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DEVELOPMENT OF MANAGEMENT ACCOUNTING PRACTICES IN ENERGY OPERATIONS IN A FOREST INDUSTRY COMPANY

Master's Thesis

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Lappeenranta 30.06.2016

ABSTRACT

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Subject: Development of Management Accounting Practices in Energy Operations in a Forest Industry Company

Year: 2016 **Place:** Lappeenranta

Master's Thesis. Lappeenranta University of Technology, School of Business and Management, Industrial Engineering and Management, Cost Management.
77 pages, 12 figures, 3 tables, and 2 appendices

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Keywords: management accounting, internal service unit, shared services, Lean service process, internal reporting, performance measurement

The aim of this master's thesis was to map the management accounting processes and reporting of an internal service unit. The research was conducted in energy services in a forest industry company. Research questions and the results of the study are highly specific for the case unit although some generalizable features of management accounting in internal service units under shared services were searched.

The research was carried out as a qualitative action research and a single case study. Internal benchmarking was used to find best practices from other units and to get a comprehensive understanding of the financial processes of the case company. Empirical data for the study was collected with participant observation, interviews of experts and by exploring internal company documents. A literature review was conducted to outline the subject and to support the study.

Although the management accounting processes of the case unit were found to be on a good level, some improvement ideas were presented. Results of the research show that the needs of the customers are in the key role in the processes of an internal service unit. Management accounting and reporting need to support the company strategy and management decision-making. To evaluate the performance of the service unit both financial and non-financial measures are needed.

TIIVISTELMÄ

Tekijä: Noora Seppänen

Työn nimi: Johdon laskentatoimen käytäntöjen kehittäminen metsäteollisuus-yrityksen energiapalveluissa

Vuosi: 2016 **Paikka:** Lappeenranta

Diplomityö. Lappeenrannan teknillinen yliopisto, School of Business and Management, Tuotantotalouden koulutusohjelma, Kustannusjohtaminen.
77 sivua, 12 kuvaa, 3 taulukkoa ja 2 liitettä

1. Tarkastaja: Professori Timo Kärri

2. Tarkastaja: Yliopisto-opettaja Tiina Sinkkonen, TkT

Hakusanat: johdon laskentatoimi, sisäinen palveluyksikkö, palvelukeskus, Lean palveluprosessi, sisäinen raportointi, suorituskyvyn mittaaminen
Keywords: management accounting, internal service unit, shared services, Lean service process, internal reporting, performance measurement

Tämän diplomityön tarkoituksena oli kartoittaa sisäisen palveluyksikön johdon laskentatoimeen liittyvät prosessit ja raportointi sekä löytää niistä kehityskohteita. Työ tehtiin metsäteollisuusyrityksen energiapalveluissa. Tutkimuskysymykset ja tulokset keskittyvät case yksikköön, mutta joitakin yleistettäviä piirteitä johdon laskentatoimesta sisäisissä palveluyksiköissä pyrittiin löytämään.

Työ toteutettiin kvalitatiivisena toimintatutkimuksena, joka koostui yksittäisestä tapaustutkimuksesta. Sisäinen benchmarking tehtiin parhaiden toimitapojen löytämiseksi yrityksen muista yksiköistä ja yrityksen talousprosessin laajempaa hahmottamista varten. Työn empiirinen aineisto koottiin osallistuvalla havainnoinnilla, asiantuntijoiden haastatteluilla ja sisäisiä dokumentteja tutkimalla. Työn teoriaosuus toteutettiin kirjallisuuskatsauksena.

Tutkitun yksikön prosesseista löytyi joitakin kehityskohteita, jotka esitettiin työssä. Työn tulokset osoittavat, että palveluyksikön toiminnassa tärkeintä on asiakkaiden tarpeiden huomioiminen. Sisäisen laskennan ja raportoinnin täytyy tukea yrityksen strategiaa ja johdon päätöksentekoa. Palveluyksikön suorituskyvyn arviointiin tarvitaan taloudellisten lukujen lisäksi muita mittareita.

ACKNOWLEDGEMENTS

I was very fortunate when I was given the opportunity to conduct this master's thesis after substituting the controller of the case unit for almost a year. This work experience helped me to understand the development needs of the management accounting practices in the unit and created a solid base for the study.

I would especially like to thank the great team of the Energy Services Finland and all the persons that were interviewed for this thesis. I want to thank the 1st examiner Professor Timo Kärri for the good advice that I received during the process.

I also want to thank my family for the support they have given me throughout my university studies.

Noora Seppänen

Imatra, June 2016

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ABBREVIATIONS

BU	Business Unit
CEO	Chief Executive Officer
CSI	Customer Satisfaction Index
CTO	Chief Technology Officer
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
ECM	Mill specific energy cost management files
EMS	Energy Management System
FORE	PVO's Energy Management System
GLT	Group Leadership Team
HFM	Hyperion Financial Management application from Oracle
IFRS	International Financial Reporting Standards
KPI	Key Performance Indicator
MA	Management Accounting
MBC	Management Base Case
NoPo	Nord Pool
PVO	Pohjolan Voima Oy
RF	Rolling Forecast
ROCE	Return on Capital Employed
ROOC	Return on Operating Capital
SAP BW	SAP Business Warehouse

SAP R/3	Enterprise resource planning software from SAP SE
SGA	Sales, General & Administration
SLA	Service Level Agreement
VP	Vice President
5YFF	Five Year Financial Forecast

1 INTRODUCTION

1.1 Background of the thesis

Importance of management accounting (MA) is constantly growing as companies of all sizes feel the need to be more cost conscious to compete in the market. Also external stakeholders' interest in financial figures influences the views of the company management. Good support for the management decision making from the financial teams inside the company is needed.

There is not much research made on management accounting in internal service units and shared services. Purpose of a service unit is to support core business of a company. Many companies have few service units for example logistics, human resources and IT. In large enterprises these service units can be collected under one organizational entity that is called shared services. This interesting organizational position creates a unique environment for management accounting in an internal service unit.

This master's thesis concentrates on management accounting practices in energy operations in a large international forest industry company. Energy operations in this company form a business unit (BU), called Energy Services, that is part of shared services. This service unit went through organizational reform few years earlier and now it follows lean principles in its operations. The service unit is small with only 12 employees in three different countries.

