy/goal linkage; secondly, to the requirements on the metric and/or data; and thirdly, to the requirements on the process the KPI is supposed to measure.

Firstly, performance measures should be directly linked to an organization's strategy or goals (e.g. Axelsson et al. 2005, Iloranta& Pajunen-Muhonen 2008). For example Iloranta & Pajunen-Muhonen (2008) point out that procurement performance indicators should be based on the organization's procurement strategy, which in turn is derived from the corporate strategy. This is illustrated in the figure below.

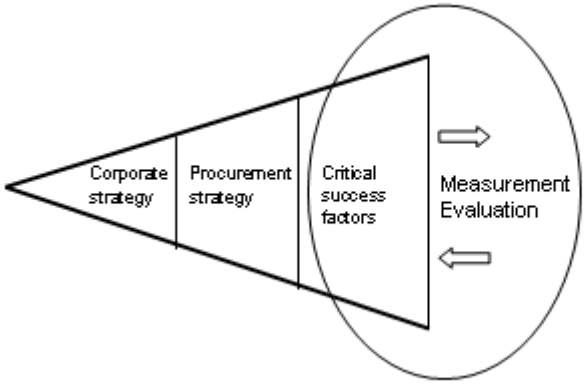

Figure 4 Defining critical success factors (Iloranta & Pajunen-Muhonen 2008)

Building a procurement performance evaluation system is a part of a bigger picture, as seen in the above figure. Measurement and evaluation are derived from the critical success factors, which in turn reflect the procurement strategy, which is formulated based on the corporate strategy (Iloranta & Pajunen-Muhonen 2008, 446). In addition to strategy linkage, the performance indicator should be *valid*, so that it measures the activities and events that are relevant (Axelsson et al. 2005, 192). It is crucial that the data available is informative and reflects the issues it is supposed to. (Haapanen et al.

2005, 238). Measures should also be *actionable* - they should be understandable and help in pointing out further directions of action (Axelsson et al. 2005, Järvenpää et al. 2001). Good performance measures promote goal congruence with the organisation's objectives and facilitate comparisons across different subunits (Bakanauskiene&Slizyte 2007; Bhimani et al. 2008).

Secondly, there are requirements on how the metric itself should be, or what kind of data it should present. The metric should be *robust* – sufficiently stable to accommodate irregularities in order to enable comparisons over time – and *precise,* which means detailed enough to give the "right" precision and be suitable as a basis for decisions. Its *scale should be reasonable* to enable managers to distinguish "better than", "worse than" etc. (Axelsson et al. 2005, 192.) The measure should also be *economical*, so that the costs of utilizing and capturing data are lower than the possible benefits from it (Axelsson et al. 2005, Järvenpää et al 2001). There is a risk that too many indicators are chosen, and/or the calculation of them becomes too resource consuming and therefore the workload caused by using the indicators increases the benefits gained from using them. Performance measures should be simple and not cause extra work. (Desai, 2004; Van Weele 2005; Wouters 2008.) Axelsson et al (2005, 192) emphasize the importance of *compatibility*. A KPI should indeed allow for target setting (Järvenpää et al. 2001, 188). The measures should be comparable and exchangeable with other information within the organization. Measures should foster an environment of continuous improvement. Thus, they should allow for benchmarking to competitor's performance or realistic goals. (Lynch&Cross 1991, 126.)

The third group of requirements is connected to the processes that a KPI measures. Performance is preferably measured where two functions touch so that internal customers should be recognized. When organizing the measurement, teamwork should be encouraged across functional silos and divisional barriers. (Lynch & Cross 1991, 126.) A KPI should be *integrated* so that it captures the most important components for the process at hand (Axelsson et al. 2005, 192), and the results of measurement should be reviewed simultaneously to get a wider picture of performance (Lynch&Cross 1991, 126). Furthermore, a measure should be *behaviorally sound*; it should not stimulate counterproductive activities and efforts to circumvent the intended orientation of the activities (Axelsson et al. 2005; Neilimo & Uusi-Rauva 2005).

The requirements for a KPI discussed above are illustrated in the picture below.

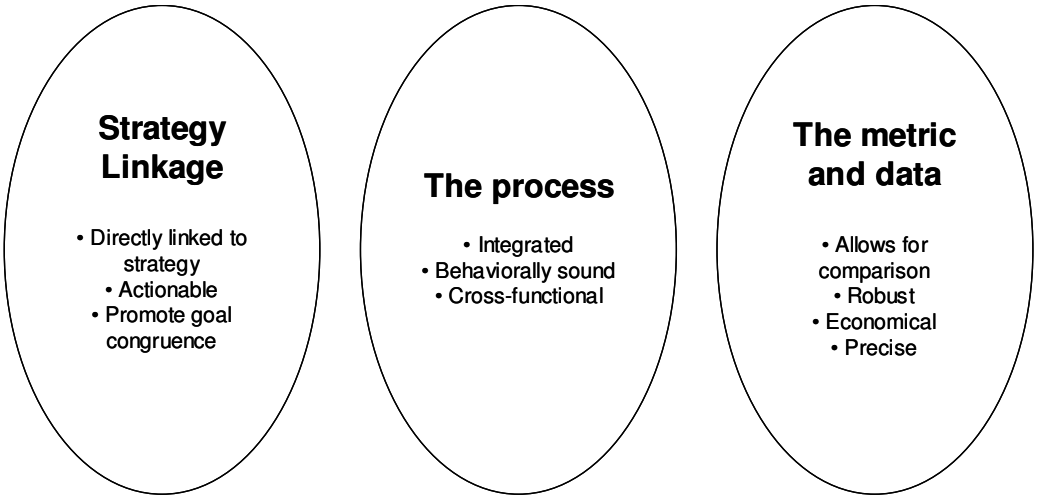

Figure 5 Requirements for a KPI (based on literature)

The requirements for a KPI are illustrated in three different categories above. There are requirements firstly concerning strategy linkage, secondly the process itself which is subject to measurement, and thirdly for the metric and data itself.

Furthermore, it is also discussed in the literature which measurements are more important, or more valuable to the management, money-based or non-money based measurements. The arguments used for and against both kind of measurements are monthly connected with data availability, the performance indicators usefulness in revealing problems, and with the reliability of the results (e.g. Horngren et al. 2002, Järvenpää et al 2001, Lynch & Cross 1992). These findings are summarized in the table 2 below.

Table 2 Advantages and disadvantages of money based and non-money based measurements

Measure	Advantage	Disadvantage
Money-based	• Data exists due to its usage for accounting purposes • Historical data exists for comparison	• Data on a very generic level • Problems noticed too late
Non-money based	• Problems revealed on-time • Causes of problems can be identified	• Data often non-existent • Risk of data manipulation is high • Results may be difficult to interpret

Both money-based and non-money based measurements have their advantages and disadvantages. From the data availability perspective the money-based measurement are practical in a way that the raw data for calculations already exists because it is registered in any case for accounting purposes. Also depending on the information system in use, usually some data for non-money based measurements is available as it is automatically collected for operative purposes as well. However, usually the data for money based measurements can be considered more accessible than for non-money based. (Järvenpää et al. 2001, 187.)

When considering the possibility to identify problems, their causes and possible solutions, non-financial measures are more effective than financial ones. Financial measures are best viewed as attention directors, not problem solvers, and problems are often noticed first via the non-financial measures and its impact on its financial performance indicator appears later (Horngren et al. 2002, 555). Weak figures in employee innovativeness or vendor delivery accuracy give the signal in a much more earlier phase than when they would be seen in the financial figures. When some measures are translated into financial data, it is often already too late to take action, and furthermore, the information is on a too aggregated level to be useful to line managers at operative level. In order to solve the problem, the fastest way to motivate corrective action is through non-financial measures. (Lynch & Cross 1991, 118.) On the other hand, the information provided by non-financial indicators is sometimes controversial and therefore difficult to interpret (Järvenpää et al. 2001, 188).

Money-based measurements are often considered more objective. The objectiveness of an indicator is considered more difficult to ensure in non-money based measurements. This is of course increased if measures are indirect and/or require estimations to be made. When implementing non-money based measurements, reliability of the results can be weakened if the possible effects on employee behavior were not taken into consideration in the planning phase. (Järvenpää et al. 2001, 188.)

Thus both types of measures have advantages and disadvantages. In all authors works (Horngren et al 2002, Järvenpää et al 2001, Lynch & Cross 1992) it was emphasized that both types are useful. It can be said that both financial and non-financial measures can be key inputs depending on the question, and exclusive reliance on either is nearly always simplistic (Horngren et al 2002, 555).

2.1.3 Reporting the results of performance measurement

Information is essential to all well managed businesses: Information plays a vital role in business enterprises both as its lifeblood and as its motivating force (Glautier & Underdown 1988). The amount and quality of information available to managers of any

organization is a good barometer of organizational health. Managers of organizations that have too little information do not have means to effectively communicate goals and are forced to make decisions by intuition, whereas managers of organizations that are capable of processing relevant information quickly can plan for future and communicate direction and capitalize more effectively on emerging problems and opportunities. (Simons 2000, 57.) Effective planning requires information for establishing targets, and effective control requires feedback information that allows management to take action to evaluate performance and to analyze and correct variance from plans (Glautier & Underdown 1988). Therefore, reporting as a way of sharing information, is crucial also in performance measurement. Kaplan and Norton (2008, 64) state that despite of best efforts and intentions, the development of balanced scorecard alone does not guarantee its use in guiding day-to-day decision-making. Frequent reporting of results, however, can bring the scorecard to the organizational forefront drawing the attention of all employees (Niven 2006, 261).

Even though income statements and balance sheets are often considered the most important pieces of reporting, much more is meant by the concept. The purpose of reporting is to give a wider picture of the financial situation and performance of a company. Reporting should give an explanatory picture, derived from analysis of the history, the present and future. As one of the primary purposes of performance measurement and control is to allow fact-based management (Simons 2000, 57). Reporting should help in reacting early enough, in predicting future events and trends and provide the management with conclusions for what should or could be done in the future. (Alhola & Lauslahti 2005, 173.)

Fraser (1991) divides reporting into operational and management reporting. Operational reports are usually vital to effective day-to-day control of the function and therefore receive the highest priority, and have to be produced as frequently as the operator is supposed to do his or her job. Managerial reports, on the other hand, have a less immediate impact than operational reports and the time span for instituting corrective action is longer and thus reports are produced less frequently. The normal frequency for management reports is one month, basically because accounting systems work around a monthly program. This is satisfactory in most businesses, while some need weekly management reports and others are satisfied with quarterly reports. (Fraser 1991, 189.)

Glautier and Underdown (1998, 359), on the other hand, divide reports to two types - control and informational reports, and routine and special reports. Control reports are related to the control of operations and aim at indicating the possible need for corrective actions, whereas informational reports are related to policy making and planning, and are intended to present and interpret facts for management. The secondary classification distinguishes both control and informational reports to two further categories; routine

reports and special reports. Routine reports are prepared at regular intervals and in a standardized form, whereas special reports are initiated either by the financial director or chief accountant or at the request of board of directors. Therefore most control reports will be routine reports and may be submitted to all management levels, whereas most information reports will be special reports and mostly directed to the top management level. (Glautier & Underdown 1988, 359.)

Alhola and Lauslahti (2005, 177) divide reporting into quarterly/strategic reporting and operational (monthly) reporting. The differences and linkage between strategic and operative reporting are illustrated in the figure below.

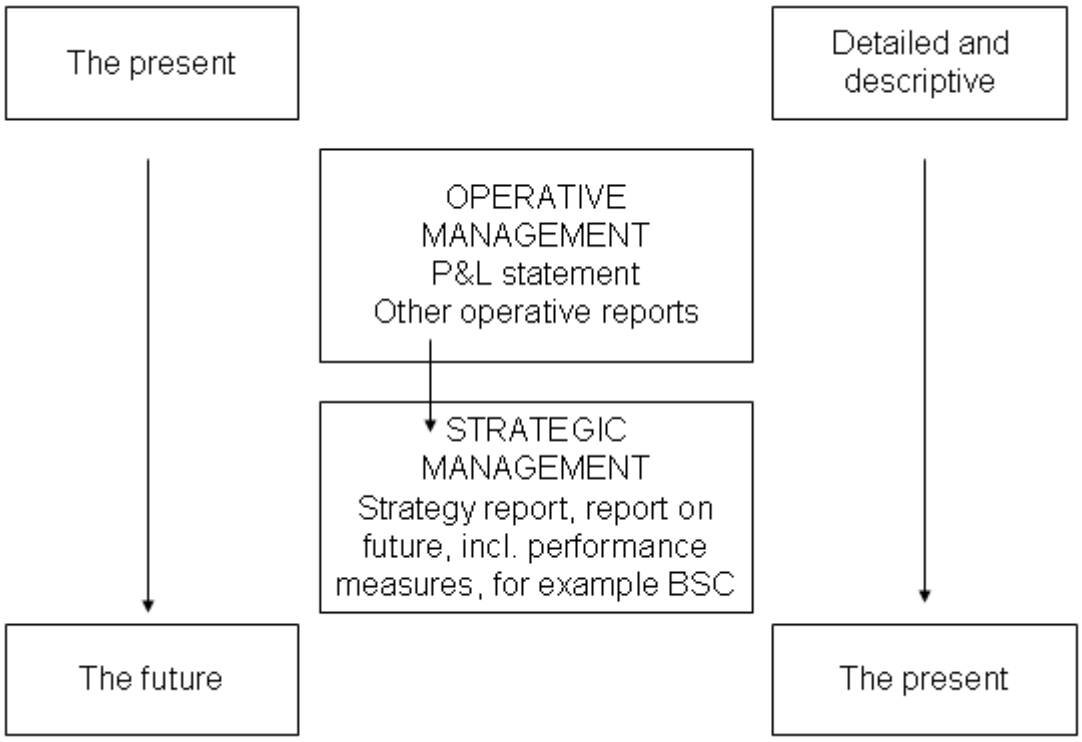

Figure 6 The difference between operative and strategic management (Lauslahti 2003)

Strategic reporting concentrates on the expected future performance whereas monthly reporting tells mostly about the present situation and helps in management in the short run. The issues of strategic reporting appear as more practical measurements in the monthly reports. (Alhola & Lauslahti 2005, 173-174.) Strategic reporting it is crucial to compare and analyze strategic plan's targets, actual figures and forecasts. On the other hand, monthly reporting is not only important to the top management but also to individual workers and external interest groups. (Alhola & Lauslahti 2005, 177-178).

Even though different authors divide different kind of company reports slightly in a different way, common to all authors mentioned here is that the content of reporting differs between different levels in an organization. This is seen in the figure below.

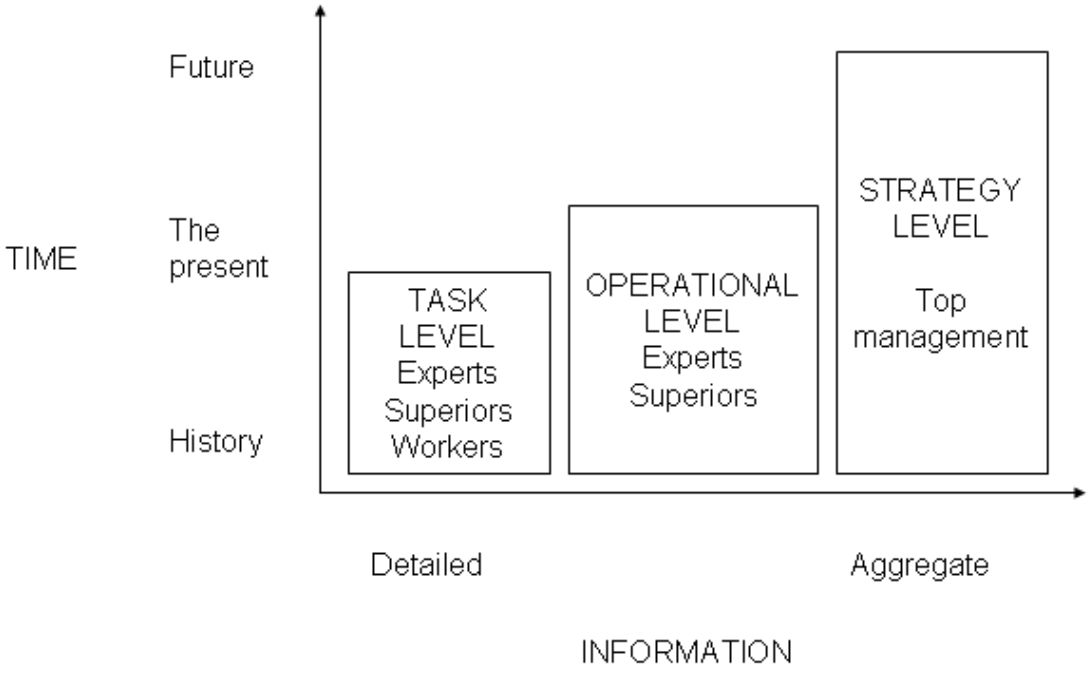

Figure 7 Levels of internal reporting (Alhola&Lauslahti 2003)

How detailed the information is varies between different levels. At the top management level the information is concluding and emphasis is on the future; on the supervisor/expert level the information is more detailed and provides analysis of the present and expectations concerning the future. (Alhola & Lauslahti 2005, 175.) The contents of reports to lower, middle and top managers vary. Information becomes less detailed as it moves up the hierarchy, but correspondingly, the need for commentary increases. At the board of directors level reports will have a limited factual content and the emphasis will be on review analysis. (Glautier & Underdown 1988, 358.)

The design of a management reporting system should ensure that different management levels receive information in a suitable for and appropriate for their responsibility level (Glautier & Underdown 1988, 355). Managers should be able to look at the interrelationships between various types of data and also attempt to establish relationships between means and ends. (Van Weele 2005, 264). Just like measurement also reporting should be economical (not too costly and time consuming). An established format of reports ensures that they are easily prepared and that their content corresponds to the expectations of those who receive them. Managers should receive reports soon after the data is processed, since if reports are not timely, feedback may be too late to act upon, and the business may be vulnerable to losses and/or poor management decisions based on faulty information. (Simons 2000, 287.)

One of the most difficult problems facing companies today is how to present and communicate complex performance measurement information. Performance

measurement system is never truly implemented until the graphs that communicate the performance are displayed around the business being measured. When this happens, the performance measurement system is no longer solely a management tool, but becomes a system that belongs to everybody and within the organization and everybody in the organization can now see what is and what is not being achieved. (Bourne 2004, 575.)