Current work processes for management accounting in the case BU are not as efficient as lean organization model would require. Controller position in the BU is relatively new as it was established during previous organizational reform to better respond to the increasing demand of financial and performance reporting. Controller should be in charge of producing financial data of the units' performance but currently also input of other personnel in the BU is needed to fulfill the expectations. As this is a service unit most of the financial data reported is for use of managers at different organizational levels. Final reports are mostly represented by other members of the organization than the controller. Controllers'

daily tasks are determined by old tools and processes causing inefficiency. Energy Services works in a continuous development environment and added agility to the financial processes would be valuable.

1.2 Research objectives and limitations

Aim of the thesis is to map the current management accounting processes and to find ways to improve the MA practices and reporting in the case business unit. This study is highly specific for the case BU although some generalizable features for management accounting in service units under shared services are searched. Internal service units are very different depending on the organization structure and the service provided and that is why comparisons to other units cannot be made easily.

Management accounting is a broad subject but in this thesis it is limited by the special features of the case unit. Energy Services is a small business unit and it has no stocks as there is no physical material flows through the unit. Also there is a very small amount of investments in a year. Energy Services belongs to the shared services function of a large international forest industry company and has a matrix organizational structure. Business units in the shared services function are a part of reporting entity Segment Other that works alongside of other divisions in the company. Theory that is used in this study is also strongly affected by the special features of the case BU. For example there is no need to present product or customer profitability calculation methods or other pricing methods than transfer pricing in this study.

Research questions are:

- What kind of processes and tools are currently used for management accounting in the case BU?
- How the management accounting processes could be developed to be more efficient so that they would serve the lean organization model?
- How could reporting be modified to better support management decision-making?

As the result of this thesis the current management accounting practices in Energy Services are mapped and compared to other units of the company. Development areas are identified and an execution plan for the changes is designed. This study enables the case BU to add agility to its MA processes and to check the level of their internal reporting. By making the MA processes more efficient it is possible to focus the resources on key issues to even better serve the needs of the case company.

Energy Services has also a grid company as a subsidiary for which financial calculations and reporting are also done in the BU. Management accounting for this subsidiary is not included in this study as the size of the subsidiary is small and financial calculations are quite different compared to Energy Services FI. Reporting and the figures for the subsidiary are mostly separate from Energy Services own figures.

1.3 Research methodology

This research was carried out as a qualitative action research and a single case study. The aim was to map and develop current management accounting practices in the case BU and to find some generalizable features for management accounting in internal service units under shared services. Energy Services presents a unique case and the processes are not directly comparable to any other unit.

Features of a qualitative study include that in-depth knowledge of the subject is searched and information is often collected with interviews and observations. Interviewed persons are carefully selected. Aim is to find new sides of the subject rather than testing previous theories or hypothesis. Research may find a new path while it is performed and the research plan changes accordingly. Each study is different and that should be remembered when analyzing the results. (Uusitalo 1991, p. 81; Hirsjärvi et al. 2009, p. 164)

Study is done as an action research when the researcher is part of the organization where the study is performed (Saunders et al. 2009, p. 147). There was a clear purpose for this research which was recognized first in the Energy Services

organization and then by the researcher herself when working as a controllers substitute for the unit for almost a year. The research continued after the substitution period. Some assumptions of the development needs were made before the study started but further research showed that all of these assumptions were not accurate.

For data collection multiple methods were used. Triangulation in data collection was utilized to ensure better reliability for the results of the study (Saunders et al. 2009, p. 146). Research methods included participant observation and interviews of experts as well as a literature review and exploring of internal company documents.

Because it is not possible to find best practices from literature for this kind of research question, theory in this study is used to outline the subject and to support the study. Theoretical data was researched from books, articles and reports. There is only one chapter dedicated to theory in this study to prevent the theory discussion from growing apart from the subject. Some references to theory are presented together with the empirical part.

Interviews of experts in the case company were executed to get a holistic view of management accounting processes. Controllers in two Finnish mills and Financial Manager of a service unit, other than Energy Services, were interviewed for comparison of MA practices and to find best practices. Group Business Controller and a person from Group Accounting were interviewed to get knowledge where the reported figures finally end up. These experts from outside the case BU were chosen because they represent a wide view of company functions. Also other personnel in the company were interviewed for smaller topics. There is no similar unit in the company that would compare to Energy Services so the sample of interviewed persons can be seen as substantial.

Theme for the interviews was thought beforehand and some questions were used to guide the discussions. Still, the interviews were executed in an open form to learn what is done elsewhere. Too precise questions might have left interesting information outside of conversations. (Hirsjärvi et al. 2009, p. 204-216)

In analyzing the status of current MA practices in the case BU internal benchmark was used (Bragg 2007, p. 224). Although the functions of the company are very different in organizational structure and in operations, the information that is reported and the tools that are used for its creation may be very similar. On the grounds of the internal benchmark, the development needs were examined. Also the needs identified in the case BU were given a major role in the final results of the study. The study was not executed a in systematic order which fits the qualitative form of the research (Hirsjärvi et al. 2009, p. 223). Analyses of the results were done alongside the interviews and search of theory. The results of the study apply at the time of the research but bigger changes for example in organizational structure would require a new study to be performed.

1.4 Structure of the thesis

There are seven chapters in this master's thesis. **Chapter 1** describes the background, aims and limitations of the study. Research methodology and data collection methods are introduced. **Chapter 2** is a theory chapter and it describes the unique features of management accounting in an internal service unit belonging to shared services. There is no clear line between theoretical part and empirical part in the study although most of the theory is presented in this chapter.

Chapter 3 begins the empirical part of the study. Chapter starts with the presentation of the case BU. Current management accounting processes and standard reports are described. Also some theory regarding the MA processes is presented.

Best practices for MA processes from other units of the company are searched in **Chapter 4.** Internal benchmark is used to understand the current level of the management accounting processes in the case BU. To get a wider view of management accounting in the company also personnel from the group controlling are interviewed.

Improvement needs for the MA processes in the case BU are described in **Chapter 5.** Development plan is designed and modifications that were done to the processes during the study are presented.

Chapter 6 portrays the results of this study. Some generalizable features of management accounting in internal service units are discussed. **Chapter 7** sums up the key findings of the study. Structure of the thesis is presented in figure 1. Figure 1 also describes what information is used in each chapter and what the aim of the chapter is.

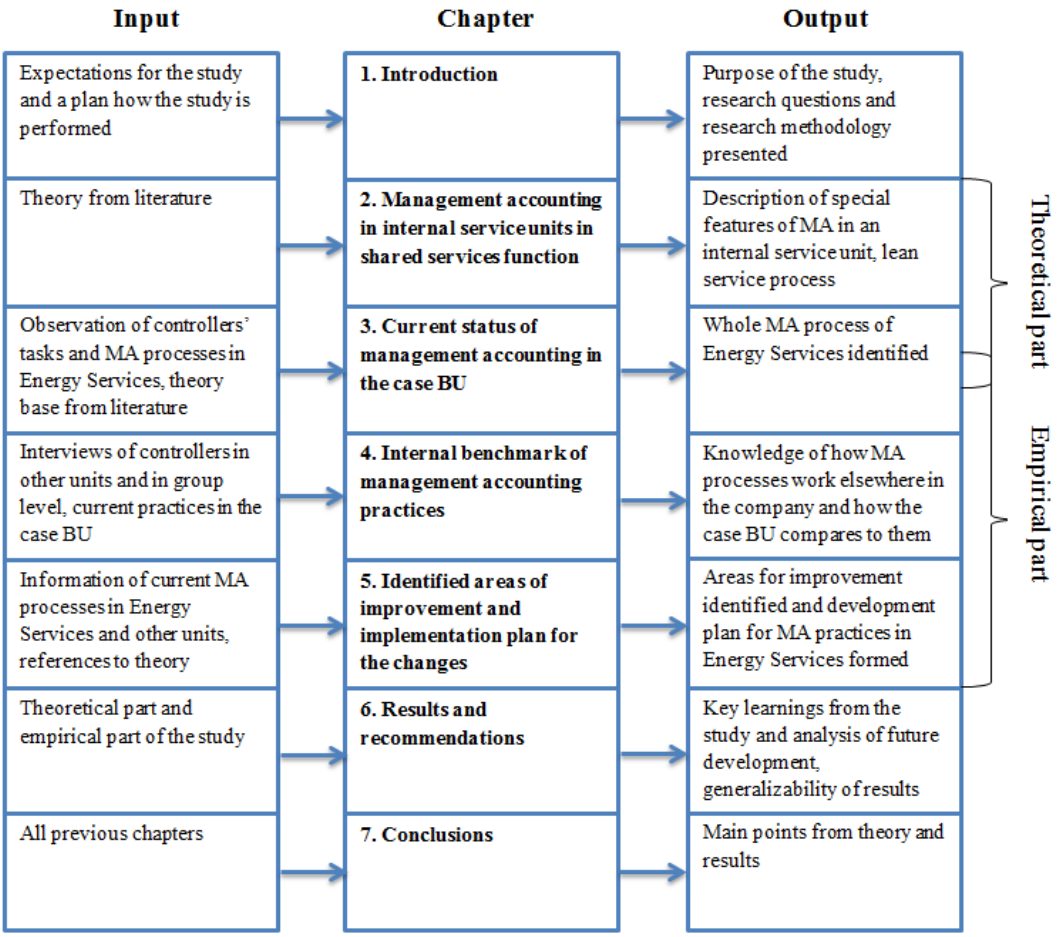

Figure 1. Structure of the thesis

2 MANAGEMENT ACCOUNTING IN INTERNAL SERVICE UNITS IN SHARED SERVICES FUNCTION

2.1 Defining management accounting

Every action of an organization requires financial resources. Use of the resources needs to be calculated in order to explain and measure how the organization works and to find place for improvement. Enterprise financial management is described in figure 2. It can be divided to tax accounting, financial accounting and management accounting. Cost measurement provides data for both financial and managerial accounting. Purpose of financial accounting is mostly to give information to external stakeholders for example shareholders, banks and suppliers. Form of financial accounting in large enterprises is often strongly affected by legislation and standard accounting principles such as IFRS. In contrary management accounting information is for use of managers inside the company. It is more company specific and it includes more non-financial data. Although external reporting and internal reporting should be separated, external reporting and the expectations of external stakeholders often guide managerial decision-making and similarly influence internal calculations. Figures in the financial statements might for example have a direct impact on the compensations paid to the management. (Horngren et al. 2009, p. 30; IFAC 2009, p. 5-6)

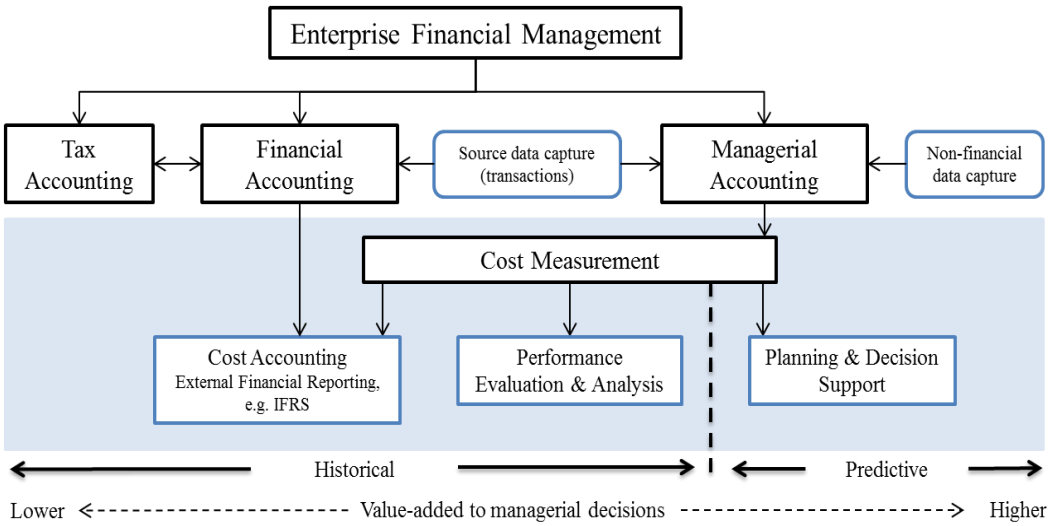

Figure 2. Enterprise Financial Management (based on IFAC 2009, p. 7)

Objectives of management accounting can be divided to forecasts of future performance and to analysis of actual figures. These two phases of MA can be named as planning and control. In practice these phases can be implemented in the five-step decision-making process described by Horngren et al. (2009):

1. Identify the problem and uncertainties
2. Obtain information
3. Make predictions about the future
4. Make decisions by choosing among alternatives
5. Implement the decision, evaluate performance, and learn

Steps 1-4 can be referred to as planning. Planning includes making estimates and predictions, determining goals and defining how to reach them. In management accounting important tool for planning is budget that demonstrates the suggested plan of action in a quantitative form. Step five in decision making process can be referred to as control and in management accounting it includes comparing actual figures to forecasted or budgeted figures. Idea of control is to evaluate performance, provide feedback and to learn how to improve actions in future. (Horngren et al. 2009, p. 35-36)