2.2 Measuring purchasing performance

In order to decide what should be measured, it is necessary first to define purchasing performance. Purchasing performance is considered to be the result of two elements; purchasing effectiveness and purchasing efficiency (Van Weele 2005, Heinritz et al. 1991). Purchasing effectiveness refers to the relationship between actual and planned performance and is defined as the extent to which a previously established goal or standard is being met (Van Weele 2005, 254-255). Purchasing efficiency on the other hand, is related to the resources that are required to realize the previously agreed goals and their related actions. Essentially it refers to planned and actual costs. (Van Weele 2005, 254-255.) Purchasing performance can thus be considered as the extent to which the purchasing function is able to realize its predetermined goals at the sacrifice of a minimum of the company's resources. (Van Weele 2005, 255.)

The purchasing process is divided often into four measurement areas: the dimensions of cost, quality, logistics and personnel (e.g. Axelsson et al. 2005; Greasley 2006; Van Weele 2005). The four areas are discussed below.

2.2.1 The cost dimension

Cost is a major purchasing variable. The end result of purchasing is product cost, and the measurement of purchasing performance can logically be based on costs (Van Weele 2005, 255). There is the cost of operation and cost of materials to be considered before performance can be truly evaluated (Heinritz et al. 1991, 399). Cost of operation -metrics provide indications of the operational efficiency that purchasing processes and systems (and those of interrelated departments) have. To the category of cost of operation, Rudzki (2005) includes measures such as average cost (and time) to process a purchase order and the average cost (and time) to process invoices for payment, percentage of total payments processed via electronic tools and percentage of purchase spend processed through e-procurement systems. Also measures such as purchase costs per purchaser, and purchases per purchaser, purchase costs as percentage of sales, and purchase costs as percentage of purchases can be considered measures of operational

efficiency of the purchasing department (Haapanen et al. 2005, 239). However, cost of operations is likely much more difficult to measure than cost of materials. As stated earlier, a measure should be economical, so that the costs of utilizing and capturing data are lower than the possible benefits from it (Axelsson et al. 2005, 192), and therefore cost of materials is likely to be concentrated on when measuring performance.

Lynch & Cross (1991, 105) emphasize that if yardsticks are to help companies focus on doing the right things, they must also help them to do well. For example satisfying the customer is of course a prerequisite for long-term success, but for-profit organizations need to be concerned about profit maximization – and profit maximization does not equal to cost reduction. However, productivity measures still often dominate company scorecards. While there is nothing wrong with these measures, there are serious problems in the way they get translated to everyday operations. For example, global productivity measures are systemic in nature, yet local productivity measures, such as spend variances, performance to budget, and purchase price variance, are reported in a vacuum. (Lynch & Cross 1991, 105-106.) Lynch & Cross also state that productivity is all about managing time effectively and eliminating waste. Emphasis on waste reduction and faster cycle times at the local department level improves productivity in the business operating system, which in turn improves cash flow, return on investment and profitability. (Lynch &C ross 1991, 105.)

Time is an important factor affecting the cost of operation. Time, as a component of flexibility, is being touted as the next competitive advantage by consultants and researchers. Vigorous global competition, product profileration, and advanced technologies have led to shorter product lifecycles. Many companies in both manufacturing and service industries are piloting projects to reduce iterations, simplify workflows, eliminate unnecessary steps and movement, eliminate bottlenecks, and reduce delays all in the name of a reduced cycle time. (Lynch & Cross 1991, 106.)

Unproductive activity can be thought of as the non-value-added resources, or waste, incurred in meeting the requirements of the customer. Waste includes all the costs associated with failures, appraisals and surpluses. (Lynch & Cross 1991, 109). “Pure waste” consists of those activities and expenses that are totally unnecessary (for example rework) and “hidden waste” comprises operations without value added (such as kitting, incoming inspection, and warranty repair, that are necessary because of poor operating conditions). Often waste is taken into account in standard cost. There is often a controversial relationship to waste – it causes costs, but so does managing it. For example, excess inventory, appraisal, and failure costs are clearly wasteful activities, as are the costs of processing waste, such as the preparation of scrap reports. Yet these activities create jobs: accountants count the inventory and prepare reports; incoming inspectors test the material; and the repair department fixes the failures. Elimination of waste also means eliminating these jobs. Specific examples of waste found in various

organizations would include: scrap, rework, work-in-progress, vendor defects, internal failures, accidents, absenteeism, incoming inspection, purges, warranty costs, tests etc). It is sometimes difficult to distinguish what is waste and what is worthwhile. For example prevention costs, such as vision machines at the front of the process vendor engineering for ship-to-stock, preventive maintenance on equipment, are examples of value-added spending but often are the first candidates for elimination when costs need to be cut. (Lynch & Cross 1991, 109-110.)

When discussing costs, Van Weele (2005) refers to the relationship between standard and actual prices paid for materials and services. A distinction has to be made between cost control and cost reduction. Cost control means the continuous monitoring and evaluation of prices and price increases as they are announced by suppliers. Examples of parameters and measures to be used are ROI measures, materials budgets, price inflation reports, variance reports etc. The main objective here is to monitor purchasing prices in order to control them getting out of hand. Cost reduction on the other hand means continuous monitoring and evaluation of activities initiated to reduce costs in a structured way associated with purchased materials and services. Cost reduction may be the result of search of new suppliers or substitute materials, value analysis and/or coordination purchasing requirements among business units. (Van Weele 2005, 255.)

It is often emphasized in cost performance measurement literature that cost alone is not very informative. Costs have to be compared to a meaningful benchmark before it tells the managers about real performance. For example, Heinritz et al. (2005) state that in evaluating cost performance, it should be considered against the variable standard of changing market levels or against adjustable standard costs as established in cost-accounting procedures. When cost performance reports are produced by the purchasing department to management, cost of materials can be approached through for instance issues such as inventory ratios, material costs related to current market levels, savings effected through good purchasing practice, adherence to material budgets the like, all tending to demonstrate specific accomplishments of the actual purchasing function. Rudzki (2005) is of the same opinion: measurement against outside sources is an important way of measuring performance. One of the single biggest issues is competitiveness on prices paid. Sometimes it is difficult to find reliable numbers to compare performance against. However, it can be reliably benchmarked at least against the prior year figures and budget (Rudzki 2005;Van Weele 2005).

Cost reduction is definitely the most important performance indicator from management viewpoint as they are the ones that really make a difference to the bottom line (Heinritz et al. 1991, 405). Only cost reduction counts toward improving year-over-year company performance. The overall cost reduction needs to be compared to a meaningful benchmark, such as the prior year, the current year budget, or a baseline

year. (Rudski 2005, 68.) Cost reduction could for example be reported as percentage of budgeted purchases (Haapanen et al. 2005, 239).

Even though cost reduction may be preferred from management viewpoint as they are the ones that really make a difference to the bottom line, cost avoidance take an increased importance in inflationary markets. Cost avoidance is less visible than cost reduction, and means savings that are generated as a result of delaying price increase or avoiding it. Firms that track avoidance compare it to a general market inflation rate to see how successful their program is. (Heinritz et al. 1991, 405.) It has to be remembered though that in some cases it is difficult to find reliable market information, and therefore cost avoidance gets more complicated to measure.

Even though outside factors may be difficult to include in savings calculations, they should still not be forgotten. Rudski (2005, 68) states that one of the common mistakes in measuring and reporting purchasing "cost savings" is to measure and report only the results from the projects/initiatives that purchasing leads. The reason behind this is the view that purchasing should only report what it controls, for example certain savings projects. However, according to Rudzki (2005, 68) the key to having a credible measurement of cost reductions in purchasing spend is to realize that three factors must be taken into account and reported, in order to get the total profit-and-loss impact of a savings project. These are illustrated in the figure below.

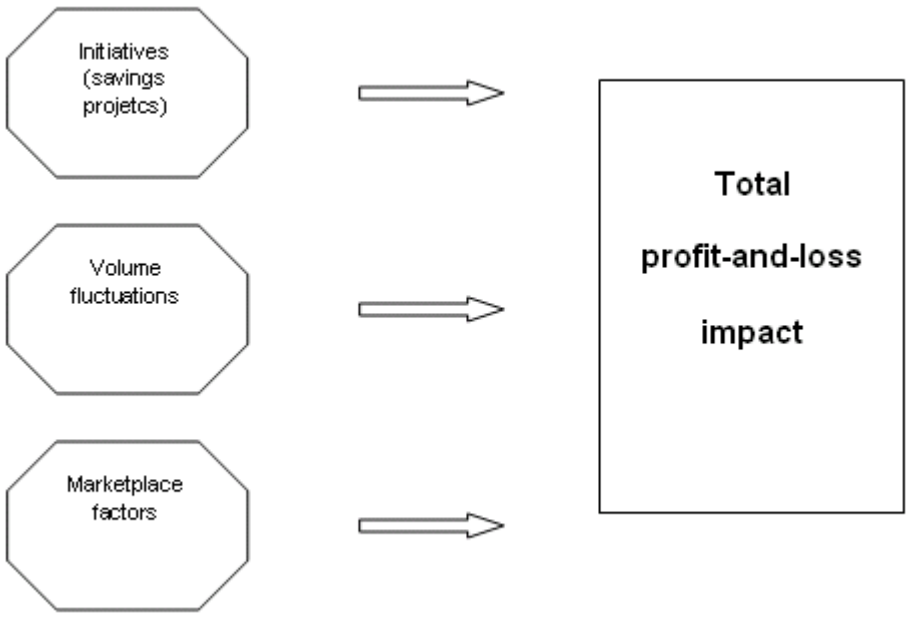

Figure 8 The total profit-and-loss impact (based on Rudzki 2005, 68)

As can be seen in the figure, when measuring cost performance, it is not enough to only look at actions taken to reduce costs. Also volume fluctuations and marketplace

factors need to be considered before arriving at the total effect on cost. All the three factors need to be included the analysis. (Rudski 2005, 68.)

2.2.2 The quality dimension

Poor quality goods can have a significant disruptive effect on performance of the operations function. Resources may have to be deployed checking for quality before raw materials can be used, poor-quality raw materials that get into the production may be processed with expense before faults are detected, and poor-quality goods that get reach the customer will lead to returns and loss of goodwill. (Greasley 2006, 353.) It can be said that as the procurement function is responsible for selecting the suppliers and for providing the raw materials for production, it is can also be considered responsible for ensuring the stable quality level of incoming raw materials (Iloranta & Pajunen-Muhonen 2008, 422).

Purchasing can contribute to the overall product quality through its work on supplier base and by improving supplier performance (e.g. Axelsson et al. 2008; Haapanen et al. 2005; Iloranta & Pajunen-Muhonen 2008; Prajogo et al. 2008; Van Weele 2005). Therefore, measuring supplier performance gives an insight to the quality level of raw materials that procurement is able to provide to its internal stakeholders. In quality control supplier performance is of crucial importance. The role of suppliers in achieving superior product quality has been recognized in the supply chain arena, with suppliers becoming an integral part of many organizational processes. Suppliers are relevant as they perform activities and incur costs when creating and delivering the purchased inputs used in a firm's end products. The costs, performance features, and quality of these inputs influence in a firm's costs and product differentiation capabilities. Helping suppliers reduce the cost or improve their quality and performance of the supplied materials can only enhance a firm's competitiveness. (Prajago et al 2008, 621.)

Proper data and analysis of past supplier performance is essential information for supplier selection. If a supplier performance measurement system is in place and systematic vendor rating done on regular intervals, suppliers can be assessed already prior to the decision to purchase materials and consequently a supplier that is known to be able to provide a stable quality level of raw materials can be selected. (Prajago et al 2008, 621.) Operational level parameters indicating to what extent the company is able to secure a flawless incoming material flow from suppliers can include for example reject rates on incoming goods, line reject rates, number of reject reports handled etc. (Van Weele 2005, 257). However, Cousins et al. (2008) find in their study that monitoring supplier performance is not of itself sufficient, rather, it is the process of socializing the buyer and supplier that is critical to success. By socialization they refer

to the process of how employees, suppliers and managers interact with each other – these can be regularly sent "report cards", regular formal briefings of informal meetings (Cousins et al. 2008, 240). They argue that the socialization process is likely to play an intervening or mediating role between supplier performance measures and performance outcomes. This can help explain why some firms are more successful at managing supply relationships, and consequently product quality, than others.

Purchasing has also a role in new product development (e.g. Axelsson et al. 2008; Haapanen et al. 2005; Iloranta & Pajunen-Muhonen 2008). After product specifications have been released by engineering, it is the job of purchasing to ensure that goods ordered are delivered according to the company's specifications (Axelsson et al. 2008; Haapanen et al. 2005; Van Weele 2005). According to the study of Prajogo et al (2008), supplier management shows strong association not only with both product quality but also with product innovation. Establishing a long-term partnership, reducing supplier base and imposing stringent criteria for a supplier rating system will ensure that firms acquire materials that conform to their quality specifications. The role of suppliers enhancing product innovation performance could follow from firms involving the suppliers early in the product development process. The deeper the supplier relationship, the more the supplier can be utilized in new product development as well (Prajogo et al 2008, 621.)

2.2.3 The logistics dimension

A third purchasing performance measurement area is logistics. Purchasing has to ensure an efficient incoming flow of purchased materials and services. According to Van Weele (2005) this can be divided into three performance areas; control of the timely and accurate handling of materials requisitions; control of timely delivery by suppliers; and control of quantities delivered (determination and control of cost effective inventory level). These are illustrated in the table below.

Performance area	Aim	Example KPIs
Control of efficient incoming flow of purchased materials and services	Timely and accurate handling of materials requisitions	Average purchasing administrative lead time
		Number of orders issued
		Order backlog
	Control of timely delivery by suppliers	Materials shortages
		Over/underdeliveries
		Number of JIT-deliveries
	Control of quantities delivered	Inventory turnover ratio
		Production delays due to lack of materials
		Average order size
		Losses due to obsolescence

Table 3 Control of efficient incoming flow of purchased materials and services (Based on Haapanen et al. 2005; Van Weele 2005).

As seen above, measures which indicate handling of requisitions are for example average purchasing administrative lead time, number of orders issued, order backlog (Haapanen et al. 2005; Van Weele 2005). On the other hand, control of timely deliveries can be measured by keeping a track on materials shortages, over/under-deliveries, number of JIT-deliveries, and so on. (Haapanen et al. 2005; Van Weele 2005). All these indicate the control of incoming material flow. Thirdly, the control of quantities delivered may be measured by measuring inventory turnover ratio, average order size, losses due to obsolescence, production delays due to lack of materials, just to mention some of the potential metrics. (Haapanen et al. 2005; Van Weele 2005.)

Inventory ratios and turnover are widely and understandably accepted as an indication of the efficiency of the purchasing policy and program (Axelsson et al. 2005; Greasley 2006; Heinritz et al. 1991; Van Weele 2005). Furthermore, apart from the cost of inventory, the use of excessive inventory can lead to other issues such as the disruption of work flow and hiding problems related to product quality and equipment breakdown (Greasley 2006, 273). Standards will vary according to conditions. In case of proper purchasing quantities, for purchasing policy may call for the accumulation of greater material reserves and greater advance coverage in times of advancing prices, which would result in less favorable turnover. In using such a yardstick, therefore, the condition at any given time could be seriously misleading, but the average of a month-to-month record period of a year would give a reasonably fair measure of accomplishment. (Heinritz et al. 1991, 402-405.)

2.2.4 The organizational dimension

The organizational dimension of purchasing performance includes the major resources that are used to achieve the goals and objectives of the purchasing function. Perhaps one of the most typical ways of personnel measurement are employee attitude surveys. An employee attitude survey is an opportunity for an organization to obtain the views of its people and an opportunity for workers to give feedback to management. It is also an opportunity for an organization to demonstrate its commitment to its employees. (Bourne 2004, 214.)

If a company is willing to develop its personnel, the scale of certain development activities can be measured. Depending on the exact goals of an organization, measures such as average amount of money spent on training per purchase employee or average number of hours spent on training per purchase employee could be used as indicators performance (Haapanen et al. 2005; Van Weele). Van Weele (2005) stresses the importance of purchasing information systems. The quality of information systems in use is a major contributor to the efficiency of purchasing personnel. Therefore, if a company aims to increase the efficiency and possibly also satisfaction of its purchasers, the efforts made to improve the information systems required to support purchasing staff in their daily activities, should be measured. It is also necessary to provide management information on purchasing activities and performance. (Van Weele 2005, 258.)

2.2.5 Synthesis

The key areas of purchasing performance measurement found in literature – cost, quality, logistics and personnel – were discussed above. They are illustrated with example performance indicators in the figure below.

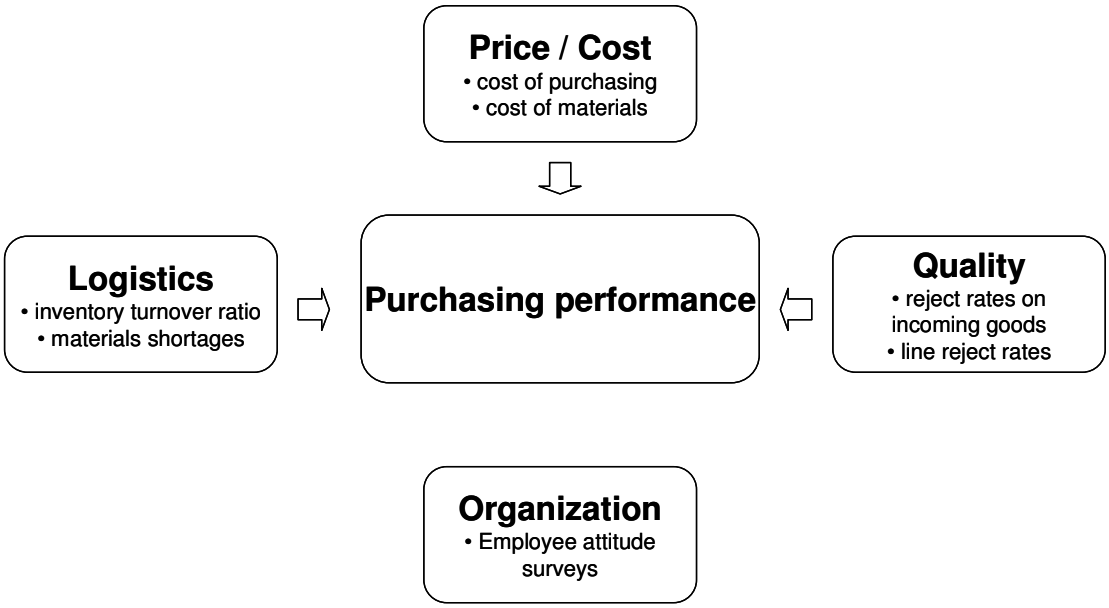

Figure 9 Purchasing performance measurement areas based on literature

In the above figure it can be seen that for price/ cost dimension example measures can be cost of purchasing and cost of materials. For quality dimension reject rates on incoming goods and line reject rates could be monitored. In logistics dimension inventory turnover ratio is a typical measure, as well as material shortages. Lastly, employee attitude surveys are often done in order to get information about employee satisfaction.

On these four areas purchasing performance measurement and evaluation of purchasing activities can be based, although the importance of each area can be evaluated in each company based on what is in focus. The measurement areas need to be derived from the strategy of the organization, as done in the balanced scorecard and performance pyramid models discussed in Chapter 2.1.

A comprehensive performance measurement system includes measures from all the key areas. (Kaplan&Norton 1992, Van Weele 2005) Interrelationships exist between all the key areas; the right material, quantity, time, source and price. They interact with one another, so that each decision of what is right in a given case depends upon what is right in respect to some or all the other factors (Heinritz et al. 1991; Van Weele 2005). For example, if purchasing pushes too hard for lower prices, eventually this will have an effect on material quality. The reverse may also be true: the requirement of zero-defects quality level may ultimately result in too high materials prices. (Van Weele 2005, 258.)

On the contrary, it has to be remembered that the importance of measuring performance by using all the above-mentioned details varies between companies. Company management has to agree on the implementation of such performance

indicators that fit to their company and its products. (Haapanen et al. 2005, 240.) Therefore the company-specific needs for measurement in the case company will be analyzed in Chapter 4, and the figure above will be modified, based on the findings on the case organization.

3 EMPIRICAL RESEARCH DESIGN

3.1 Action research as a research approach

The purpose of this study is to create a purchasing performance measurement and reporting system for the case organization. To accomplish this, the main purpose is divided into two parts: firstly, to the definition what are the purchasing key performance indicators relevant for Alpha, and secondly, to analyzing which of the chosen key performance indicators can be already implemented and which of them are left for future development.

The nature of the research objective makes it rather obvious why the research was conducted as a qualitative[1] and deductive[2] research, and as a case study[3]. As discussed in Chapter 2, the performance measurement system design and implementation has to be done on an individual company basis. A measurement system of one company could be applicable only in a very similar type of a company with similar operations. No generalizations can be made, and therefore it is easier to carry out a qualitative study and gain a deeper understanding of this one particular target than try to make a wider research and make not reliable or not invalid conclusions based of a large set of incomparable data.

According to Eriksson & Kovalainen (2008, 194), if the research question is related to understanding the process of change, development or improvement of some actual problem, then, in order to learn from it, action research is the appropriate application (Eriksson & Kovalainen 2008, 194-200). Therefore the research was done as an action research during a ten months period, in the case company's production sites in Saint Petersburg and Moscow. Action research can be classified in general as a collaborative approach to research that provides persons, organizations and businesses with the appropriate solutions or means to resolve specific problems autonomously. There are twofold aims in action research: first, to the improvement of and finding solutions to some problems; second, of the involvement of researchers in that activity. Furthermore,

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[1] Qualitative research can be characterized any type of research that produces findings not arrived at by statistical procedures or other means of quantification (Corbin & Strauss 1990, 11). Compared to quantitative methods, qualitative research takes a more holistic approach to the research object and studies a phenomenon it its context. (e.g. Corbin & Strauss 1990; Marschan-Piekkari – Welch 2004; Marshall & Rossmann 2006.)

[2] Deductive approach works from the general to more detailed; an example of this is deriving hypotheses from a theory. It is opposite to inductive approach, which involves discovering patterns or themes in one's data and making generalizations based on observations (e.g. Quinn Patton, 2002, 453).

[3] A case study is a preferred strategy when the investigator has a little control over events and when a phenomenon is difficult to investigate outside its real-life context (Yin 1994, 1). It optimizes the understanding of a particular situation or problem rather than generalization (Ghauri 2004, 109).

the information produced in the process should be useful to a group of people, organization or community in question. (Eriksson & Kovalainen 2008, 194-200.) Additionally, action research focuses on specific programs at a specific point in time, and typically there is no intention to generalize beyond the specific research settings (Quinn Patton 2002, 221).

The researcher could have defined a set of purchasing KPIs by only making managerial interviews, but defining which measures can be implemented in the case company only by interviews and document analysis would have been really difficult, even if not impossible. This is due to the fact that the availability of the data needed for performance metrics depends on the level of the company's information systems, and the willingness to share information in general. The data needed is hidden somewhere in people's separate excel files, notebooks, or even only in their minds without any documentation. When considering the possible ways how to tackle this data accession problem, it was agreed that the best results would be achieved if the researcher would take part in the organizations everyday work. Making a survey from Finland among Russian companies on how they measure operative purchasing would have, unfortunately, been difficult to carry out with the current resources, and additionally would not have given the needed results.

Action research aims to increase the ability of the involved community or organization members to control their own work more effectively and to keep improving their capacity to do so. Furthermore, according to Greenwood and Levin (1998, 6), action research is the only way to generate and test new knowledge. According to Quinn Patton (2002) action research becomes a part of the change process by engaging the people in the organization in studying their own problems in order to solve them. What comes to organizational learning as mentioned by Eriksson & Kovalainen (2008) and Greenwood & Levin (1998), as the aim is to maintain the implemented performance measurement system after the researcher leaves the organization, it is of high importance that the local organization members understand how performance measurement is involved and connected to their work and are willing to keep on maintaining the possibilities for performance measurement.

Thus action research strongly involves active participation and improvement of social situations and problems. The researcher initiates the project, and then expert knowledge of the theories and research field in question, and local knowledge of the members meet beneficially. Researcher and members of the organization start pooling knowledge. (e.g. Eriksson & Kovalainen 2008; Greenwood & Levin 1998.) Indeed, by having the researcher as one of the workers in the company, the researcher's view on the very operative level of the purchasing department was ensured and the possibilities to access data were remarkably increased, as well as the possibility to use the experience and expertise of the purchasers in problem-solving. Greenwood and Levin

(1998) state that action research democratizes the relationship between the researcher and the local interested parties – in this study to ensure adequate data accession, good relations and an open atmosphere among researchers and local employees was an absolute prerequisite.

3.2 Data collection

In an action research, in addition to the researchers there are several stakeholders involved in their everyday work, and therefore as a result, the distinction between research and action becomes quite blurred and the research methods tend to be less systematic, more informal, and quite specific to the problem, people and organization for which the research is undertaken (Quinn Patton 2002, 221). The 10 month long period of action research offered good opportunities to collect different types of empirical data.

The answer to the first research subobjective, what kind of performance measures would be needed in the case company, was found by making interviews. Interviews expressively put the *whats* and *hows* to work; the interview is a commonly recognized occasion for formally and systematically provoking the respondent to formulate and talk about experience and opinions (Holstein & Gubrium 2004, 151). A common reason for the use of interviews in business research is that they are an efficient and practical way of collecting information that you cannot find in a published form (Hesse-Biber & Leavy 2006; Eriksson & Kovalainen 2008). Marschan-Piekkari & Welsch state that interview based research may be optimal when there is a small population of possible respondents, and researchers must focus on the depth of collected data when the breadth is simply not attainable.

For this research data collection by interviews was relevant to get a deeper picture of what kind of performance measures reflect the strategy and goals of this particular organization. A wider research such as a survey among procurement professionals in different industries would most likely not have given results that are actually needed in the company in question. Therefore the following six persons were interviewed for the study:

- The Sourcing Director, The Group
- The Sourcing Development Manager, The Group
- The Sourcing Director, Business Unit B
- The Sourcing Development Manager, Business Unit C
- The Sourcing Director, Alpha
- The Purchasing Director, Company M

Five of the interviewees were representatives of The Group's procurement organization. The reason why they were "insiders" (not to Alpha but to The Group) is the company-specific nature of performance measurement. As The Group has a common procurement strategy, under which the procurment organization of Alpha also operates, performance measures that are in line with group strategy are also relevant for Alpha. Four of these five group member interviews were aimed at finding out what kind of operative purchasing measures would be beneficial for the organization.

Furthermore, two interviews were made in benchmarking sense. In order to be able to benchmark, it is required that the benchmark company has a functioning purchasing performance measurement system in place. It was stated in the introduction that purchasing performance measurement is by far not always seen as a top priority in companies, and that it often is poorly planned, not systematic or in worst cases does not exist at all. Therefore it was of crucial importance to find a company with actual experience of purchasing performance measurement, and a person who has strong experience on this field. Luckily, in one of the group's business units, Business Unit C, purchasing performance has been successfully measured already for years. The sourcing development manager of Business Unit C was interviewed in a benchmarking sense, to find out what kind of measures they consider relevant to use. The sixth interview was also made in having benchmarking in mind – the sourcing director of a Russian subsidiary of another Finnish multinational in food industry was interviewed about how they are measuring their purchasing performance in Russia. As the prerequisites for performance measurement are clearly on a different level in Russia than in Finland, it was considered useful for the research to find out how another company is able to measure performance in its Russian business unit.

The interviews ware carried out as a theme interview, with a prepared outline of topics, issues, or themes, but still leaving room for changing the wording and order of questions. Although responses were expected to be, in large part, open-ended, the interviewer could use the interview guide to direct the conversation so that it stays on course. (cf. Eriksson & Kovalainen 2008; Marschan-Piekkari & Welsch 2004.) This way of conducting an interview turned out to be good also in a sense that due to the open and informal atmosphere the interviewee is likely to feel free to point out things that he sees important, even if the researcher has not come up with the question herself. This was beneficial as purchasing performance measurement as the topic is really specific, and the interviewees naturally had much more expertise on the topic than the researcher herself.

Before the interviews the researcher got familiar with the company documents, mainly concerning the group strategy as well as the procurement strategy, because as it was stressed in Chapter 2, the performance indicators need to be derived from the organization's strategy in order to truly reflect the organization's goals. Therefore the

questions were designed combining the information found in the literature (discussed in Chapter 2) and in the company strategy documents. The questions were designed to be open, primary questions but allowing for secondary questions when needed, and of direct type, as "usually a direct question produces more talk than an indirect one" (Eriksson & Kovalainen 2008, 84-85). The topic of this research can be considered not sensitive so that these issues could be directly asked from the interviewee without the fear of destroying the atmosphere. The interview was tape recorded in order to allow the interviewer to fully participate in the interview instead of trying to write down as much as possible.

The second one of the research subobjectives, which performance measures can be implemented immediately and which are left to be implemented for future, were mostly solved by the researcher's experiences when working in the research site, discussions and observations. The researcher started the research by working full-time in the Moscow bakery. She was arranged a working place in the purchasing department so that she could be in the middle of the research setting. Therefore she was able to be every day in contact with the key people for her in the organization, and got to see how the purchasing process works in practise. After few months she moved to work in the St. Petersburg headquarters' purchasing department in order to understand the process also there. The other sites were visited several times. The researcher was also given access to the information systems in use and got an access to almost all purchasing's reports in the system. Therefore she could investigate the possibilities and limitations for reporting from the technical point of view. Additionally the researcher was invited to sourcing management team's regular monthly meetings in order to be aware of what is going on in the organization, as well as report the status of the research, get feedback, and share ideas. The findings from literature as well as from interviews were used as a basis for discussions also with the personnel in the research site as well as for how the collected data was organized.

Not only the purchasing personnel were involved in the study. Firstly, among the first people with whom the researcher discussed were the finance director of Alpha and his three subordinates. Purchasing performance measurement and its problems were also discussed with them, and their opinions collected. Finance department is closely linked with purchasing and that is why it was considered of highest importance to build connections and reach a common understanding with them. Secondly, when trying to find out the current process of material quality inspection, also representatives of production and technologist of all production sites were involved. The process was described and compared to the one which is in use in Business Unit B (explained to the researcher by a purchaser from Business Unit B). Thirdly, members of the IT team were consulted in order to find out what kind of possibilities exist for modifying the existing reports or creating new ones.

After each discussion, even small ones, the researcher made notes about what was mentioned, and depending on the focus of the material, stored them in the corresponding "purchasing performance measurement area file" to ease the analysis. For an action research it is typically possible that the researcher collects huge amount of data which is then later difficult to manage (e.g. Miles & Huberman 1994; Quinn Patton 2002). The researcher may lose sight of how much and which sort of data was collected from different sources and informants. As the data was collected by different methods – interviewing, observing and taking part in the organizations everyday work – the regular discussions with the case company procurement team helped the researcher to understand what kind of data is still needed to avoid the reseacher being overloaded with data.

3.3 Data analysis

Ghauri (2004, 117) is strongly against the fact that many researchers first collect all the empirical data and start the analysis only after all the data is collected. The data should be analysed continuously while collecting it. Sometimes the data can be analysed months or years after the data collection, which will weaken both the analysis and the data collection processes. Also McKinnan (1988, 46) agrees on this by stating that data analysis in a field research is an ongoing process: unlike experimental or survey research, where typically the stages of hypothesis formulation, data collection and data analysis are relatively distinct and sequential, in field research these stages tend to occur continuously and interactively throughout the study.

This allows theory to develop alongside the growing volume of data, allowing the research problem to be formulated or even reformulated at the same time. It will reveal the blind spots and deficiencies of data collected and researcher can improve his or her data collection techniques in the subsequent cases. (Ghauri 2004, 117.) In this study it was intended to continuously analyze the data while collecting it. New points or ideas were always added to the existing data, and if it brought something new, possibilities for measurement and its necessity for the organization was discussed with the stakeholders among everyday work, and then the new idea was either added to the list of findings, or deleted as being tested but afterwards being considered impossible to measure or not relevant for the moment. Sometimes it was realised that more data was needed on a certain topic, but as the researcher was (at least treated as) part of the organization, it was not a problem to request more data again.

Even though agreeing that data collection and analysis are simultaneous processes, McKinnan (1988, 46) states that a behavioral consequence of this is that the factual data and the researcher's interpretation of that data may become mixed, leading to the former

being contaminated by the latter and highlighting the potential for the researcher's own expectations to affect the analysis. While steps of data collection and analysis are necessarily interrelated in field research, it is critical for the validity and reliability of the results that the two steps are clearly separated in the researchers mind. (McKinnan 1988, 46.) Overlapping of data collection and analysis improves both the data collected and the quality of the analysis as long as the fieldworker takes care not to allow these initial interpretations to overly confine analytical possibilities (Quinn Patton 2002, 437). Miles and Huberman (1994) see interim reports as a good way for ensuring continuous data analysis – interim summary exercises force the researcher to digest the materials in hand, to formulate a clearer sense of the case, and to self-critique the adequacy of the data that have been collected. This process leads to next-step data collection, planning, and usually reformulation of codes and further analysis plans (Miles&Huberman 1994, 80).

In the case of this study no written interim reports were made, but the topic and results of analysis were discussed in monthly Alpha sourcing team meetings. The topic raised a lot of discussion and ideas, comments and critique was received from case company procurement team members, who all represent different positions in the procurement organization and have different background and experience. The monthly "brainstorming" helped the researcher to further continue analysis and collect new data.

Getting organized for analysis starts with an inventory of the data, and it is necessary to have some initial framework for organizing and managing the large amount of data collected during fieldwork. Quinn Patton (2002) introduces several options for organizing and reporting qualitative data. There are three approaches; storytelling (situation described in chronological order or as flashback starting from the end), case study approaches (analyzing individuals, critical incidents, or various settings) and analytical framework approaches, in which the data is organized to describe important processes, issues, questions or sensitizing concepts. These are not mutually exclusive or exhaustive ways of organizing and reporting qualitative data, and different parts of the report may use different reporting approaches. (Quinn Patton 2002, 439.) Also according to Ghauri (2004), data analysis can consist of different stages. In order to be able to understand how things are developing and why things occur the way they do, the researcher has to understand the phenomenon itself. The best way to gain this understanding is to start a story-telling of the situation in a chronological order, and consequently a map can be constructed different elements and variables located. This helps to relate the information to our question or frameworks. Finally a theory or model can be built, which means showing how the variables are connected together and influence each other. It is important to search for common or conflicting themes in data related to research questions. (Ghauri 2004, 118-119.)

Consequently interview data analysis was started by making a transcript of the interviews, printing them, and carefully reading through them. This is a beneficial way to get a picture what the data in hand includes (Hesse-Biber&Leavy 2006, 345), so that further analysis can be planned. Doing all of one's own interview transcriptions (instead of having them done by a transcriber) provides an opportunity to get immersed in the data, an experience that usually generates emergent insights (Quinn Patton 2002, 441). According to Taylor-Powell & Renner (2003, 2), it might be useful to write down the key questions to which the answers are wanted and arrange the data under these questions/topics. This should be done beforehand; firstly decided which part is wanted from the interview and then having this in mind, analyzing the transcript of the interview (Taylor-Powell & Renner 2003, 2). Following a pattern like this, the data analysis was done in a similar kind of way; by dividing the data into different areas and then arranging it to correspond with the theory part and not in a chronological order as in the transcript. Similarities and differences between the theoretical background and interview data where looked at.

After analyzing the interview data and finding out what kind of performance measures would be considered useful to management, the possibilities to implement these measures were analyzed using field notes and documentary data. The connection of theoretical framework, collected data and analysis of the results and conclusions is illustrated in the figure below.

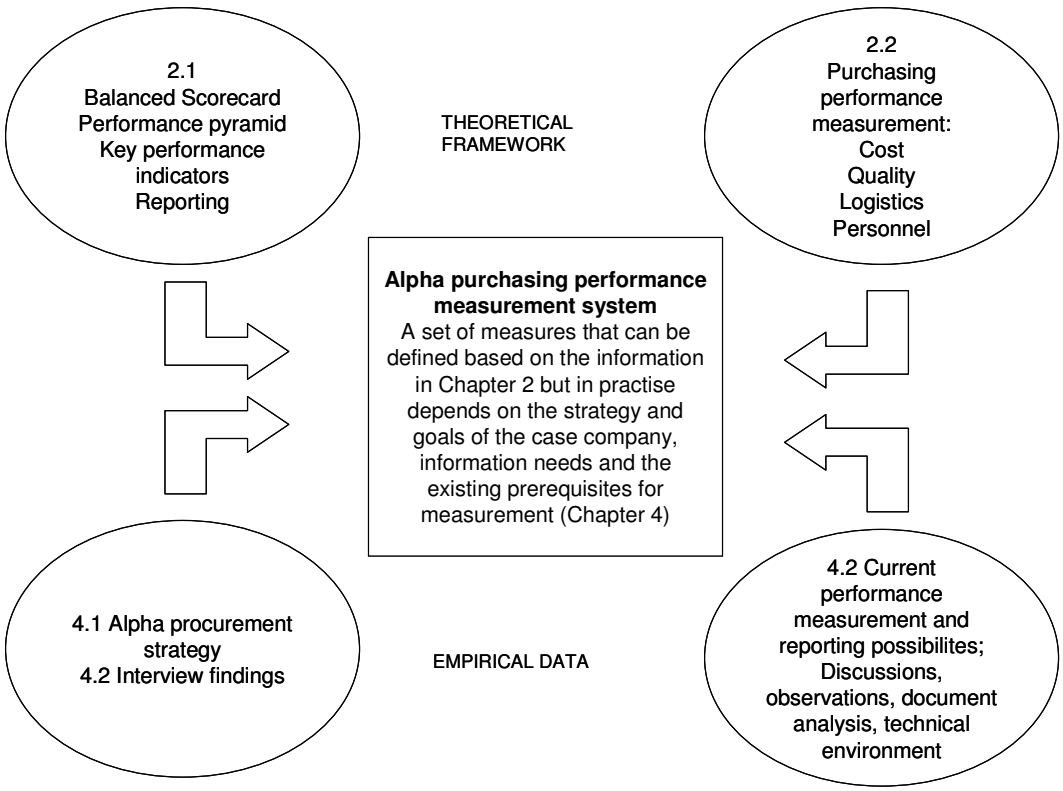

Figure 10 The connection between theoretical framework and empirical data

As it can be seen in the above picture, how the performance measurement system turned out to be was affected by firstly the performance measurement models and typical purchasing performance measurement areas, as well as the procurement strategy and expectations on the system (interviews), and secondly keeping in mind the current possibilities for measurement and reporting. The data was organized to fit the same framework that was created in the theory part and in the interview data analysis, by which it was possible to find the current measurement possibilities and needs in the case company, and define what possible future improvements can be made.