Management accounting aims to produce information that helps the management to guide the performance of the organization to wanted direction. Producing this information includes calculating, analyzing and reporting relevant data. Managers need information for performance evaluation, decision making and strategy work. Management accounting and reporting should give solid support when formulating strategy and also with the follow-up of the chosen strategy. Strategy defines the goals of the unit and the plan how they will be achieved. It defines the operations of the function. Management accounting can help to notice the capabilities of the unit. Management accounting key question can be summarized as follows: 1. How the information helps the managers to perform better in their tasks? Are the benefits of the produced information higher than the resources needed for its creation? (Horngren et al. 2009, p. 30-31)

Three guidelines for value creation with management accounting can be identified: cost-benefit approach should be used, both behavioral and technical part of accounting should be remembered and different costing methods should be used for different purposes. With cost-benefit approach it is meant that in all the decisions and in resource allocations both costs and the benefits of the action should be considered although they might not always be easy to define. Among technical part of accounting it should be noticed that human behavior is what matters the most. Actions of the managers and employees affect performance, not the calculated and reported figures. Budgets are used to motivate people and to communicate strategy to employees. There are no common rules for management accounting measurement and reporting. Often income statement and balance sheet are followed both in financial accounting and management accounting although the presentation form of the data might be different in MA than in external reporting. Costing methods should be chosen separately for each occasion because the information should be easy to understand. (Horngren et al. 2009, p. 30, 37-38)

The term cost management is used when costing information is utilized in managerial decision making to manage the use of resources and to increase the value created for the customer. Cost management cannot be separated from management accounting. Cost management doesn't only mean reduction of costs but it also includes the review of income and planning of profit. Cost measurement provides valuable information of the costs of resources that are used in an organization and it can also be used in financial accounting for example in valuation of stocks. (Horngren et al. 2009, p. 30-31)

Global trends affect management accounting. Base for management accounting was created in manufacturing companies and some ideas need to be rethought when service organizations become even more important in economies. Increased global competition requires management accounting information to be even more precise and on time. Improvements in technology enable complex accounting systems to be built to answer these challenges. Also management philosophies have changed and nowadays flexibility, efficiency and total quality management are the key words. (Bhimani et al. 2012, p. 12-15)

2.2 Features of internal service units and shared services

There are few characteristics that affect management accounting in service organizations. Services are often intangible which means that the customer experience defines the quality of the output and this makes measurement of performance difficult. Services are consumed and generated at the same time and they cannot be stored. Cost of labor in service organizations is usually high compared to other costs. Common for all service organizations is that they raise money and spend it. Management accounting information is used to build up efficient operations. Budget and control system have an important role because service organizations need to manage their resources well. (Andres-Lopez et al. 2015, p. 24; Bhimani et al. 2012, p. 13)

Shared services concept is a good option for large enterprises to structure its supporting operations. Idea in creation of shared services is to trim off duplicate support operations from business divisions and to form units that can efficiently concentrate on their strengths. As services are not outsourced knowledge is kept inside the company. In shared services it is possible to arrange common management for the service units that enables better performance and value observation. (Ulbrich 2006, p. 196-197)

Cost reduction is the main goal when establishing shared services. Also customer focus and value creation can be more easily pursued. Centralizing services brings economies of scale to service production. Small group of experts can efficiently serve the whole company. Having professionals of the same field working together enables complex questions to be solved without the use of other resources. Gathering the experts under one roof streamlines processes and may even generate new innovations for services. When employees feel that their skills are well in use they succeed better and feel more satisfied. This all leads to good knowledge management. Cost reductions may also be seen when negotiating new contracts with suppliers. Shared services units are in better position to agree good terms with suppliers and volume discounts are possible. To create more profit services can sometimes be offered to external customers. (Ulbrich 2006, p. 197-199)

Shared services should only include supportive task that are not critical to company's success. Tasks that are strongly related to company's core business, such as sales, might lose part of their connection to other processes if they were located in shared services. Units in shared services are not dependent on location. With modern technology service units can be located geographically almost anywhere. (Ulbrich 2006, p. 198)

Goals of an internal service unit should be in line with the goals of the whole company. Needs of the user are most important in operations of the service provider. Internal customers have a big influence on internal service units. If they don't see the value that the service function creates or are not ready to pay for the services then the role of the service unit should be questioned. (Häusser 2013, p. 209; Wilson 1998, p. 59-60)

In the service units the importance of the end customer should not be ignored. Internal service unit is an important part of the value chain of a company. A service unit will support the whole business process of the company by working efficiently. This could mean for example cost reduction in the final product price or enhanced level of customer service. Consultation support from the service unit to other units is also valuable and for example support in environmental issues can increase the value created to stakeholders. (van Fenema et al. 2014, p. 181-183)

Internal service units should not take their customers for granted. Internal service units can be outsourced in most cases if the level of service provided is not felt good enough. External service providers have excellent marketing skills which make their services attractive. Marketing skills should also be learned in internal service units. It needs to be clear to the customers what kind of services is provided and what skills and resources the service unit has. (Wilson 1998, p. 58-59) Value created for the company should be communicated forward (Häusser 2013, p. 210).

One important benefit of an internal service unit is that it has inside knowledge of the business of the company and the information sharing is very open. Also part of MA reporting in internal service units goes to the internal customers which

differs from having external customers. This often confidential information makes the service provider and customer closer. Trust between a service unit and an internal customer is often in high level so that the customer doesn't feel similar need to control the actions of the internal service provider as with an external supplier. (Herbert & Seal 2012, p. 92; Wilson 1998, p. 60)

2.3 Measuring performance of an internal service unit

Performance measurement in an internal service unit is very different than in traditional business units. Measures that are related for example to profitability, growth and liquidity can rarely be used. Profit making ability and performance is not the same thing in an internal service unit. Customer needs define the actions of an internal service unit and performance should be measured through customer experience. Service level and the cost for the internal customers are agreed on service level agreement (SLA). Transfer price is used when a service unit sells commodities for the internal customers. Transfer pricing determines the profit making ability of an internal service unit.

Performance of a service unit depends on value created to customer on agreed price. This input of a service unit is normally agreed on service level agreement (SLA). SLA defines responsibilities for both service provider and the customer. SLA can include for example a list that describes what is expected from the service unit and how the costs are allocated to the customer or what is the transfer price. It can include information about contact persons and organizational forms. There might be a list of key performance indicators and target figures for performance evaluation of the service unit. Even benchmarking to external service provider may be used. Also customer requirement should be written to the document for example delivering data to the service provider on time. (Bangemann 2005, p. 95)

SLA is unique for every company's situation and cannot be easily copied from other organizations. Aim of the SLA is to get a good understanding of how the process works and to clarify to each business partner what is expected from them. This way improvement opportunity can be spotted. SLA should also help to

explain the cost drivers for the customer. Principles described should help both service provider and customer in budgeting. (Bangemann 2005, p. 97)

Service units differ from service companies in that there is usually no billing per hour but the monthly costs are fixed to certain level regardless of the amount of work done. (Bragg 2011, p. 394) This is why performance measurement is very important. If a service unit invoices all the costs from its action from another unit with one agreed price the service unit can work quite freely and can create more costs than necessary. If this happens, the service unit won't fill its actual purpose of cost savings.

Transfer pricing is the key issue when talking about creation of profit in an internal service unit. Transfer pricing is used when a unit charges another unit internally for its services or products. In addition to providing services to the customers, an internal service unit might also be delivering commodities to other units of the company. Service unit can create profit by forwarding products to other business units with higher price than purchased. Transfer prices can be agreed internally and they can be agreed to stay on certain level or it can be tied for example to market price or actual costs. Defining transfer prices gives top management a change to influence how income and costs are divided between different units and what actions are taken correspondingly. In some cases correctly set price level may enhance profit-making ability of the whole company. Setting level of transfer price may become an issue if managers of different units don't share a common opinion. (Horngren et al. 2009, p. 794; Sahay 2013, p. 783)

With transfer pricing it is possible to decrease the total amount of income taxes in the company by charging higher transfer price from countries with high tax rate to move the profit to countries with lower tax rate. As this should not be happening, tax authorities require an arm's length margin to be added to transfer prices to make them more comparable to market prices. Also documentation system for internal transfer pricing needs to be implemented in international companies. (Horngren et al. 2009, p. 794; Järvenpää et al. 2010, p. 370-371)

As transfer prices are often agreed to be very close to actual costs it is possible that the internal service unit only gains the mark-up amount of profit from its operations. Internal service units can be seen as cost center and that is why the classic financial measures cannot be used for the performance measurement. The amount of profit doesn't show the real value that is generated for the company. In internal service units the importance of non-financial figures in performance measurement should be underlined. (Häusser 2013, p. 209)

Performance measurement in many internal service organizations is quite a new feature and has yet to find the best practices. Some financial information needs to be provided for external stakeholders but for internal performance measurement other kind of data is needed. Performance measurement should help to manage the operations. Small set of well chosen key performance indicators (KPIs) could be used for this purpose. With too many measures there is a risk of not having enough time to analyze them properly. (Häusser 2013, p. 209)

2.4 Lean service process and cost consciousness

Cost savings are one of the main reasons for establishing shared services. That is why cost consciousness is very important for the service units. Lean service process is one way of keeping costs in control. Identifying waste in service production can lead to cost reduction (Bragg 2011, p. 430).

Lean service process focuses on elimination of waste in service production. As services are intangible, waste in the service process can be recognized by measuring customer satisfaction. Service organizations should concentrate on serving their customers' needs and activities performed should be value-adding. Lean principles were originally developed for manufacturing companies that have tangible output. In recent years new methods have been developed to enable lean principles to be used in service organizations. (Andres-Lopez et al. 2015, p. 24; Hadid & Mansouri 2014, p. 750-751)

Developing lean service process starts with understanding the needs of the end-customer and identifying what creates value in the processes. Value stream of a service organization includes actions that add customer satisfaction. Service

processes should be streamlined to only deliver what is demanded by the customer. (Andres-Lopez et al. 2015, p. 25)

In management accounting cost consciousness is more than only reduction of costs as it also includes the organizational behavior and economic efficiency. Cost consciousness enhances the understanding in the organization of how the actions taken affect the financial figures and can lead to more thoughtful spending behavior. Cost consciousness can be promoted with management controls. In previous research it has been found that cost consciousness is best pursued with involving employees in budgeting. This way cost related information can be distributed comprehensively in the organization. Use of cost and profit centers as well as setting up budgetary controls and comparing actual costs and income to budgeted figures in monthly reporting promotes cost consciousness. Also cost management knowledge in the organization helps in creation of cost conscious environment. (Velasquez et al. 2015, p. 64-65, 70)

2.5 Organizations impact on accounting practices

Organizational structure and work practices affect management accounting. Some organizations embrace innovations and new technologies, others rather do everything as before. (Ribeiro & Scapens 2006, p. 99) Management accounting information should reflect the way that an organization works. Managers at different organizational levels need information of company's performance in multiple aspects. Ultimately this information can be used to promote company strategy and to guide the performance to right direction. Use of similar management accounting practices doesn't work in organizations that have very different business model. (IFAC 2009, s. 19)

Organization structure is firmly linked to responsibility centers that are used for management accounting in a company. Organization structure presents the form how the responsibility is spread in the organization. Each manager in the organization is accountable for a responsibility center. Responsibility area spreads as the manager's level goes higher. Cost center, revenue center, profit center and investment center are the four typical responsibility centers. Managers

don’t always have possibility to control the costs or revenue of their responsibility center. Thus, it is important to remember that responsibility centers can be used also for information giving purposes and to find the manager who can tell more about the topic. Budget creation should be combined with responsibility accounting. When the managers participate actively on creation of budget for their responsibility area they are more committed to achieve the goal. (Horngren et al. 2009, p. 223-225)

Management accounting methods vary between different organizations. Even within one company there might be several different ways to represent MA information and many tools used for its creation. Organization’s business and operational model affect the methods and tools used for management accounting. Tools should be developed to produce highly sophisticated information if that is needed for management decision making. If the organization doesn’t have much possibility to affect the costs or income then it also lowers the requirements for the tools. There is no reason to build too complex systems. Good tool increases the transparency of costs. (Häusser 2013, p. 209; IFAC 2009, p. 16)

An internal service unit belonging to shared services is seen to be in the same hierarchical level as any other unit in a company. The organizational form affects management accounting of the service unit. It increases the need for reporting as there are multiple stakeholders. Service unit has its own management but it is also controlled through its own reporting division. In addition the internal customers require detailed information of the actions of the unit. (Herbert & Seal 2012, p. 93)