3.4 Evaluation of the research

McKinnon (1988) analyses the validity and reliability threats encountered in field research, presents of strategies and tactics how to minimize those threats. Defined broadly, *validity* is concerned with the question of whether the researcher is studying the phenomenon she or he purports to be studying. Validity is impaired if the design and/or conduct of the research are such that the researcher is unintentionally studying either more than or less than the claimed phenomenon. Defined in equally general terms, *reliability* is concerned with the question of whether the researcher is obtaining data on which she or he can rely. Reliability may be impaired if the data are not independent of the "accidental circumstances" under which they were gathered. (McKinnon 1988, 35-36.)

From different sources of literature McKinnon (1988) has formed a list of four main types of threats to reliability and validity**:**

- observer-caused effects;
- observer bias;
- data access limitations;
- complexities and limitations of the human mind.

By the observer-caused effects McKinnon refers to a situation where the researcher's presence in the setting will cause the participants to change their behavior and conversations and consequently the researcher is not observing the natural setting but one which is disturbed by the researcher's presence. With observer bias, it is what the observers see and hear (or think they see and hear) that is of concern, and the nature of it is such that it is a question of management rather than elimination. (McKinnon 1988, 37-38.) The third threat to validity and reliability is the access to data (the researcher is on the field only for a limited time; the time period may accidentally consist of abnormal behavior of the site, or the research hosts may impose restrictions on mobility and access to certain documents, events or people). (McKinnon 1988, 37-38.) The fourth threat according to McKinnon is the complexities and limitations of the human

mind. The subject may consciously seek to mislead or deceive the researcher, or the subjects may be trying to be honest and accurate in their dealings with the researcher, but their statements and reports are affected by natural human tendencies and fallibilities.

McKinnon (1988, 40-41) states that the above-mentioned risks can be reduced by spending substantial length of time in the field. Spending more time in the research setting serves to lessen the potential for observer bias, and can also effectively overcome the problem of observer-caused effects. Threats to validity and reliability imposed by data access limitations are also decreased as the length of the time spent in the field increases. These benefits of course depend on the researchers social behavior in the field. (McKinnon 1988, 40-41.) In this study the researcher worked full-time for several months at the production sites of Saint Petersburg and Moscow, so she can be said to have spend a long enough period of time in the field to gain access to data, people, events etc.

The the risks mentioned above can be reduced also by paying attention to the researcher's social behaviour in the field. The researcher was a totally new person in the organization, a foreigner in the research site, and sent by the Finnish management – these facts can be considered both positive and negative for the conduct of the research. For example, being the only foreigner working in the research setting, and not being a native speaker of the organizations language can be considered to reduce reliability of the research. On the other hand, as being "one of a kind" was often a reason for special treatment and therefore sometimes helped in gaining access to data or people. Furthermore, being sent by management might have on one hand decreased data accession possibilities and increased the threat of observer-caused effects, as people might have been unwilling to reveal problems etc in fear of the possible consequences. On the other hand, given the Russian very hierarchical organizational structure, the having the support from management was an absolute prerequisite for proper conduct of the study. The fact that researchers appropriate social behavior is essential for securing access to reliable and valid sources of data can be considered obvious, but it is rather difficult to prove that the researcher's behavior was "appropriate" in the research setting. However, looking back, it can be argued that during the research period the researcher was able to create connections to several persons in different parts of the organization, which would not have happened in case her behavior was not appropriate.

Also multiple methods contain the potential to reduce each of the specific threats to validity and reliability. By subjecting hypotheses emerging from observational data to "testing" against interview data, the researcher is able to detect, and therefore also compensate for his own interpretational and perception biases which may have distorted the shape of the hypotheses. (McKinnon 1988, 42-44.) Collecting data by different methods and from different perspectives can produce more complete, holistic and

contextual portrait of the object under study, and reduces the likelihood of misinterpretation (Marchan-Piekkari & Welsch 2004, 115-116). However, sometimes it can be difficult to judge the accuracy if the results from different and sources are not consistent, or when results from different sources come up with contradictory results. According to Marchan-Piekkari & Welsch (2004, 115-116) it can still lead to a better understanding or to new questions that can be answered by later research. The appropriate social behavior on the researcher's part is essential for securing access to reliable and valid data. (McKinnon 1988, 44.) It can be concluded that as the empirical data in this study consists of interviews, observations, discussions on the research site etc, the strategy of multiple methods against threats to validity and reliability is utilized.

What also can decrease the reliability of the research a bit is indeed the fact that the topic is new to the researcher – if she was more experienced, she would have probably been able to ask more of secondary questions and consequently to receive valuable details in addition to the information that was now received. The company specific nature of the research may slightly decrease the reliability of the research, as there was not much information available on how the purchasing performance measurement system has been designed and implemented in other companies in bakery business in Russia. However it has to be remembered that the conclusions of this research cannot and should not be generalized or be applicable to other companies, except to those which are very similar to the case company.

4 EMPIRICAL RESEARCH FINDINGS

4.1 The procurement strategy of Alpha

Whatever performance indicators are chosen, they have to be in line with the organization's strategy (e.g Axelsson et al. 2005, Bose 2006; Kaplan & Norton 1992, Lynch & Cross 1991, Van Weele 2005). For example Bose (2006, 50) states that as KPIs help the company define and measure progress toward company goals within the identified strategy. Almost anything can be given a status of a KPI as long as it reflects company goals. (Bose 2006, 50.) Consequently, before discussing possible performance metrics, it is necessary to explain The Group's procurement strategy in order to be able to understand what are the organization's goals that the set of KPIs designed for the case company's purchasing performance should reflect. The Group has a matrix structure, and therefore, even though Alpha is its own business unit in the Group, the procurement strategy designed for the group procurement organization is also the procurement strategy of Alpha. Additionally, it is necessary to clarify that even though in The Group the different levels of procurement - sourcing as the strategic level procurement, and purchasing at the operative level – are separated, there are no separate strategies for the two levels, and therefore the procurement strategy will serve as a basis also for the purchasing performance measurement.

In order to ensure that the procurement activities support the overall company goals, the strategy of the procurement organization is derived from The Group strategy. The strategic areas of the whole group are growth, operational excellence and organization and capabilities. The corresponding four areas in the procurement strategy are buying power maximization, operative efficiency, sustainability and food safety, and personnel dimension. The linkage between the group strategy and the procurement strategy is illustrated in the figure below.

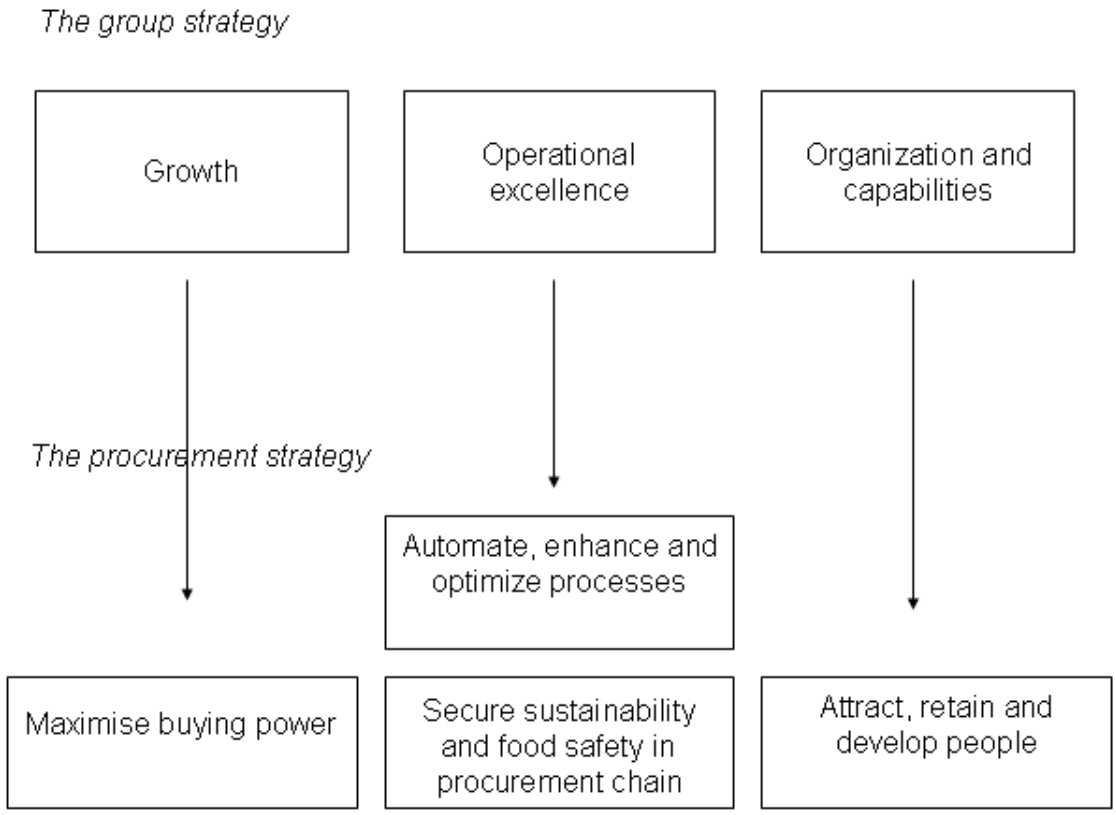

Figure 11 How the procurement strategy is derived from the group strategy (from The Group's sourcing organization's strategy presentation)

As seen from the above picture, the first of the group strategy areas, the growth perspective, is further derived into procurement strategy by being formulated as the aim to maximize buying power. In practise this means that the buying power should be optimized and value chain improved across the divisions and countries, and based on business needs. Secondly, the second perspective of the group strategy, the operational excellence perspective, is further derived to the procurement strategy into two separate dimensions. First dimension is to automate, enhance and optimize the processes inside the organization - meaning that the procurement processes are efficient, procurement tools are efficiently used and supplier performance corresponds to the group's needs. The second part of the operational excellence dimension is to secure sustainability and food security in the procurement chain. This refers mainly to supplier perspective. Lastly, the third dimension in the group strategy is organization and capabilities. In the procurement strategy this is formulated as a target to attract, retain and develop people. In other words, to ensure that procurement personnel is professional and competent, and as importantly, motivated.

Thus, the strategies for different functions are derived from the group strategy, and the above illustrated procurement strategy connection to the group strategy is a good example of this. In this same way the performance metrics need to be derived from the

procurement strategy (cf. e.g. Axelsson et al. 2005; Van Weele 2005). Due to the matrix structure of The Group, the above presented procurement strategy is also the strategy for company Alpha's procurement organization. Therefore, according to the case organization's strategy, the purchasing performance areas for measurement would be buying power maximization, operative efficiency, sustainability in the food chain and personnel. As the strategic background is understood, it is necessary to analyze the opinions and ideas of the interviewed Group procurement professionals and a representative from another Russian subsidiary of a Finnish multinational. It is also necessary to find out the current possibilities for performance measurement at Alpha. Based on these it can be defined which KPIs could be implemented immediately, and which need to be left for future implementation.

4.2 Current situation and the needs for performance measurement

In this chapter the current state of reporting at Alpha is described. Interview findings, both from benchmarking and professional interviews, also analysed and compared with the current reporting. This is done in order to allow for definition for the actual KPIs in Chapter 4.3.

4.2.1 The cost dimension

It was discussed in Chapter 2 that purchases are known to constitute to a large part of company costs and that consequently purchasing can have a significant effect on company performance, and that the need for follow up on spend is one of the most typical ways to illustrate what procurement has achieved or not achieved (Heinritz et al, 1991; Rudzki 2005; Van Weele 2005). Based on discussions with the Alpha Sourcing Director, local sourcing managers and representatives from finance department, *currently at Alpha there is no agreed procedure for common spend follow up,* measurement or reporting. Finance department reports direct raw material and packaging material costs in the monthly profit and loss statement, where actual direct material spend is being compared to budget and previous year. However, more detailed spend analysis by categories has not been available, neither for the management, or for procurement personnel. The data which would be of interest for the sourcing managers, the actual volumes that were consumed and the actual prices of materials by different raw material and packaging material categories on an item level, compared to a proper benchmark (which would be budget, previous year, or an agreed baseline for example)

is currently not available. Also no information on raw material and packaging material actual price development is available.

In the past spend follow-up system has been tried to be maintained. The control department provided actual volumes and prices compared to budget volumes and prices on a raw/packaging material item level. By updating such a report, the latest estimate spend for the whole year was continuously redefined, as more facts on actual spend were gained monthly. This report did not include an update of sourcing manager's estimates of near future price development. However, the finance department did not see such a process to be of interest for them, and that they do not know how to categorize new items to correct material categories, they quit providing the information. As from sourcing there was no-one to demand this to be continued, the result was that the data interesting for sourcing stays inside the finance department. Given the fact that Alpha consist of five bakeries, which have four finance departments and three different accounting systems in use, it can be understood that the spend data is not as easily available as it should be. It goes without saying that none of this is reported or measured either.

Savings are reported three times a year from sourcing managers to the group, but this is not regularly reported to stakeholders at Alpha. From finance point of view there is a need to start reporting and follow-up on savings also within Alpha. Sourcing managers set up their own savings targets but there savings are not yet regularly measured against the target in Alpha.

Contrarily to Alpha, in the benchmarking business unit, Business Unit C, there are several cost related performance indicators in use. They are listed in the table below.

Table 4 Cost related performance measurement Business Unit C

Cost related performance measurement Business Unit C	
Spend	Savings
• Spend difference to budget • Spend difference to previous year	• Savings, direct spend • Savings, indirect spend • Savings compared to FVUR • Savings from harmonization projects

In Business Unit C, *spend difference to budget* is an important measure, as the management wants to know how much above or below the budgeted spend they are. Another similar kind of measure in use is *spend difference to last year*; the current year spend is compared to the last years corresponding figures and deviations are analyzed and presented. In addition to absolute spend, savings measures are also important, as the

procurement actions have a direct influence on the bottom-line. In Business Unit C, *savings of the direct spend* (of raw material and packaging materials categories) and *savings on indirect (materials and services) spend* are measured and reported. This KPI indicates how much is saved in spend compared to historical cost (except in investments when there is no historical cost; then they compare to the first offer). The historical cost is used as a baseline, as according to the interviewee, it is the most important figure from the whole organization viewpoint – the stakeholders are interested if the costs increasing or not. Savings can of course be calculated by comparing the negotiated price the first value under review (FVUR) – *this savings compared to FVUR* reflects the efficiency of sourcing managers and is therefore informative for the procurement organization, but the rest of the company is only interested in the *real* impact on the bottom-line. Another performance indicator in the cost dimension is *savings from harmonization projects*. By making changes in production and using the finest and most expensive raw material in only those products where they really add value, remarkable cost savings are expected in the future. The most important issue to remember in savings reporting is to ensure that everyone reports their savings in the same way - otherwise no comparisons can be made.

According to the Sourcing Director of Company M, they are also monitoring the price level in Russia. It is known that reliable market price data is difficult to find in Russia, but the interviewee pointed out that as they are buying both directly from producers and also from wholesalers, they are able to define the market price level. Their own purchase prices are compared to the market prices. However, the interviewee was of the opinion that from his point of view for example price differences to world market prices are not a very good performance indicator:

> *"As our raw materials are imported to Russia the purchase price is affected by issues out of the purchaser's control, such as political decisions and currency changes. Measuring price development is still useful, therefore I created this kind of a measurement system in our company –before there was no market price level follow up at all."*
> *- The Sourcing Director of Company M*

The interviewee was also of the opinion that actual performance indicators concerning price are not very useful or even possible to use in their business, as based on tender rounds held he and his personnel are aware of the current price level and therefore know if their prices are on an acceptable level or not.

What they also monitor in Company M is not what was purchased but what was consumed in production during the time period. This data is received from bookkeeping. This monitoring is done for the purpose of finding out whether they have used in production materials that are more expensive than estimated earlier. Additionally, once a month the director takes a list of purchases and checks that the

prices are the same as the contracted ones. Also cost of purchasing / cost of one order is monitored, mainly targeted to decreasing the cost of purchasing. The interviewee pointed out that this is a simple calculation based on the P&L statement, and therefore did not consider it a performance indicator. He considers it rather a tool which is taken a look at between certain time intervals in order to make decisions, mainly concerning plans to reduce the number of personnel.

Also the rest of the interviewees were of the opinion that the follow-up on spend is the most important dimension of procurement performance measurement from the managerial point of view. Spend related measurements can be several; chosen period's spend can be compared to different baselines, such as the budget or the actual spend of the previous year. According to all interviewees, one of the most important spend related indicators from the management point of view appears to be *savings*. Especially the savings which have a direct bottom line effect, the so called hard savings (vs. "soft savings" or cost avoidance in a growing market), were considered to be a metric of procurement efficiency which is the most important from the whole company performance point of view. However, as the group procurement is organized so that tender rounds, supplier decisions, savings negotiations are considered to belong to the strategic level procurement, and not to the operative purchasing level, savings cannot be said to be an operative purchase measure in the case company. This was agreed by all interviewees.