2.6 Internal reporting

Aim of management accounting is to produce information that supports management in decision making. To achieve this goal it is important to understand the needs of the receiver of the report. This can be achieved by asking the needs of the receiver or by proposing a certain way of presenting the information. There is no meaning to produce reports that are not utilized. In organizations there is often too much information available. Challenge is to find

relevant, reliable and up to date information for the occasion. (Järvenpää et al. 2010, p. 35-36)

Management accounting information is mostly used for planning, monitoring and control purposes. For example investment calculations, production costs or customer profitability can be presented. Pricing methods can be compared or benchmark to external competitors created. Environmental calculations for example emission can be included in management accounting. (Järvenpää et al. 2010, p. 36-37)

Management accounting reports may be used in situation that include different amount of uncertainty. Product profitability can be shown with calculations that respond directly to the question. Sensitivity analyses can be used if there is no clear view how to proceed. Calculations can also be used to justify certain way of working, for example to justify the existence of internal service units. (Järvenpää et al. 2010, p. 38-39)

Management accounting data can be in multiple forms. Information can be financial or non-financial, objective or subjective and history or future oriented. Features of information used in management accounting are presented in figure 3. Most of the produced information is financial but also non-financial information, such as number of sold units and amount of employees, is needed to support the monetary figures. Objective information is verified data that doesn’t depend on the producer. Subjective data is affected by the producer of the data for example when customer satisfaction is evaluated based on observations of employees. History data of financial performance is needed to evaluate current situation of a unit and to create plans for future. Future oriented information is presented in premises and forecasts and it can be used for strategic planning. (Järvenpää et al. 2010, p. 39-42)

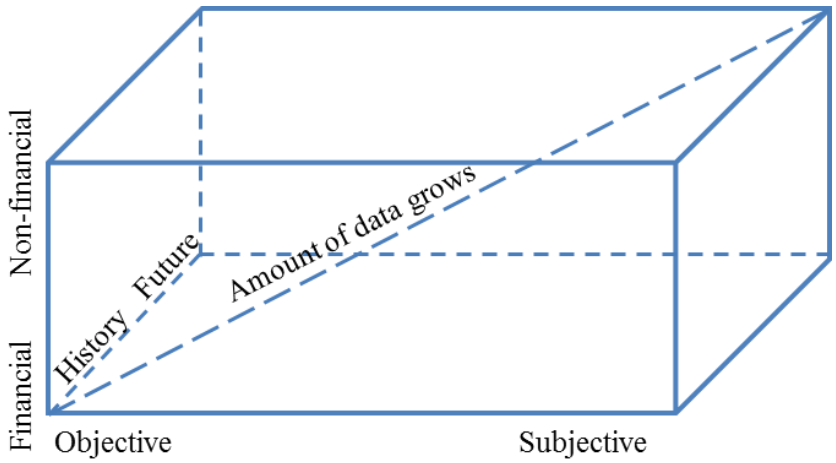

Figure 3. Features of information used in management accounting (Järvenpää et al. 2010, p. 43)

It is often difficult to produce data that is financial, objective and future oriented. But if information that is produced is only financial, objective and historical it might give too narrow and one-sided presentation of the situation. For example use of future scenarios is recommended to broaden the dimension of the data. Previous research has shown that companies that use broad set of figures in management decision making perform better than companies that use only historical financial information. Of course, specific features of an organization need to be considered when producing data. Only information that is usable in the organization should be produced and resources that are needed to produce the information should be compared to the benefits. (Järvenpää et al. 2010, p. 43)

Reports should be simple enough for the managers and employees to understand otherwise the information on the reports might be ignored. Way how the information is presented is just as important as the way that it was calculated. Data should be presented by using tables, charts and commentary. Reports should be clear and easy to understand for the receivers. Users of the reports need to trust the information to make relevant decisions based on it. Organization culture affects the way that the information should be presented for example people with different educational background may need data in different forms. Decisions made on management are affected by facts and intuition beside financial

calculations. (Bhimani et al. 2012, p. 6; IFAC 2009, p. 14; Järvenpää et al. 2010, p. 38)

Although information should be presented in simple form to management, financial personnel should make a detailed analysis for their own use (Bragg 2011, 356). In management accounting it is possible to use income statement formulas that are different than in bookkeeping and external reporting. It is important that the followed income statement in management accounting enables comparisons between actual and forecasted figures and shows the variances. Making variance analysis is a crucial part of management accounting. Variance analysis might reveal areas of improvement either on performance of the unit or in the forecast accuracy. (Järvenpää et al. 2010, p. 52-53)

3 CURRENT STATUS OF MANAGEMENT ACCOUNTING IN THE CASE BUSINESS UNIT

3.1 Introduction of the case BU

This case study is carried out in a service unit responsible of energy operations of a large international forest industry company. Energy Services is a small international team of experts that follows a matrix organization structure (figure 4). Lot of information of energy operations is reported to Chief Technology Officer (CTO) including energy efficiency, strategy, emission trading and legislation related matters. Energy procurement is managed together with Sourcing organization. Bigger decisions that are related to Energy Services are made in Energy User Board where other divisions can affect the future actions of the service unit.

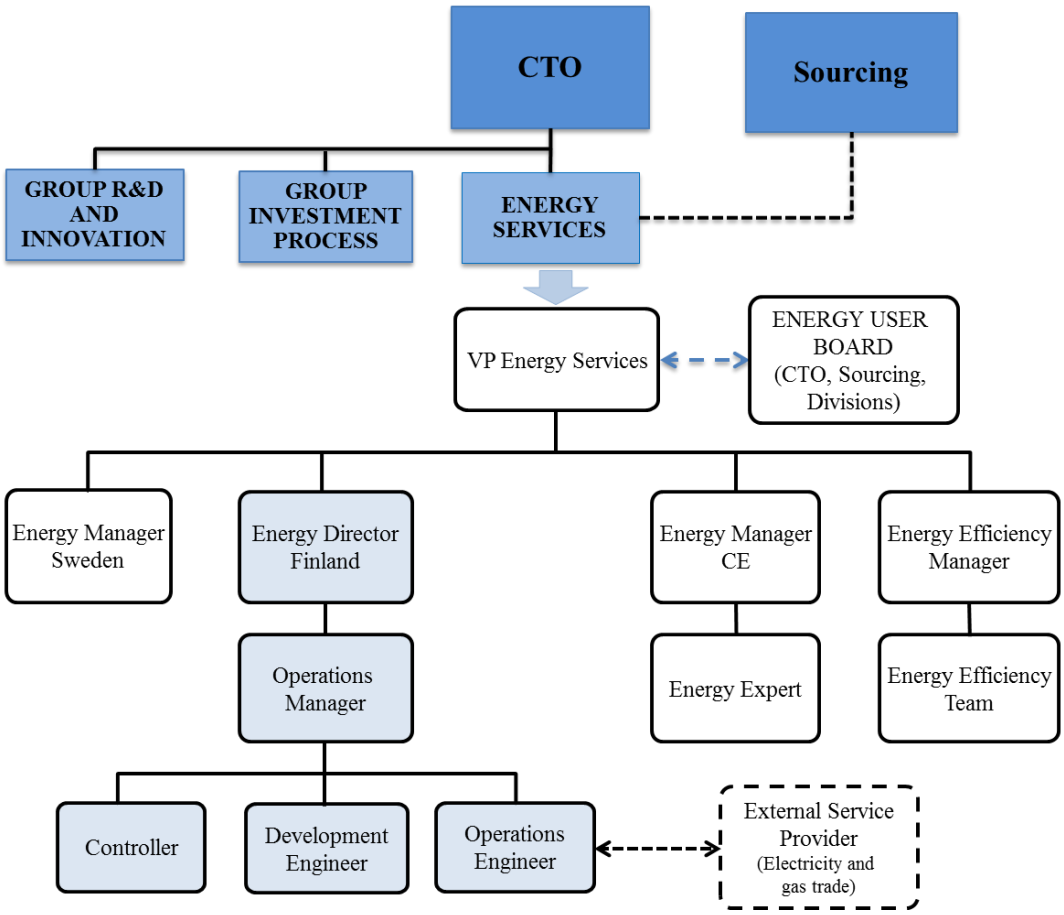

Figure 4. Energy Services organization (based on BU presentation material 2016)

Finland, Sweden and Continental Europe have their own Energy Services teams. Each country is different when it comes to energy procurement so it's easier when each regional area has own responsible persons. Finland is the only place where gas and electricity procurement is centralized and invoicing to the mills goes through the unit. All the areas have a consulting role in energy operations which creates SGA (Sales, General & Administration) costs that are invoiced from the mills as agreed in SLA. Financial information of the units' performance is reported under Energy Services Finland and that is why emphasis of this study is on Finnish operations. Main operations of Energy Services Finland are presented in figure 5.

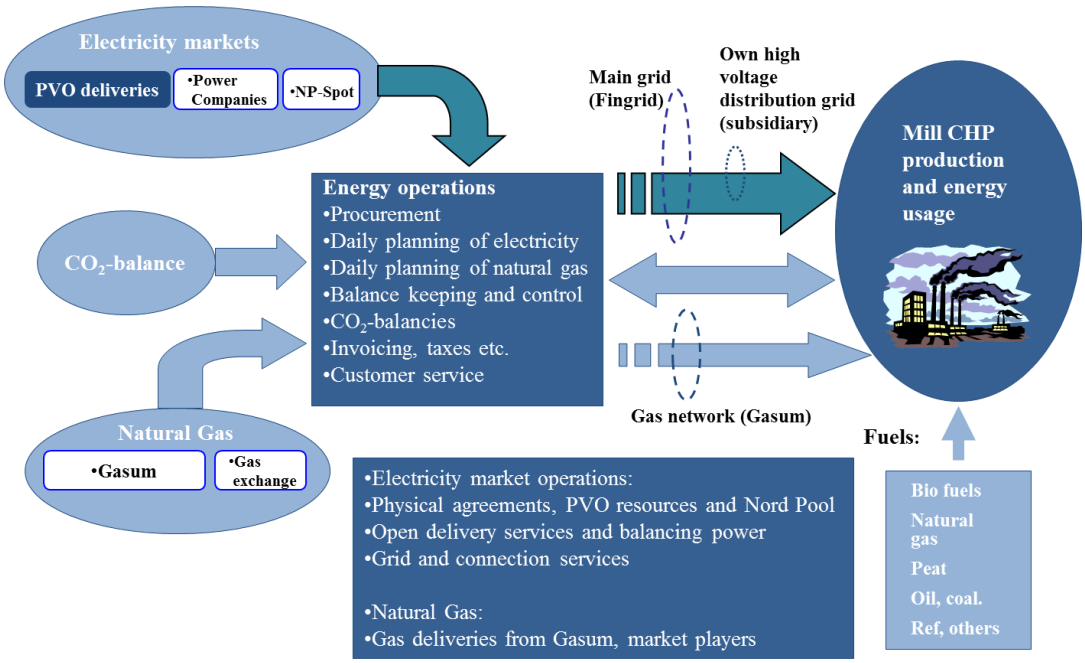

Figure 5. Energy Services FI operations (based on BU presentation material 2016)

Main operations of Energy Services in Finland include electricity and gas procurement, price hedging and invoicing from the mills. Energy contracts are checked and renewed in cooperation with Sourcing. Energy Services provides expertise on energy related issues inside the company and deliveries information of changes in energy market, taxes and legislation to other departments. Also emission trading and supervising interests of the company are a part of daily tasks. The case unit has no stocks and only few investment are done in a year.

Managing Pohjolan Voima Oy (PVO) resources is an important part of electricity procurement in Finland. Case company owns PVO shares and gets electricity from PVO's power plants at production cost. Energy Services allocates electricity from PVO to different mills in relation to their consumption. Electricity is forwarded to mills with agreed fixed transfer price that is close to electricity market price. This way the risk of changes in PVO production cost is not on mills. Difference between PVO production cost and transfer price to mills has major impact on Energy Services FI earnings before interest and tax (EBIT).

Energy Services FI maintains Energy Management System (EMS) that delivers up to date information from mill production and energy usage. System is used for electricity and gas procurement optimization and invoicing. It is possible to see from the system how a mill has forecasted its energy consumption and what is the actual level on real-time measurement. Information from the system goes to external service provider which handles electricity and gas trade. EMS also has many other features that are needed in daily operations in Energy Services FI.

Case company has a wholly-owned subsidiary that manages electricity transmission grid (110 kV) in few sites. This subsidiary is led by Energy Services FI team. Financial information for this subsidiary is also provided in the unit but it is not considered in this thesis.

Energy Services is part of shared services function and belongs to reporting division Segment Other. Financial information is provided to Segment Other controlling team and this is also where the instructions for cost control and for reporting are mostly given.