It was mentioned by several interviewees that not only the low purchasing prices reflect the efficient purchasing of materials. Supplier performance evaluation should include more than just the price or incoming material quality. For example the Group Sourcing Director would be interested to see *cost of one delivery* to be measured. She emphasized that even though the material price and quality would be adequate, suppliers can contribute to high costs of inbound logistics by having problems in some other areas of the deliveries. As an example she mentioned the cost of invoicing:

> *"Cost of inbound logistics would be an interesting performance metric. Invoicing should be included. Inbound logistics may often seem to have low cost, but overall cost may increase due to high invoicing cost. A supplier may have nice prices and good quality, but for example continuous mistakes in invoices lead to increased invoice handling times and increased cost. Measuring invoice handling times per supplier could reveal new problem areas, they could be communicated to suppliers and improvements made, and the cost would be decreased."*
>
> - *The Group Sourcing Director*

The Group Sourcing Development Manager agreed that in the case organization different ways to follow up on spend cannot be considered as the responsibility of purchasing, and as a consequence should not be included in the set of KPIs for Alpha's

purchasing department. However, according to him, cost related measures that would be interesting to see would be the total percentage of the whole purchasing process cost as a percentage of turnover, or cost of one order. What according to him would be an ideal measurement would be the cost of managing the total cost of the supply chain – of course really challenging to carry out in practice.

In the benchmarking unit of another multinational, in Company M, the sourcing director told that as the price of their raw material – meat – is highly dependent on the world market prices, they are continuously and on an annual level monitoring the world market prices, as well as seasonal price fluctuations. The interviewee emphasized that seasonal fluctuations are important to follow up on, as even though the seasonal fluctuations are usually the same, every year people still tend to forget. As there is a monitoring system in place it is easier for his personnel to get prepared on-time for the seasonal changes.

The fingings of different interviews, observations, discussions and document analysis are presented in the table below.

Table 5 Cost dimension interview results

Business Unit C	Company M	Suggestions from group professionals	Currently at Alpha
• Spend difference to budget • Spend different to last year • Savings direct spend • Savings indirect spend • Savings from harmonization projects • Savings in % compared to FVUR	• Purchase prices vs. market prices • Price of materials used in production vs. estimated prices • Purchase prices vs. agreed/contracted prices	• Follow-up on spend; current year vs budget • Total negotiated savings • Cost of one order • Cost of handling one invoice • Cost of purchasing process, % of turnover •Total cost of the supply chain	• Raw and packaging material cost in profit and loss statement • Savings reported three times a year to the group, not in Alpha

To sum up, based on the interviews the cost dimension performance measurement, as also discussed in the theory part, measurement can be divided into cost of operations and cost of materials. For example it was stated by Heinritz et al. (1991), that both, the cost of operation and cost of materials, should to be considered before performance can be truly evaluated (Heinritz et al. 1991, 399). As it can be seen from the table above, *cost of operations related measures were suggested, but the kind of measurement that*

the companies in question have in use, are measuring the cost of materials rather than cost of operations.

4.2.2 The quality dimension

When it comes to operative purchasing the major contributor to overall quality can be considered supplier performance in material quality terms. Laboratories of the bakeries (four in St. Petersburg and one in Moscow) were visited in order to find out how the current quality control process is organized, and more importantly, where the data of this is collected and to whom it is reported.

In the biggest bakery laboratory personnel check the incoming materials, and if there is a quality problem, on a common disc exist separate files for flour (a Word document) and for raw materials (in Excel) to which quality deviations are written down. If a quality is not noticed in the incoming control but the deviation appears in production, production personnel will contact a representative of the laboratory, and then they will examine a sample and also write down the data to their database. The process works in the same way in the smaller bakeries as well - the only difference being the fact that they do not have computers but the information is not put in to electronic format but hand-written and stored in paper folders. Of all this data no regular reports outside the laboratory are made concerning supplier raw material quality.

Concerning delivery accuracy, correctness of documents and correctness of delivered amounts are all checked by the warehouse workers. But in case of a problem, nothing is written down. This was common to all bakeries visited.

According to specialists in both cities, with packaging materials it is difficult to measure quality because it is often noticed only in production – and then it is difficult to define whether there really was a material quality deviation or the material broke down due to incorrect handling in production. The Moscow bakery has a special technologist responsible for packaging materials, so at the Moscow site the reason for quality deviations is easier to analyze, but in Saint Petersburg bakeries it is more difficult. No systematic data collection of delivery quality deviations exists.

After discussing with purchasers, laboratory personnel and other key stakeholders, the researcher got the impression that people understand the logic behind systematic supplier performance monitoring and analysis, but somehow are still of the opinion that they already know which supplier is “good” and who is not. They seemed to be of the opinion that a more systematic data collection is not needed, and if implemented, would be only extra work.

Among all the interviewees, supplier performance was considered the main contributor to the quality dimension. It was agreed that performance evaluation should

not only be based on the knowledge of the purchasing personnel, but data on supplier performance should be continuously collected and results regularly monitored. For example one of the interviewees stressed the importance of a defined system as follows:

> *"Having a proper vendor rating system in place is an absolute necessity in order to be able to objectively follow up on supplier performance."*
> *- The Sourcing Director of Business Unit B*

During the interview the Sourcing Director of Business Unit B showed the vendor rating system that is currently in use in his business unit. The system consists of two supplier performance areas – quality of delivered materials and quality of delivery. Different error codes for different mistake types are in use, and three times a year a supplier quality index is calculated from the data collected in everyday operative work. This is reported and is an important source of information for sourcing managers, as it indicated how well the suppliers they have chosen are actually performing in practice. Based on this data problems can be identified and solutions considered. The Group Sourcing Director pointed out that in the current vendor rating system there is no monitoring of supplier contribution to the sustainability and food safety (hygiene etc). According to her that kind of measurement system should also be implemented, or elements of it should be integrated to the current system.

In Business Unit C (the benchmarking business unit) supplier quality is also measured by vendor rating system, and according to the interviewee, it is one of the most important issues to measure. The basics of the system are similar to the one used in Business Unit B – the issues monitored are also the quality of materials and the quality of delivery, which is further divided into deviations in delivery process, deviations in quantity and deviations in time of process. When considering an implementation of such a supplier performance measurement system for Alpha, the restrictions posed by ERP system[4] appear. This is because Alpha does not yet have ERP implemented (there is a group-wide project on harmonizing processes and information system across units, but it has not yet proceeded to implementation phase), and the current system does not include a quality module, and as a consequence all supplier performance data should be managed in Excel. The Sourcing Director of Alpha does not see that as a total restriction though:

> *"We do not have ERP yet, but once we have it, the data still needs to be put into the system by people…ERP does nothing alone. We should start to do this with Excel, to train our people to understand the importance of*

[4] ERP means Enterprise Resource Planning, and it refers to an information system which consolidate information from different functions of the organization. Such system provides an integrated solution across the whole of a company. This includes connections between finance marketing and sales, accounting, human resources, customer relationship management etc. (Cruz, 2010).

a supplier performance monitoring system, and then the real system is easier to implement when we have the proper ERP supporting it."

- The Sourcing Director of Alpha

In Company M, the Russian business unit of another Finnish multinational, no supplier performance measurement system exists. Quality control of incoming materials is of course in place, but the information on the quality deviations against the specifications detected is only in the minds of the laboratory personnel and purchasers – it is not stored anywhere in written form. The interviewee told that when he started to work in that organization, there was some kind of a quality follow-up in place, but it could not be considered reliable:

"When I received the report I noticed that they were wrong. The laboratory personnel had included the testing of samples in the statistics, which of course led to high number of situations were quality was not good enough! This of course does not give the right picture of the performance of the selected suppliers. People should be given strict advice on what to include in the reports."

- The Sourcing Director of Company M

In Company M the importance of such a system has been understood though, and a task to create such as system has been given to the quality department, but the process is not finished yet. On the contrary to the representatives of the Group, the interviewee representing Company M agreed that a vendor rating system is important, but would not call it a high priority, as he and his subordinates are well aware of the situation already without statistics. Concerning delivery quality deviations, the interviewee said that a small-scale database for late deliveries exists. Though usually it is not communicated to suppliers for claims, as their raw materials are transported from South-America, and in most cases the reason for the late delivery is out of the control of the supplier.

The interviewee added that the reclamation process is an issue on which he would like to receive more information. Now even though the quality department is responsible for the control of incoming materials, the information in case of a quality deviation reaches the purchasing department too late. Similar thoughts were pointed out also by the Group Sourcing Director during her interview – she said that it would be good to measure the efficiency of the reclamation process in order to spot problem areas and find targets to be improved.

Additionally, during the interview with the manager form Business Unit C, also criticism was given to the fact that most of the KPIs in use in that particular business unit were related to spend instead of quality:

"As quality is really a key factor in the group image, and is therefore also emphasized in the strategy, from my point of view quality measures do not get as much attention as they should. Quality should be the top

priority. Of course spend should be closely linked as cost-effectiveness should not be forgotten, but in any case quality should be the number one target for measurement."

- The Sourcing Development Manager, Business Unit C

So according to the interviewee, quality measures, especially related to indirect spend, should be more in number. In direct spend (materials) the purchasing personnel can have a great impact on spend, but in indirect spend (services etc) are bought, spend should not be the first thing to look at. This is part of the "internal customer service" – and then the price is really not the thing that purchasing should look at, as they are buying services for their own people. The interviewee would like to see some development in indirect purchases quality measurement in the future, but agrees that its measurement is a challenging issue.

Summary of the interview results concerning the quality point of view is seen in the table below.

Table 6 Quality dimension interview results

Business Unit C	Company M	Suggestions from group professionals	Currently at Alpha
• Vendor rating	• Reclamations database creation in process • Late deliveries written down	• Vendor rating • Deviations in quality of materials • Deviations in quality of delivery • Delivery accuracy • Time to handle an invoice per supplier • Supplier contribution to hygiene and safety	None

To sum up, performance measurement concerning quality performance indicators were quite generally concerned with supplier performance. The vendor rating system in which is used in the benchmarking business unit of the group involves several different indicators which represent supplier performance. Also in the benchmarking Russian business unit of another multinational, supplier performance measurement exists, though it is not yet very systematic.

4.2.3 The logistics dimension

Inventory ratios and turnover are widely and understandably accepted as an indication of the efficiency of the purchasing policy and program (Axelsson et al. 2005; Greasley 2006; Heinritz et al. 1991; Van Weele 2005). Inventory turnover is measured and reported by the Alpha control department in the monthly company dashboard. Inventory turnover in this case includes all raw material and packaging material inventories, but also finished goods. Therefore, even though regularly measured and reported, cannot really be used as a fully informative metric for purchasing performance measurement as the finished goods inventories are there to affect the figure. The whole truth of the how well purchasing is able to keep a steady inflow of materials with a low amount of capital tied to it cannot be seen from this KPI.

In the company dashboard also delivery accuracy of suppliers has been planned to be reported, but as data for calculating it is not available in the information system. Consequently it would cause more manual work than benefit, and therefore it has been agreed that it will be measured after new ERP is installed in the future.

Inventory levels are available in the bookkeeping program, and in theory enough data is available for inventory measurement, but nothing is really reported or inventory levels calculated within purchasing. What comes to the fact that purchasing should ensure a steady inflow of materials to production, no monitoring or reporting is made on how often stock-outs due to procurement exist, nor reasons for this analyzed in a systematic way. There is also no defined regular process for getting rid of obsolete material in warehouses, nor calculating losses due to it, and naturally no reporting on that either.

In the benchmarking business unit, Business Unit C, when asked about inventory measurement, the interviewee explained that in his business unit, for keeping track on the inventory levels a measure "days of supply" (DOS) is used. It is measured not by business unit but by factories. DOS indicates for how long the production can go on without deliveries. According to the interviewee, earlier the stock turnover was used, but it was realized that it was not the most convenient performance indicator:

> *"DOS was adopted just because it is more useful, informative and user-friendly. It is easier to understand for how long time do we have enough inventory, than just to know that the stock turnover is X."*
> *- The Sourcing Development Manager, Business Unit C*

In the benchmarking Russian business unit stocks are under purchasing, and naturally there are inventory reports but performance indicators concerning inventories are not in use.

All interviewees were of the opinion that inventories should somehow be measured. As a traditional measure, inventory turnover was mentioned, as well as value of

inventory. Additionally, obsolescence, and especially losses due to it, was mentioned as a good metric of purchasing performance:

> *" As we do not have high stock levels for direct materials, it would be more interesting to regularly measure the obsolete material that we have in warehouses, especially in packaging materials category. Being measured regularly this KPI would then indicate how efficiently we are getting rid of non-currant materials."*
> *- The Sourcing Director of Alpha*

One of the interviewees mentioned also mistakes in inventory or the extent to which inventory matches with bookkeeper's data. However, it was agreed that this measurement could be more complex to implement in reality, as would be the benefits of it.

Furthermore, as the task of purchasing is to ensure that there is enough materials for production, "stock-out situations due to procurement" should be monitored. In the Business Unit C, this is monitored, but has not been automated. According to the interviewee, it has to be measured manually as it is always a bit controversial issue of whose fault the stock-out really is. The Sourcing Director of Alpha agreed that monitoring of this is useful, but would be more informative if it could be further developed to indicate the purchasing's contribution to the company performance. For example, stock-out situations due to purchasing probably should not be measured in volumes of end-products that were not produced due to the stock-out, but as loss of sales in money. The Sourcing Director of Alpha stated this to be an ideal measure from her point of view, but agreed that as it is currently challenging to break the sales forecast down to raw material forerecast, in practise it would be difficult to measure.

The discussed performance indicators on the logistics dimension are summarized below.

Table 7 Logistics dimension interview results

Business Unit C	Company M	Suggestions from group professionals	Currently at Alpha
• Days of supply • Stock-outs due to procurement	• No performance measurement in the logistics dimension	• Inventory turnover • Inventory value • Obsolete material / losses due to obsolesence • Quality of inventory data	• Inventory turnover (incl. finished goods)

In conclusion, inventory measures were considered important, but there were differing opinions on what should the exact performance indicator be. It was commonly agreed that inventory turnover is the most traditional of the inventory measures, but it is not necessarily the best one – some consider it difficult to understand and not user friendly, and some simply considered it not relevant for the case company itself. Another kind of inventory measure mentioned was obsolete material in warehouse and/or losses due to it. Stock-outs due to procurement were agreed by all interviewees to be a measure that directly measures how well the purchasing department is able to fulfill its task of ensuring that there are enough materials for production.

4.2.4 The organizational dimension

At Alpha, there is a personnel satisfaction survey done annually by the HR department. It is done by departments and therefore also the sourcing director is able to get feedback on how the personnel see different things in the organization. In addition to this annual company-wide personnel satisfaction inquiry, no other measurements concerning personnel dimension is made. Tools for personnel competence evaluation, measurement and reporting on trainings, development projects, absences are being developed, but not in use yet. This is common to all production units.

The organizational dimension is also visible in The Group's procurement strategy and therefore was considered to be important area of measurement by all interviewees representing the Group. It was commonly understood that even though personnel related measures do not have a direct bottom line effect, the information on their personnel is still valuable for managers.

The need to measure employee satisfaction annually by inquiries was mentioned by all interviewees. In the benchmarking company, Business Unit C, personnel is also considered an important dimension in purchasing performance. Every year the business unit orders a survey by which they follow employee satisfaction. In procurement the employee satisfaction has been over 90%, which according to the interviewee is the highest figure among different departments of the business unit. The interviewee was not able to define how the index is calculated as it is a service which is outsourced. On the contrary, in the other benchmarking company, Company M, no measurement of personnel and its capabilities exists.

In addition to the annual employee satisfaction inquiry, the representative of the Business Unit B explained that an employee capability profile system is used in his organization. He quickly explained that the basic idea of this system is to see how well the competencies of the personnel match the positions they have. Capability profiles for different positions are defined, and regularly the head of department checks whether the

personnel capabilities match the requirements for different positions – if not, then possible trainings or development actions are considered. Furthermore, if the capabilities and requirements do match, or the capabilities exceed the requirements, it is discussed with the subordinates themselves if there is a possibility to move him to some other position where his competence could be better utilized.

The Group Sourcing Director was of the opinion that it would be important to measure the management's contribution to the operative purchasing personnel's competence and satisfaction. This could be measured by monitoring the number of development projects and/or the number of training sessions held. Even small trainings could be included in the measurement. According to her, employee absences should be monitored as well to reflect employer satisfaction.

Personnel dimension is obviously regarded as an important dimension in The Group, as it has been named a separate strategic area. However, it has to be kept in mind that the purpose of this study is to define performance measures for operational level purchasing. Understanding this, all the interviewees agreed that personnel dimension performance indicators are not really operational level indicators but are considered more strategic in nature. The Sourcing Director of Alpha explained that being aware of the employee satisfaction is important, but for now, as there are no other tools available, the annual employee satisfaction survey has to be considered enough. She agrees that more information should be available, and expects the tools to develop in the future.

The Group Sourcing Development Manager was even of the opinion that personnel should not be measured at the operative level at all:

> *"…when it comes to operative level, personnel can only be measured as a number of people who are needed for everyday work. And this number should be targeted to be as small as possible."*
>
> *- The Group Sourcing Development Manager*

Furthermore he pointed out that this measure would, however, be more a cost related one, as the aim of it would of course be to reduce the cost of purchasing. The interview findings of the personnel dimension are summarized in the table below.

Table 8 Personnel dimension interview results

Business Unit C	Company M	Suggestions from group professionals	Currently at Alpha
• Employee satisfaction	None	• Annual employee satisfaction inquiry • Employee capability profile • Number of development projects • Number of trainings • Personnel costs • Number of personnel required to carry out the operative work	• Employee satisfaction survey

As seen in the above table, according to the interviewees, personnel dimension could in theory be measured by using some performance indicators. Even though the importance of competent and motivated personnel is emphasized, there was little willingness to implement operative level performance measurement for the personnel dimension. Satisfaction inquiries done annually were considered informative enough to reflect the motivation of the personnel and to reveal problem areas.

4.2.5 Maximizing buying power - Operational efficiency

The interview findings above were structured in line with the most important purchasing performance areas based on the literature (see Chapter 2.2). In most cases the findings on the four areas - cost, quality, logistics and personnel – can be matched to with the different areas of the case company procurement strategy, which contains the dimensions of maximizing buying power, operative efficiency and sustainability and food security, and personnel. However, in order to be able to design a set of KPIs which are derived from the strategy, all the strategy areas need to be taken into consideration. Therefore, also interviewees' opinion on "maximizing the buying power" strategy dimension was asked.

When asked how the dimension maximize buying power could be measured at the operative level, almost all interviewees agreed that given the structure of the case company's procurement organization, "maximize buying power" dimension could not have its own operative level indicator. In other words, it can not be measured directly, but indirectly via operational efficiency. The logic behind this is that if the operational purchasing process works as smoothly as possible, time is left for purchasers for more

value-adding tasks. Only the Sourcing Director of Alpha partly disagreed on this, as she pointed out that given the current circumstances in the company, it cannot be assumed that if the operational work is eased, the employees would immediately start to work on some more value-adding tasks. She agreed though that perhaps in some other companies this could be the reality.

However, as process enhancement is one area of the Group's procurement strategy, there were several different measures that were mentioned by interviewees. The suggested measures can be categorized to two groups; time usage of purchasers and quality of communication.

Issues subject to measurement concerning time usage were for example

- time to process an order
- value of one order
- average number of modification to orders
- percentage of emergency purchases of all purchases
- average delivery size
- number of deliveries/orders/invoices per chosen time period
- number of phone calls/ faxes/contacts per day
- time to process a return
- control of reclamation process

On the other hand, measures indicating the level of communication and how well technology is utilized in operative purchasing were for example.

- % of spend purchased electronically
- order to order confirmation percentage
- orders in written form vs. spoken
- correctness of orders/invoices and
- perfect order fulfillment
- existence of data
- quality of data
- % of purchases in the system
- share of vendor managed inventory (VMI) solutions

However, the most relevant measure of operational efficiency mentioned by all interviewees was the percentage of spend purchased electronically, as well as the order confirmation received to orders that have been placed. The Sourcing Director of Alpha agreed on the usefulness of the indicators, but considered them rather irrelevant for Alpha, as the purchasing process may be considered slightly less developed:

> *"It is indeed a useful measure for an organization more developed than Alpha - where most orders still made by phone. For us it is still quite far in the future… It's the same with the so-called order-to order confirmation percentage – if the order is done by phone without any*

written document one can hardly expect a written order confirmation. The whole ordering process needs to be refined before this kind of measurement is relevant."

- The Sourcing Director of Alpha

In the benchmarking business unit, Business Unit C, a measure that indicates operational efficiency is called call-offs by buyer in percentage. This is related to CMI – co-managed inventory; the company and the supplier are managing inventory in co-operation. The idea is same than in vendor managed inventory, but the co-operation dimension is more emphasized. The company is interested to know about how much of call-offs they have managed to delegate to be done by the supplier instead of their own purchasers. By call-off here is meant the actual ordering of materials according to a contract signed already earlier.

Call-offs by buyer in percentage is transaction-based, but in Business Unit C they have another measure in use as well, which is value based – purchasing value in percentage CMI. Earlier they used to have a measure of the number of suppliers in CMI – this, however, directed the performance to a direction that was totally not intended. As the business unit wants to centralize its purchases to a small number of reliable supplier, the old figure on the other hand only encouraged to have a bigger number of suppliers. According to the Sourcing Director of Alpha, CMI and VMI measures discussed above are relevant measures for procurement in general, but unfortunately the processes at Alpha are far from that level of development.

In the other benchmarking unit, Company M, no operative efficiency performance indicators were in use. According to the interviewee, without proper information systems in place the data collection for the calculation of such indicators would become such a burden that he does not see them a high priority at all. It was also agreed by the Alpha Sourcing Director that the current information systems in use at Alpha do not support the performance measurement at all.

For the operative efficiency performance measurement several measures were suggested by the group professionals. They are summarized in the table below.

Table 9 Operational efficiency dimension interview results

Business unit C	Company M	Suggestions from group professionals	Currently at Alpha
• Call-offs by buyer, % • Purchasing value in % in CMI	• No performance indicators in this field	• Time to process an order • Value of one order • Average number of modification to orders • Emergency purchases as a % of all purchases • Average delivery size • Number of deliveries/orders/invoices • Phone calls/faxes/contacts per day • Control of reclamation process • Time to process a return • Order to order confirmaiton % • Share of VMI solutions • Orders in writing vs. spoken • Correctness of orders/ invoices • Perfect order fulfillment • Usage of eProcurement • Quality of data • % of purchases in the system	• No performance indicators in this field

It can be seen from the above table that the performance measures suggested were many. However, many of them are either technically of process-wise not possible to measure or even irrelevant for Alpha, so it has to be carefully considered which ones to consider for implementing.

The interviewee representing the Russian subsidiary of another Finnish multinational, Company C, wanted to point out that the lack of proper information systems is the main reason for the low level of regular and systematic performance measurement in their company. The current monitoring is mostly done in Excel, requiring a lot of manual work. Purchasing does not have an information system in use which would be designed for purchasers. Although the interviewee said its understandable that there are no investments in new information systems now as in the future the aim is to start using the same system in Russia as they use in Finland. Meanwhile there is no sense to change into new systems. The interviewee stated that it is understandable but still unfortunate that as a result the possibilities for performance measurement are much smaller in their Russian unit than in their business units in Finland.

This was totally agreed by the Sourcing Director of Alpha as well. The fact that the interviewee representing Company M, a company also operating in Russia, does not even consider implementing operative efficiency measures due to insufficient information systems, may give some hint of the implementation possibilities also at Alpha.

4.3 Purchasing performance measurement system suitable for Alpha

4.3.1 Dimension of the procurement strategy that can be measured at the operative level

In order to design a KPI set for the case company's purchasing department, it is important to start by reflecting the procurement strategy with the needs and possibilities for operative performance measurement – in other words, to define which components of the strategy can and need to be measured at the operative level.

The dimensions of the case company's procurement strategy were introduced in the beginning of this chapter. As already mentioned, the four different strategy areas are the maximization of buying power, process efficiency, sustainability and food safety in the procurement chain, and fourthly, ensuring the high level of competence and motivation of the personnel. Based on the interviews it can be said that not all of the strategy dimensions can be directly measured at the very operative level of purchasing, and it can be concluded that of the four above-mentioned strategy areas two will be measured at the operative level. Those dimensions are "automate, enhance and optimize processes" and "secure sustainability and food safety in the procurement chain". These two areas can then be divided into operative level internal process efficiency and (external) supplier performance. This is illustrated in the figure below.

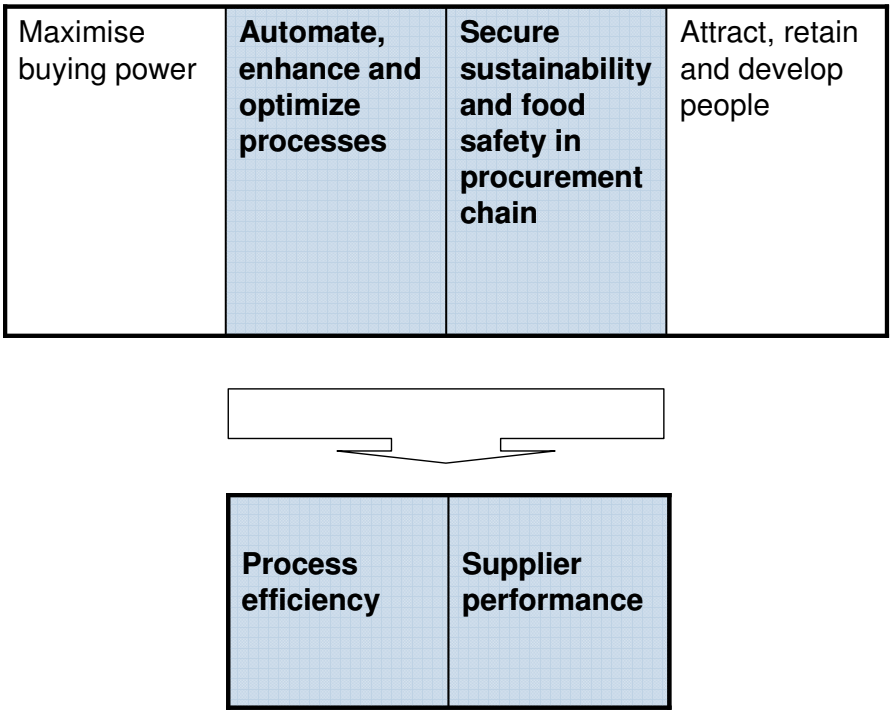

Figure 12 Purchasing performance measurement areas as derived from the case company's procurement strategy

The above figure indicates which procurement strategy dimensions can be measured at the operative purchasing level. In general all interviewees agreed that as buying power maximization in this case is means utilizing personnel expertise and volumes across business units and countries, and activities contributing to this are considered to be "strategic level procurement" and therefore in the case company they are regarded as sourcing level activities instead of the operative level purchasing. Even though the interviewees had slightly contradictory opinions on the effect of process efficiency on buying power maximization, as some suggested that by improving process efficiency more time is left for purchasers for value-adding activities, it was still decided that it should not be measured directly the operative level.

However, what can and need to be measured ant the operative level are the strategy dimensions "automate, enhance and optimize processes" and "secure sustainability and food safety in the procurement chain". Efficiency of the purchasing process itself was stated by all interviewees to be in the very core of operative performance measurement. As already mentioned, most of the interviewees were even of the opinion that operative efficiency contributes to the purchasing power maximization. It was commonly agreed in the interviews that what contributes to purchasing performance in these strategic areas are two factors; firstly, how efficiently the purchasing process works inside the company, and secondly, the supplier contribution to process efficiency, meaning the supplier contribution on how successfully the purchasing department is able to fulfill its

task of providing the production the required raw materials at the right time and according to the company quality specifications. Regardless of the current level of performance measurement in the interviewees' business units, all agreed that supplier performance is a thing that needs to be monitored – not only to reveal problem areas and help in communicating them to suppliers and help in problem solving, but also to provide support for decision-making to sourcing managers for future tender rounds. These operative level performance measurement areas can be named internal process efficiency and supplier performance.

Based on the interviews and the researchers observations in the case organization it was found out that the personnel dimension of strategy is not seen as the first priority for performance measurement, as the tools for personnel evaluation and measurement are in the process of development. The annual employee satisfaction survey will currently be considered informative enough, and KPIs for personnel development are expected to be implemented in the near future.

To sum up**, the areas in focus from now on will be the purchasing process efficiency and supplier performance.** What actual KPIs would then be suitable and possible to implement at Alpha to reflect the performance in these dimensions, will be discussed below.

4.3.2 KPIs possible to be implemented at Alpha

Having in mind the purchasing performance measurement issues discussed in literature, the interview findings, observations in the different production sites of the case company and discussions with the local personnel, and being aware of the restrictions set by the information systems in use, it is now possible to derive some basic performance indicators with which to start measuring purchasing performance in company Alpha. It needs to be remembered that the presented set of KPIs is something that can currently be implemented – improvement can be expected once a proper information system is installed in the near future. Suggestions for future improvement will be discussed later.

The mentioned KPIs will be next discussed in more detail, explaining the purpose for measurement, the source of data for calculating the KPI, formula, target value, reporting frequency and audience. The order is the same as presented above – firstly the supplier performance dimension with its KPIs is discussed, which is then followed by the internal process efficiency performance measurement.

4.3.2.1 Supplier performance

Supplier performance is one of the performance measurement areas relevant for operative purchasing. The chosen KPIs for the supplier performance measure to what extent to which the suppliers are capable to deliver materials that meet the quality requirements of the company, and to what extent the suppliers can meet their agreed delivery times. Therefore the KPIs for the supplier performance will be

- share of reclamations of all deliveries
- delivery accuracy.

As the task of purchasing is to provide the production with materials that meet the agreed quality expectations, the first KPI for supplier performance measurement is quality reclamations. *Reclamation percentage of all deliveries* is a simple measure, indicating to what extent suppliers are able to fulfill the quality requirements. The details on the calculation and reporting of the particular KPI are summarized in the table below.

Table 10 Share of reclamations, as a percentage of all deliveries

KPI	*Reclamations, % of all deliveries*
Purpose	To indicate to what extent the suppliers are not able to fulfill quality requirements
How to get the data for calculation?	Supplier data base (Excel, Sharepoint) filled in manually by laborants and purchasers, summarized by sourcig analyst, commented by purchasing and sourcing
Formula	Number of reclamations / Total number of deliveries
Measurement frequency	Monthly
Target value	< 2%
To whom results are presented	Sourcing and purchasing teams, laboratory, company dashboard

Even though reclamations percentage is a simple measure, in the case company it requires some effort in order to have the data in a useful format. Company Alpha has a quality control of incoming materials, but the results of it are not in a form that could be easily used for taking statistics, nor are reported anywhere - even though this information is highly important for sourcing managers when making decisions over suppliers.

Therefore a whole system for supplier performance monitoring was be built during the research period in order to be able to follow up on supplier performance. Luckily, as the tradition for data collection already existed, the procedure only needed to be made systematic to ensure that all necessary data is collected and stored in a format from which reports and summaries can be easily made. The data for this metric will now be collected by purchasing and laboratory. For raw materials, technologists will fill in the table in case of a quality deviation, and for delivery quality deviations the purchaser collects the data. For packaging materials the purchaser responsible for them also fills in both material and delivery quality deviations. The supplier performance data collection process is illustrated in Appendix 2.

A summary is made once a month, to be shared with the sourcing team, purchasing, and laboratory. Laboratory is reported the results and with comments on actions from the purchasing department and also from sourcing managers if needed, to inform the interested stakeholders about what was or will be done to solve a possibly continuous quality deviation. This is an elementary version of the system that is used as a vendor rating system in the business units in Finland. It is Excel-based, which makes the supplier performance follow-up possible, although not as practical and quick to use as with ERP, as it is done in the Finnish business units.

The second KPI for supplier performance is *delivery accuracy*. It indicates how successfully the suppliers contribute to the task of purchasing to ensure a timely material flow. The characteristics of this KPI are describes in the table below.

Table 11 Delivery accuracy

Title	*Delivery accuracy*
Purpose	To indicate to what extent the suppliers are able to fulfill a timely material flow
How to get the data for calculation?	Manual (Excel) data collection by purchasers, sample group of 80 % spend suppliers excluding flour suppliers
Formula	Orders not delivered on time / Total number of orders
Measurement frequency	Monthly
Target value	100 %
To whom results are presented	Sourcing and purchasing team

As well as the quality related KPI, the above described KPI of supplier delivery accuracy is something that cannot be fully measured given the current information flow. What would be required to calculate delivery accuracy is to know the expected delivery dates and actual delivery dates of each order, and to compare those. As discussed earlier, as the orders are not stored in any information system, no information exists of the expected delivery dates, so that comparison could be made.

However, it was decided to start at least some kind of measurement by sampling. It was decided in the organization to choose a group of suppliers whose delivery accuracy will be measured manually, by purchaser's filling in Excel tables with expected and actual delivery dates. The target group of this measurement was decided to be the top suppliers, or more specifically, those suppliers that cover 80 % of the direct material spend. Flour suppliers are excluded, as flour deliveries are many in number and there have not been any delays in them.

How the KPI is calculated was a subject to long discussion; whether it should be represented as a percentage of on-time deliveries, or as the average variance to the expected delivery date in days. The percentage of on-time deliveries was considered more descriptive and therefore was chosen to be the calculation method for the delivery accuracy KPI. The target was set to be 100 %.

Reporting frequency for delivery accuracy was decided to be one month, and the information was to be shared among the procurement community of Alpha, not yet the rest of the organization. Delivery accuracy information will be shared in the company when it is technically possible to measure it systematically for all suppliers, and not manually by sampling.

4.3.2.2 Internal process efficiency

Internal process efficiency measures are more in number. They could be divided into two groups – permanent and temporary KPIs. For permanent KPIs it is obvious that they will be measured continuously. Contrarily, as found out in the literature as well as during the interviews, performance measurement is a cyclical process and the focus of measurement should be updated as the organizations goals change. Therefore also in the case of Alpha purchasing there are some temporary KPIs implemented for a certain time period, in order to measure the progress of a certain development project. The internal process efficiency KPIs to be implemented at Alpha are

- of lost production due to stock-outs
- unplanned/ emergency purchases
- obsolete material in warehouses
- percentage of call off items in supply chain

- written orders as a percentage of all orders placed
- written order confirmation ratio.

Of the above-mentioned indicators three first ones, lost production due to stock-outs, unplanned/emergency purchases and obsolete material in warehouse, are to be implemented as so-called permanent KPIs. The three last ones, % of call-off items in supply chain, written orders and written order confirmation ratio are temporary KPIs.

The first of the permanent efficiency measures is lost *production due to stock-outs*. It reflects how much of planned production was not produced due to material stock-outs due to procurement. The details of the performance indicator itself are shown in the table below.

Table 12 Lost production due to stock-outs

Title	*Lost production due to stock-outs*
Purpose	To indicate the ability of purchasing to ensure a timely material flow to production
How to get the data for calculation?	Manual data collection (Excel) by the purchasing department
Measurement frequency	Monthly
Target value	0 kg
To whom results are presented	Sourcing and purchasing teams

As seen from the above table, data for this measure will be collected manually. It has been discussed with the interviewees and with the local employees that the question of stock-outs is often a controversial issue when defining whose fault the stock-out actually was. A typical explanation of such a situation would be a case where procurement receives information on new packaging material design too late in order to ensure that the supplier can deliver the materials with the new design before the production is planned to start. This of course is due to poorly working cross-functional communication system, which can then make it difficult to define who is responsible for the stock-out – was it marketing, who did not deliver the designs early enough, or was it procurement, who has not communicated the supplier lead times to marketing well enough, or was it supplier, who has misevaluated the lead times and therefore is not able to meet them. Therefore it was decided that the stock-outs will be written down to a certain Excel database, and the purchaser will have a possibility to comment on the reason why there was a stock-out. Even though reported only inside procurement, it is

of importance to find out if there are continuous problems with for example communication with other stakeholders. The results of the measurement with comments can then be used for trying to improve the situation and get rid of any kind of problems that result in such situations.

Stock-outs are also to be measured and reported monthly among the procurement community. Naturally, as it is intended that purchasing is always able to ensure the material flow to production, the target is not to have any stock-out situations, and therefore the target value for this performance indicator is 0.

The second permanent efficiency measure is the number of *unplanned or emergency purchases* during a month. As well as stock-outs, it is targeted to reflect how well the purchasing process is under control. If there are a lot of ad hoc purchases it reflects the fact that something in the process is not working well enough. This information should be analyzed on a regular basis so that possible problem areas can be spotted and actions taken to solve the problem. The table below describes the emergency purchases KPI.

Table 13 Unplanned / emergency purchases

Title	***Unplanned/emergency purchases***
Purpose	To indicate how well the purchasing process is under control
How to get the data for calculation?	Purchasers
Measurement frequency	Monthly
Target value	0
To whom results are presented	Sourcing and purchasing teams

As seen above, this KPI will also be reported monthly among the procurement community. The target is set to be 0. The data is collected manually, which can be considered the main weakness of this indicator – purchasers may not remember to fill in all the ad hoc purchases they needed to make. Ideally this could be measured by comparing the required delivery date and the order date – if the difference is for example one day, and it has been defined that less than one week's difference between the date when the material is needed and when the order is placed makes a purchase to be recorded as an emergency purchase. Unfortunately, this information is not put into

the information system so that these two dates could be connected, and therefore the purchasers are given a database for filling in the information by themselves.

The third permanent process efficiency KPI is the *value of obsolete material in warehouse*. Purchasing should be responsible for a steady inflow of materials but with a low cost of money tied in them, and therefore high stocks of obsolete materials should not be accepted. On the other hand it is not always the fault of purchasing that some material purchased in is left unused. Sometimes also what is planned by marketing can vary remarkably of the actual. However it is useful to measure how much there is obsolete material in the warehouse, be it a fault of purchasing or some other function. At least by regular measurement possible problem areas can be spotted and used as a basis for improvement. The details of the obsolete material count KPI are seen below.

Table 14 Obsolete material count

Title	*Obsolete material*
Purpose	To indicate how well purchasing is getting rid of excess material
How to get the data for calculation?	Purchasers, accounting
Measurement frequency	Tertially
Target value	0 RUB
To whom results are presented	Sourcing and purchasing teams

The KPI is supposed to reflect how well purchasing gets rid of excess materials in warehouses. The data for this should be reported three times a year by the purchasing department. The person named responsible has to take a stock report, analyze how much there is material that has not been used for a while, check from marketing in case it will still be needed in the future, and if not, then it is needs to be report is as obsolete material. The reporting will take place once in four months, and the target is to have obsolete material in warehouse worth of zero rubles. Of course this will often not be the case, but at least the efficiency of the write-off process can be monitored by taking regular reports on the obsolete materials.

The last three measures, call off items in supply chain, written orders and order to order confirmation percentage are more temporary measures than the above-mentioned five KPIs. The first one of them is *the percentage of call-off items in the supply chain*. As discussed with the head of operative purchasing for direct materials, as the organizational change is ongoing, and the target is to have most call-offs not done in the

purchasing department, but in warehouses. However, the stock keepers will not take over the responsibility for the call-off of all items at once, but have promised to start from some items and increase their number in the future. To really reach the target, systematic measurement is necessary. The detail performance indicator is seen in the table below.

Table 15 Call-off items in supply chain

Title	***% of call-off items in supply chain***
Purpose	To indicate to what extent purchasing has been able to transfer the responsibility of call-off to supply chain
How to get the data for calculation?	Manual data collection (Excel) by the purchasing department
Formula	Call off items in supply chain / total number of items
Measurement frequency	Monthly
Target value	SPB Raw materials 60 % Packaging materials 30 % MOS Raw materials 30 % Packaging materials not measured
To whom results are presented	Sourcing and purchasing teams, supply chain

As the KPI is a temporary one, this performance indicator will be reported monthly by the purchasing department, as long as the targets are met. The report will be shared with purchasing and sourcing teams and supply chain, to discuss the progress, possible problems and to agree if the targets are still realistic. As the prerequisites for implementing the call-off process are different in Saint Petersburg bakeries than in Moscow, they have different targets. For Saint Petersburg, the target is 60 % for raw materials and 30 % for packaging materials, whereas in Moscow the call-off process is being implemented only in raw materials, with significantly lower possibilities to delegate the responsibility to the warehouse – therefore the target for the Moscow bakery is set to be 30 % of all items.

The second temporary KPI is related to the fact that most orders are still placed by phone, without any written document about it. This is of course a source of mistakes, and the head of purchasing has a target to start making all orders in writing. To boost the change, *orders in writing* was chosen to be target for measurement as well. The characteristics of this KPI are seen in the table below.

Table 16 Written orders %

Title	*Orders in writing, % of total orders*
Purpose	To indicate what kind of a share of total orders is done in writing
How to get the data for calculation?	Manual data collection (Excel) by the purchasing department
Formula	Number of written orders / Number of total orders
Measurement frequency	Monthly
Target value	100 %
To whom results are presented	Sourcing and purchasing teams

As for the other performance indicators, also the data for this measure will be collected manually by the purchasers. This will be reported monthly. As the aim is that all orders will be placed in writing, the target for this indicator is 100 %. The purchasers have been given a simple Excel file to have open all time during their work, where they can quickly fill in how the order was placed. This will be the same "every-day working file" to which they fill information concerning delivery accuracy and order confirmation performance indicators.

The third temporary performance indicator measures the *order confirmation*. It has been discussed with the heads of purchasing departments both in Saint Petersburg and in Moscow, that it is not clear to what extent to suppliers provide a written order confirmation. Confirmation would of course reduce the risk of mistakes, as it would be ensured that both sides have understood correctly what was ordered. Therefore it was decided to start monitoring the order confirmation and name it as one of the purchasing KPIs. First the target was to get at least a picture of the current situation, then set a target for further improvement and performance measurement. As this KPI is also considered a temporary one, it is to be measured only until the target level is reached. The details can be seen in the table below.

Table 17 Written order confirmation %

Title	*Written order confirmation, % of all orders*
Purpose	To indicate how often a written order confirmation from supplier is received
How to get the data for calculation?	Manual data collection (Excel) by the purchasing department
Formula	Number of written confirmations / Number of total orders
Measurement frequency	Monthly
Target value	100 %
To whom results are presented	Sourcing and purchasing teams

Order confirmation KPI in the above table will be reported once a month and its target value is 100 % among the biggest suppliers (80% of spend). Also this measure will be calculated based on the data collected manually by purchasers. This data will be collected in the same file with the previous KPI "written orders" not to have too many templates for the purchasers. The aim is to end measurement as the target is reached and when ability to maintain the target level is ensured.

4.3.3 Summary of KPIs to be implemented at Alpha

To sum up, the designed set of purchasing KPIs is derived from the company strategy. The biggest source of information were the interviews, in which three group professionals were asked about their experience and expectations on purchasing performance measurement. So the above-introduced eight KPIs can already be implemented in the case company. They are summarized in the table below.

Table 18 Purchasing KPIs of Alpha

KPI	Scope	Data collected by	Target group	Distribution
Reclamations, % of deliveries	Direct materials, SPB and Moscow	Laborants, purchasers; summarized by sourcing analyst	Sourcing & purchasing team, laboratory	By e-mail with other KPIs and as a special report with comments, also on Disc I
Delivery accuracy	Direct materials SPB	Manual sampling by purchasers ; summarized by sourcing analyst	Sourcing & purchasing team	By e-mail to the team, on disc I
Lost production due to stock-outs	Direct SPB and Moscow	Purchasing dep.; summarized by sourcing analyst	Sourcing & purchasing team; discussed with other dep. in case needed	By e-mail to the team, on disc I
Unplanned / emergency purchases	Direct SPB and Moscow	Purchasing dep.; summarized by sourcing analyst	Sourcing & purchasing team; discussed with other dep. in case needed	By e-mail to the team, on disc I
Obsolete material in RUB	Direct SPB and Moscow	Purchasing dep.; summarized by sourcing analyst	Sourcing & purchasing team; discussed with other dep. in case needed	By e-mail to the team, on disc I
% of call-off items in supply chain	Direct materials SPB	Purchasing dep; summarized by sourcing analyst	Sourcing & purchasing team, warehouse	By e-mail to the team, on disc I
Orders in writing, % of total orders SPB and Moscow separately	Direct materials SPB	Purchasing; summarized by sourcing analyst	Sourcing & purchasing team	By e-mail to the team, on disc I
Written order confirmation, % of all orders	Direct materials SPB	Purchasing; summarized by sourcing analyst	Sourcing & purchasing team	By e-mail to the team, on disc I

The chosen KPIs are listed in the table above. It can be seen that almost all of them require manual data collection by purchasers. They are also reported in a purchasing monthly dashboard (see Appendix 3). In addition to those KPIs that were listed above, there were some other indicators that would add value to purchasing management but due to technical reasons cannot be implemented yet. They are discussed next.

4.3.4 Strategy linkage of the new performance measurement system

As the above-mentioned KPIs have been derived from the strategy, it is also useful to summarize how the above performance indicators are linked to the organization's procurement strategy. As it was already concluded earlier, the strategy areas that can be measured at the operative purchasing level are automate, enhance and optimize processes, and secure sustainability and food safety in the procurement chain. At the operative level these two areas were re-named to be operative efficiency and supplier performance. The link between the chosen KPIs and the performance measurement areas are summarized in the picture below.

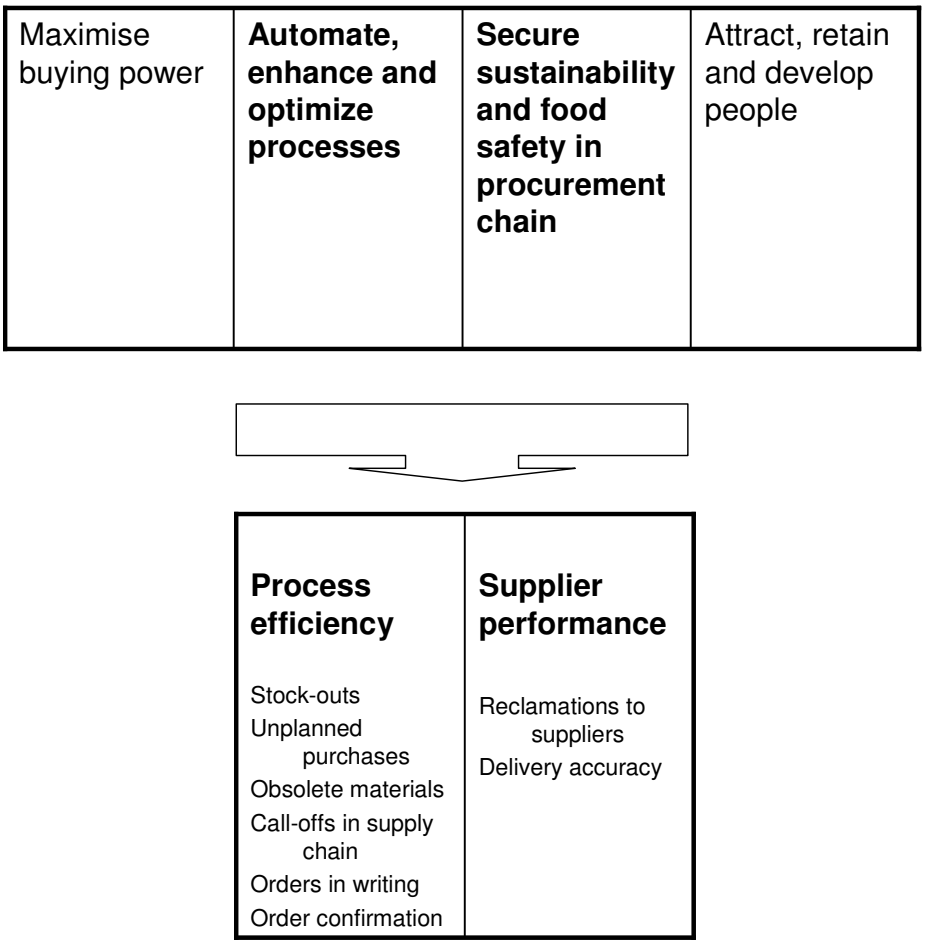

Figure 13 Strategy linkage of the chosen KPIs

The defined KPIs can be linked to the strategy and operative performance measurement areas as seen in the above picture. Internal operative process efficiency measures are stock-outs situations due to procurement, unplanned/ emergency purchases, the value of obsolete material in warehouses, call-off items in supply chain, orders in writing and order confirmation. On the other hand, supplier performance indicators are reclamations as % of total deliveries, and delivery accuracy.

4.3.5 Performance measures for the future

The second sub-objectives of this study was to define what key performance indicators should be left for future implementation. As it has become clear that the prerequisites for purchasing performance measurement in Alpha are not ideal, and some of the KPIs that are already implemented, should be further developed. Also there are indeed some

KPIs that would be useful for Alpha purchasing management, but what are currently not possible to calculate due to the low level of accessible data.

Supplier performance is currently monitored only in terms of material quality or delivery quality deviations. This means that if the quality of the material does not match the specifications, or if the delivery time or quantity is incorrect or there is a problem in documentation, the situation is filled into the database as a deviation. However, there is no operative level monitoring of what happens to the items before they arrive the Alpha warehouse. As one of the procurement strategy areas is "sustainability and food safety in the procurement chain" the supplier performance measurement should be extended also to cover such issues as the level of quality in the supplier's production facilities, or transportation. By doing quality audits the procurement together with the Alpha quality department can define whether the origin of the purchased raw materials and packaging materials is acceptable or not. The KPI could be named "number of quality audits" or "quality audited spend" (spend of the quality audited suppliers as a percentage of all spend)". However given the structure of the case procurement organization this is more a strategic level measure. *On the operative level, on a continuous basis what could be measured and reported would be for example the observations concerning the supplier's trucks at the time of delivery.* Occasionally there have been complaints about the trucks being in poor conditions, just to mention an example. These kind of problems should be added to the supplier performance measurement as well.

The reason why this kind of data collection was not organized yet is the fact that as for materials there are specifications mentioned in the contracts, but in the contract there are not always requirements set for suppliers for what kind of transport they should use. According to the discussions the researcher had in the research site with different stakeholders, at the moment it is difficult to define what kind of transport conditions are acceptable and what are not. As soon as this is somehow agreed both internally and with suppliers, the warehouse should start to collect data on transport quality deviations, and this figure would then be reported in the monthly supplier performance report.

A second KPI to be further developed is the *supplier delivery accuracy*. Currently it is measured only by manual sampling by purchasers, and includes only the 80 % spend suppliers, but excludes flour deliveries, as they are so many in number. The delivery accuracy should be extended to cover all suppliers. Of course it is good to start from the biggest suppliers to know if the big items, or 80 % of the money spent, is delivered on time. However, also some small items in terms of spend can be of crucial importance or not have alternatives, and therefore can cause a stop in production in case of a too late delivery. Furthermore, even if a small spend item would not be crucial for production, it is still important to know to what extent that small supplier delivers on time. It might well be so that the biggest suppliers deliver more or less in time, but smaller ones, to

whom Alpha may not be a key customer, might be more careless and therefore also cause extra work for Alpha's purchasers, therefore increasing the cost of purchasing.

Third current KPI to improve is the stock-out situations due to purchasing. In an ideal situation the metric would reflect not only the lost production volume, but the lost revenues due to procurement. The problem currently due to information system restrictions the sales plans cannot be converted into material level forecasts, and therefore it is not impossible to implement such a performance indicator yet. Once the demand plans can be broken down to material forecasts then, also this KPI should also be further improved to be for example *"lost revenues due to purchasing"*.

One of the currently implemented KPIs was targeted to measure the share of purchases that are not done by purchasing anymore but by the warehouse. This was defined to be a temporary measure as the issue of measurement is a project after which the call-off of the certain percentage of raw material items will be the responsibility of warehouse keepers. However, both in the literature review and in the discussions and interviews during the empirical data collection, the vendor managed inventories (VMI) were mentioned several times. The Russian business environment may not be fully ready to such an arrangement, but nothing prohibits Alpha of training its suppliers and trying such a system with them. If such a system is implemented then also it should be measured as a share of VMI solutions for example, or in some other way that would reflect *to what extent purchasing can delegate the responsibility or a basic call-off further.*

The last issue of future development is the *cost of purchasing*, even though it was not considered of first importance yet. It was noticed however, that maybe it would be useful in the future. There have been many changes in the structure in the purchasing department during the past year, and most likely more are to come. Therefore the cost of purchasing would be useful to measure, to see the effect of organizational changes. Of course the total cost of the purchasing personnel and the information systems can be monitored, but it would be useful to develop the measure to show the cost of one order for example. This of course requires that the total number of orders is in use, which is currently not the case, but after ERP system implementation will be possible.

The future improvements to be made are summarized in the table below.

Table 19 The future improvements to the KPI system

Issue	What should be done?	When can the change take place?
Supplier performance	Transport quality deviations should be included to supplier monitoring	When quality requirements for deliveries are included in the contracts
Delivery accuracy	Delivery accuracy should include all suppliers instead of the current 80 % spend suppliers	When the orders are done in the system; after the new ERP system implementation
Stock-outs due to purchasing	The current measurement should be extended to measure lost revenues due to purchasing (as a result of stock-outs in production)	When a proper sales plan is in place and data accessible; after the new ERP system implementation
Share of items with call off responsibility in warehouse	To continue measuring to what extent the responsibilty of call-off is delegated further, such as VMI solutions	When first changes are made (towards VMI etc)
Cost of purchasing	Should be measured as the cost of one order	When the orders are done in the system to get the number of total orders; after the new ERP system implementation

As it can be seen, four of the suggested improvements are issues where the already existing KPI needs to be refined to better reflect the actual situation. They need to be refined because the current information system does not provide enough data for calculating the KPI, or where the process is not yet organized as such (call-offs/ VMI). Only cost of purchasing is something that is not yet at all included in the already implemented KPIs.

5 CONCLUSIONS

5.1 Reporting needs vs current situation

The purpose of this study was to create a purchasing performance measurement and reporting system for the Company Alpha procurement organization. The system was to be based on a set of defined key performance indicators, which could be used as a tool in measuring progress toward organizational goals. To accomplish this, the main purpose was divided into the following two sub-objectives: firstly, to defining what are the purchasing key performance indicators relevant for Alpha, and secondly, to analyzing which of the chosen key performance indicators can be already implemented and which of them are left for future development.

In the theory part the most well known performance measurement models were discussed. It can be concluded that three important principles of the performance measurement models need to be taken into consideration when designing a purchasing performance system. Firstly, the performance indicators should be derived from the strategy and they should reflect the progress towards organizational goals. Secondly, the indicators should be chosen from different areas of the process to measure and analyze the performance from all perspectives. Thirdly, that the results of measurement should be regularly reported within the organization and to its stakeholders. (cf. Kaplan & Norton 1992; Lynch & Cross 1991.) In addition to performance meausurement models, also the most typical purchasing performance measurement areas cost, quality, logistics and personnel.

These performance measurement areas were used as a basis for the interview questions as well as for discussions in the research site. A direct linkage could be found in the empirical findings and the theory part, as it was found out that those are exactly the areas of which more information is needed, but is currently not available. It was also discussed in Chapter 2, that each company needs to define its own performance measurement areas depending on what is has in focus. Therefore also one extra area, operative efficiency, was added, since it is a significant part of the organization's strategy. However, this supports the fact that the issues related to purchasing performance are very company specific, and need to be designed for each organization almost case by case. Naturally information about the operative efficiency was not available either and there was a need to implement measures and reporting concerning it.

The strategy areas of the case organization can be further divided to operative level purchasing performance areas, as not all of them are considered to belong to the responsibility of operative purchasing. Thus it was defined which of the strategy areas

should be measured at the operative level. Those operative purchasing performance measurement areas were defined to be supplier performance and process efficiency. Even though categorized like this, the key performance indicators belonging to those categories can also be matched to fit the theoretical framework presented in Chapter 2. This linkage can be seen in the figure below.

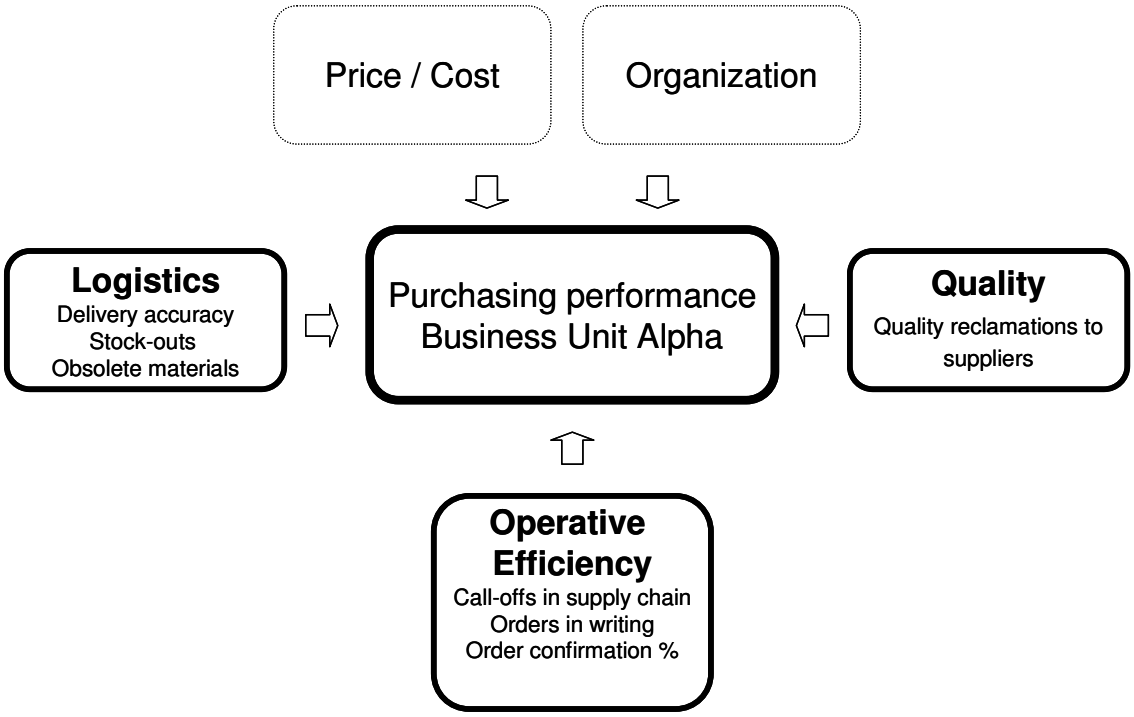

Figure 14 Purchasing KPIs in Alpha, based on literature and empirical findings

From the above figure it can be seen than the price/ cost dimension and organization dimension are not measured at the operative level, as in the case company they were considered strategic level issues and therefore out of the scope operative performance measurement. The KPIs that were derived based on the empirical findings can also be matched to the purchasing performance areas discussed in the literature. *Reclamations* percentage indicator represents the quality dimension. *Delivery accuracy, stock-outs and obsolete material count* represent the logistics dimension. What is added to the picture is the dimension of operative efficiency, which will be currently measured by *call-offs* in supply chain, *orders in writing* and *order confirmation percentage*, to start with.

Having proper information systems in place ensures that data for calculating the performance indicators is accessible (e.g. Axelsson et al. 2005; Van Weele 2005). In the case company the information systems posed the biggest restriction on KPI implementation. It was already said in Chapter 4 that in the five production sites of the

case company 4 different information systems were in use. In order to be able to measure performance of the whole purchasing function, similar kind of data should be available in a similar format from all these 4 systems. In fact, not one system alone offered the necessary data for purchasing performance measurement, and therefore the data for calculating many suggested key performance indicators can be considered non-existing.

Consequently, in order to start measuring and reporting the data for all the performance indicators currently implemented is manually calculated in Excel**.** As it was stressed in Chapter 2, and also during the interviews as well as during the researcher's stay at the research site, that the cost or time spent on finding the data and calculating the KPIs should not exceed the benefits gained from it. Therefore some very simple Excel templates were created to make the data collection for purchasers easy. The templates were meant to be filled in continuously in everyday work, but contrarily, ended up being something that were filled in quickly before the monthly reporting. This in turn remarkably decreases the reliability of the data and reports.

Additionally, the open attitude of people and willingness to share data was also shown to be in crucial role in this study: the data collection is currently done manually by certain employees, and consequently **the performance measurement is almost fully built on the people's willingness to openly share data and details.** This has a remarkable effect on the data quality as well. It is of course in the interests in the audience of the reporting that the measurement results are reliable. Due to the manual data collection this need to get information on the chosen areas may not be fully satisfied, as it can be questioned whether the results give a full picture of a situation in question or not.

Also the fact that there is no commonly shared operative purchasing procedure used in all production sites decreases the possibilities to have common performance measurement system either, as the working methods and therefore the basis for measurement differ between sites. If the procedure would be agreed and used everywhere in a similar way, it would be rather easy to design a common set of KPIs as well and the results would be comparable between sites.

Furthermore, it is not only the internal lack of processes in the purchasing department that can cause obstacles to performance measurement. What can be considered even bigger obstacle is the **poor cross-functional information flow**. Purchasing is a function which operations are closely linked with other functions of the company. To be able to ensure the stable and timely flow of materials, and to place an order, there should be a clearly informed demand plan in place, or the internal customer should place a purchase request. This purchase request should be given early enough so that the purchaser has time to buy it before the deadline (when the material is actually needed), and the request should include all the details necessary for the purchaser to be

able to find a material that satisfies the need. If there is no clear material demand plan, or if it is under constant change, or if a purchase request is placed too late and/or with inadequate information, it is also difficult for purchasing to fulfill its own task well. In an unstable environment where the process which should be measured does not always exist, or at least is not obeyed by all the parties involved, it is also difficult to build a stable performance measurement system.

It can be concluded that at least in this Russian business unit of a Finnish multinational the prerequisites for performance measurement are on a much lower level than in the Finnish business units. Behind this there are several different factors affecting, however the most important being lack of common processes, both internal and cross-functional, poor cross-functional information flow, inadequate and inefficiently used information systems, and tendency to underestimate the importance of performance measurement. Before the case company's performance measurement can be lifted up even close to the level it is in the benchmarking business unit of The Group, or even to a level that would add value in purchasing management, improvements have to be made. They are discussed next.

5.2 Recommendations

As a result of this research the case organization has been provided a set of purchasing key performance indicators. Based on the literature review and empirical findings, the key performance indicators were derived from the organization's procurement strategy and implemented, to be calculated and reported regularly on defined intervals. The purchasing areas of which the management is now getting more information via regular reporting are purchasing process efficiency on one hand and supplier performance on the other. Process efficiency is measured for example by monitoring stock-out situations caused by purchasing, emergency purchases and the value of obsolete material in warehouse. In order to follow up on supplier performance and material quality, a whole system of supplier performance data monitoring was created, and deviations to material quality and quality of the delivery itself are monitored and reported on monthly intervals. Also supplier delivery accuracy is measured.

Even though the first set of operative purchasing key performance indicators has now been defined and implemented, there is still much to improve in the whole performance measurement system in the organization. Different ways of improvement can be divided into two parts. Firstly, **the data collection for the KPIs already in use has to be improved**, and secondly, **the performance measurement needs to be extended beyond the current scope for measurement.**

It is still necessary to work more on making performance measurement part of the organization's everyday work. All employees need to understand that performance measurement is useful, compulsory and here to stay. The operative people need to understand that the reports are not done only for the analysts, and that the management really is interested in monitoring the results. The performance measurement should be extended to job descriptions. The job descriptions of the different positions in the purchasing department should be updated with data collection for **performance measurement being included as a compulsory task, not something additional.**

During her stay in the research site the researcher noticed that importance of performance measurement should be communicated and emphasised top-down. Therefore, **bigger interest from management is required to communicate the importance of regular performance measurement and follow-up to the lowest levels of the organization.** Without the support of the managers it is difficult for the researcher / analyst to convince the involved people about the importance of data collection, measurement and analysis and make them actually work accordingly. The message needs to come from the person to whom they report to.

As purchasing is in the very core of the organization, it is of crucial importance that the connected functions understand the importance of performance measurement as well. The internal stakeholders need to understand the value of measurement. **The people who are involved in the data collection should understand the real purpose of the system, understand their role in the process and fulfill their responsibilities.** For example the roles of purchasing and supply chain should be clarified, and the responsibility of performance measurement should be defined. Some of the measurements, such as those regarding inventories, should be re-evaluated with representatives of the supply chain function. The same applies to other functions, such as marketing. Procurement role in new product development will have to be defined, followed then by few carefully selected key performance indicators which reflect the capability of procurement to satisfy the needs of new product development, and/or the efficiency of the cooperation of the two functions, as defined in the process.

As it has already been stressed, the biggest restriction in the current performance measurement is the lack of data for calculating the key performance indicators. This is due to the fact that the information systems offer poor possibilities for performance measurement, or some of these possibilities are not fully utilized. However, in the case company there is a new ERP system to be implemented in the future, covering all the production sites of the case company. The system will not only harmonize the processes within the Russian production sites, but also in the Finnish business units of The Group. At best the new system can lift the performance measurement possibilities to a totally different level, providing data for KPI calculation and allowing for harmonizing operative purchasing performance measurement between the Russian business unit and

the Finnish one, and most importantly, allowing for comparison between the units. However, at worst the new system implementation does not ease the performance measurement at all, and the data for KPI calculation will be as non-accessible or even non-existent as it has been so far.

However, given that the case organization is rather big and the cross-functional communication and understanding are not always very deep, the risk that the ERP system implementation will not improve the possibilities of performance measurement as expected, should not be underestimated. As it was mentioned by one of the interviewees, the ERP system will not do anything by itself. **Therefore the procurement personnel should be involved from the beginning and take an active role the becoming phases of the design and implementation project, in order to ensure that the future system includes the necessary elements for performance measurement**. Furthermore, if and when the prerequisites for the defined data collection are established, all the employees who are involved in filling in the needed data into the ERP system should understand the importance of the data collection and also fulfill their responsibilities.

Above it was discussed how the performance measurement could be improved in its current scope. It has to be remembered that now the performance measurement has been designed only for direct materials (raw materials and packaging). This is because in the beginning of the research the only the purchases in the direct material categories were under control of the procurement. Almost all the rest of the purchases were done in other parts of the company but not by the purchasing department – purchasing of indirect goods or services was done by those people who were going to use the material or service, and a common way of buying did not exist. Therefore direct materials were considered a logical point to start from, as they were the only categories that could be said to be totally under the control of procurement. However, there is a huge amount of purchases in the company, both in quantity of purchases and in terms of spend, which are still outside the performance measurement system developed. These purchases are the purchases of materials and services not directly linked to the end products, such as consumables, facilities management services and spare parts for example. Historically the procurement of such materials and services has not been done by procurement, but by those people who are using the purchased product (for example engineers have been buying spare parts etc).

The fact that several people can buy in an organization leads to inefficiency and often in misuse of the resources of the company. Therefore it should be considered of highest importance **to implement different performance measurement systems to different indirect categories, as soon as they are taken under professional control.** If performance is then measured, in addition to using the reports only for procurement's internal use, they can also be utilized in justifying for the rest of the organization that

procurement expertise really adds value. It is understandable that with the current information systems the measurement cannot be designed to be very complicated, but it would be possible to start with for example some very simple measures such as savings compared to the planned spend, or the number of suppliers covering 80% of the spend of a certain category, just to mention few examples. Purchasing lead times for all kinds of indirect purchases could already be started, and would be very useful indeed, as well as sampling supplier delivery accuracy for the biggest suppliers.

In closing, the case organization has taken its first steps of performance measurement. The importance of purchasing is well understood by management and therefore there is an increasing interest to see procurement results. The first set of key performance indicators has been defined and implemented. The employees have had time to get used to the idea of performance measurement and start to feel more comfortable with reporting some of their daily activities. During the past years a lot of changes have taken place in the organization, and it has been noticed that all changes require some time to be fully accepted. As it was discussed in the literature review as well as in the empirical analysis, performance measurement is under constant change, depending on changing measurement possibilities and needs. Given more time and consequently improved possibilities for data collection and performance measurement, the members of the case organization can built a scorecard which can then truly add value in performance management.

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APPENDIX 1: INTERVIEW QUESTIONS

Aim of the interview

- Wish list of KPIs
- Current reporting at Alpha, requests for improvement

Background information

1. Job title, position, main responsibilities?
2. Sourcing related work experience? (years, different positions, different responsibilities)
3. How you are involved in purchasing performance measurement and reporting in your present position?

Performance measurement

1. In your opinion, what kind or a linkage is there between sourcing strategy, sourcing performance measurement and purchasing performance measurement?
2. If different areas of sourcing scorecard are finance, personnel, suppliers and operational excellence, to what extent should they be the same in the purchasing scorecard?
3. How would you divide purchasing process to different measurement areas?
4. How should the purchasing performance be measured in the following areas:
    - Prices/costs?
    - Product/quality?
    - Logistics?
    - Organisational factors?

Current reporting at Alpha

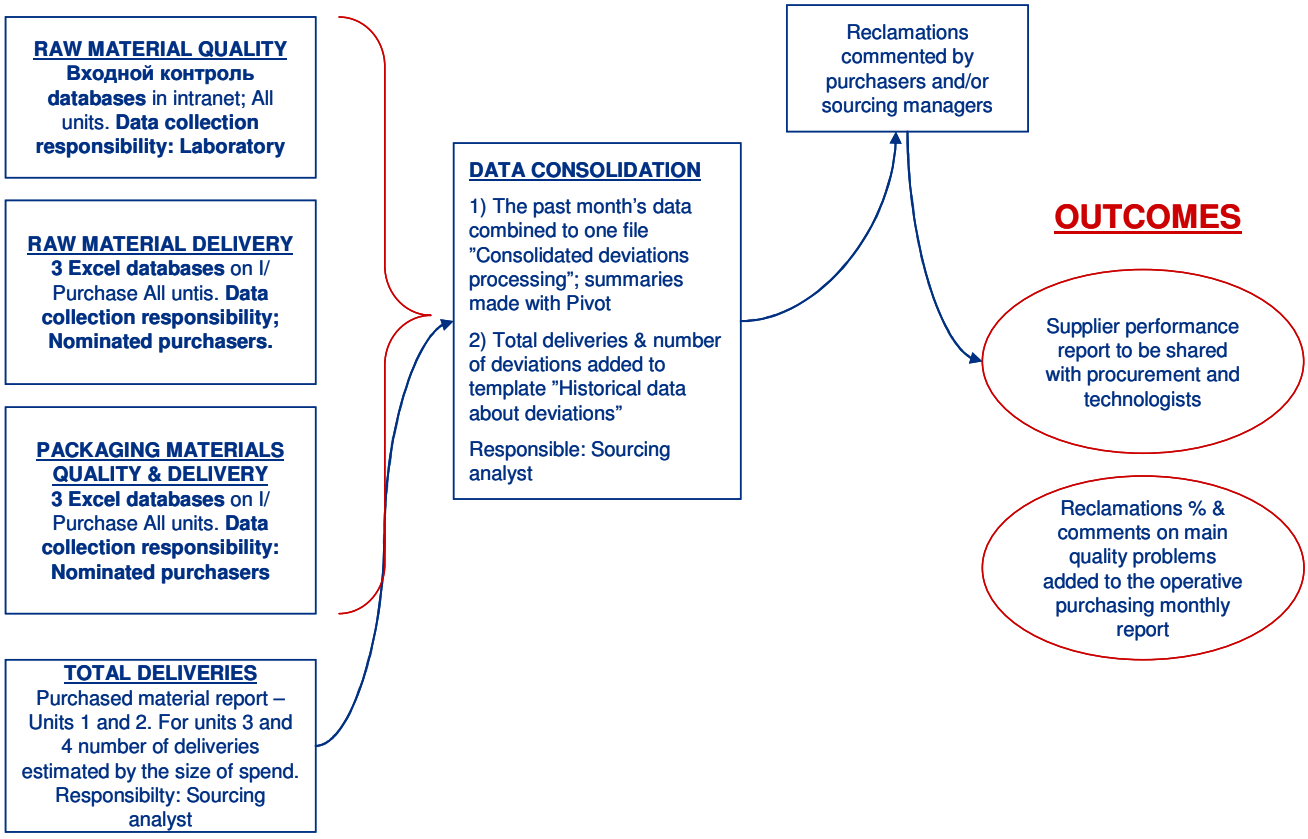
1. What is measured at the moment?
2. Is the current measurement system linked to sourcing strategy?
3. What systems are currently in use in performance measurement?
4. Who is responsible for performance measurement and reporting?
5. Who is responsible for collection of data used in reporting?
    - Is it only one person or are there more involved?
    - Is the finance department involved in cost measurement?

6. What works well?
7. Are there issues that are problematic?
    - Can you think of a reason for this?
8. Is there something that should be given up?

Improvements to be made

9. Should more people take responsibility over reporting? If yes, who should be involved?
10. Do you consider that the employees should be included in the design of the system?
11. What are the basic areas that the system should cover?

APPENDIX 2: SUPPLIER PERFORMANCE DATA COLLECTION PROCESS



APPENDIX 3: MONTHLY PURCHASING DASHBOARD

KPI	Target	December	January	February	March
Deliveries without reclamations, % of all deliveries					
All	98 %	99,0 %	98,9 %	98,5 %	98,4 %
SPB	98 %	98,9 %	99,2 %	98,6 %	98,4 %
MOS	98 %	99,5 %	98,2 %	98,1 %	98,2 %
Delivery accuracy					
SPB	90 %		97 %	na	93 %
MOS	not measured				
Lost production due to stock-outs, kg					
SPB	0 kg	0	0	0	0
MOS	0 kg	600	0	1 991	3 400
Obsolete material in RUB					
SPB	0 RUB				152 000
MOS	0 RUB				812 000
% of call-off items in supply chain					
Raw materials SPB	60 %		49 %	53 %	
Packaging materials SPB	30 %		4,0 %	7,0 %	
Raw materials MOS	15 %		30 %	35 %	35 %
Packaging materials MOS	not measured				
Unplanned / emergency purchases					
SPB	0				3
MOS	0				2
Order confirmation % among the biggest (80% of spend) suppliers					
SPB	100 %				
Raw materials			50 %	100 %	100 %
Packaging			100 %	100 %	100 %
MOS	70 %			20 %	55 %