Energy Services has no separate management accounting system. Actual figures are in SAP and most of the MA calculations are done in Excel files. Reporting to different organization levels is done in multiple forms. Group uses Hyperion Financial Management (HFM) as a consolidation tool. Mill-specific information is shared in company's intranet in ECM files. These files contain information of energy and fuel related consumption, costs and taxes and they can be updated by personnel in the mill or in Energy Services. Lot of information for management

accounting is also collected from information systems of external suppliers, the most important source being PVO's energy management system called FORE.

3.2 Cost center and profit center accounting

Purpose of cost and profit centers is to divide costs and income into smaller segments so that it is easier to see what is causing them. Aim is to understand how much resources are needed for the value created. Cost and profit centers can also be called responsibility centers to underline their importance in management.

Cost centers include costs that are related to specified business process or employee group. Income is not observed in cost center accounting. Cost centers mostly include fixed costs because variable costs are often associated with sales and profit center accounting fits them better. When using costs centers for management purposes it should be noted that focusing only on costs may lead to behavior where employees' main goal is cost reduction rather than pursuing company strategy. (Bragg 2007, p. 218)

Profit center accounting applies well for operational performance measurement because it focuses on income but also includes related costs. Using profit centers for management purposes is advisable because then attention is on profitability rather than costs. Cost centers may not be easily converted to profit centers if the department does not have any direct income. In this case cost allocations can be used. This is a valid way for example for an internal service provider. (Bragg 2007, p. 219-220)

Responsibility centers enable reporting that is customized for each receiver in different organizational levels. Very detailed information of incurred costs can be given in employee groups at lower level to control the activities whereas managers may need reporting that gives wider view of company performance. Often this leads to having more cost centers than profit centers. Investment centers can be used as responsibility centers when controlling investment projects. (Bragg 2007, p. 218)

Responsibility centers work most effective when they only include costs that can be influenced by the responsible persons. Allocating overhead costs to the responsibility centers should be carefully considered because allocations may lead to unfair judgment if the responsible persons have no control over the costs. Overhead costs should be excluded from reporting if local manager is unable to master the cost or if the cost would occur even when the responsibility centers were deleted. If the overhead costs need to be applied to responsibility centers then they should be presented on their own separate line. (Bragg 2007, p. 221-222)

In the case BU there are currently three profit centers: Power, Natural Gas and SGA Pooling. For Power there are 16 cost centers and for Natural Gas only 1 cost center in use. Under SGA Pooling there are 5 cost centers. Profit and cost center structure is presented in table 1. This structure has been in use for many years despite the changes that have occurred in the organizational structure and operations. Rethinking and streamlining profit and cost center structure should help the daily tasks and cost follow-up considerably.

Table 1. Profit and cost center structure

PROFIT CENTERS:		
"POWER"	"NATURAL GAS"	"SGA POOLING"
COST CENTERS:		
FI ADM Overheads	Natural Gas Costs	Mill Allocation
FI ADM Wages	(FI OPER Cost Allocations)	Energy Management
Energy Efficiency	(FI ADM Wages Natural Gas)	CE
FI OPER Overheads		SWE
FI OPER Wages		FI
ISO50001		
PVO		
Contract Purchases		
Nord Pool		
Transmission and Services		
Electricity tax		
Hydro Power Overheads		
Hydro Power Oper. and Maintenance		
Hydro Power Electricity tax		
Hydro Power PVO		
Power Grid		

Power is the most complex of the profit centers. It includes all income from electricity sales and all costs for electricity procurement. It also includes personnel costs, all the costs from operations that are not directly related to natural gas or SGA pooling and costs that are further invoiced from distribution grid subsidiary. Cost center structure is a relic from the time when the case company owned few hydro power plants and Energy Services had own control room operations for electricity and gas trade. Now all the electricity is received from PVO or it is bought from the market. Control room actions are outsourced for third party service provider. Also internal invoicing practices have changed over the years.

Profit center Natural Gas includes all natural gas sales and costs. This profit center is intended to make zero profit as all the costs are invoiced from the mills each month. Structure of this profit center is very simple as it only has one effective cost center. There are two older cost centers that were last used in 2014 and are no longer needed.

SGA Pooling is used for managing income from service fees and monitoring cost allocations between different profit centers and countries. Result of this profit center should get close to zero in year-end if service fees that are invoiced from the mills are close to actual SGA costs. Most of the cost centers in SGA Pooling are currently only used as a technical part of allocations but not otherwise monitored.

Profit centers are in an important part in Energy Services EBIT-analysis. Differences between actual figures and RF are first checked by profit center before further inspection. Most often unexpected differences are found at profit center Power. Because the profit centers currently contains so much data it is very difficult to find an explanation for the differences. To ease the calculations in month end it has been presented that profit center Power could be divided to two or three profit centers. This would affect internal reporting as many figures are presented by profit center. Profit centers are also used during the month to check that re-allocations and other bookings are correct.

Cost centers are mostly used for cost allocations and SGA cost reporting. Amount of cost centers in Energy Services FI is overwhelming when compared to existing lean service organization. It is agreed that there is no more need to calculate personnel costs separately in FI OPER and FI ADM as there is no clear line between operative and administrative tasks in the current organizational form. Present cost center structure causes extra work for example in budgeting. Also cost centers for hydro power are unnecessary.

3.3 Budgeting and Rolling Forecast

Budgets are key components in management accounting. They are used for forecasting future profit and to drive company strategy. Actual figures should be compared to budgeted figures to see how well organization is performing and what are the causes for deviation. Comparing actual and budgeted figures also helps to make more accurate forecasts in future.

There are several different ways to assemble a budget. Costs and income can be calculated for instance in product, service or department level. In a manufacturing company the main budget may consist of production costs and there can be subsidiary budgets for labor, purchasing and overheads. Items that are not directly associated with production can be gathered to separate budgets. Usually these budgets include sales, marketing, general and administrative costs and income. Budgets are rarely independent and changes made to one of them may cause modifications to all the other ones. Rolling forecast is a budget that is created by continuously adding a new period to the budget to achieve a budget that is always available for a certain period. (Bragg 2007, p. 5, 7-8; Horngren et al. 2009, p. 211)

In the case BU there are currently three different kinds of budgets done regularly. Rolling forecast (RF) is updated monthly for next 12-15 months and operative budget for next year is fixed in October (RF10). SGA budget for the following year is done every fall. In addition five year financial forecast (5YFF) is done once a year to promote long time strategy. Budgeting process in functions is described in figure 6.

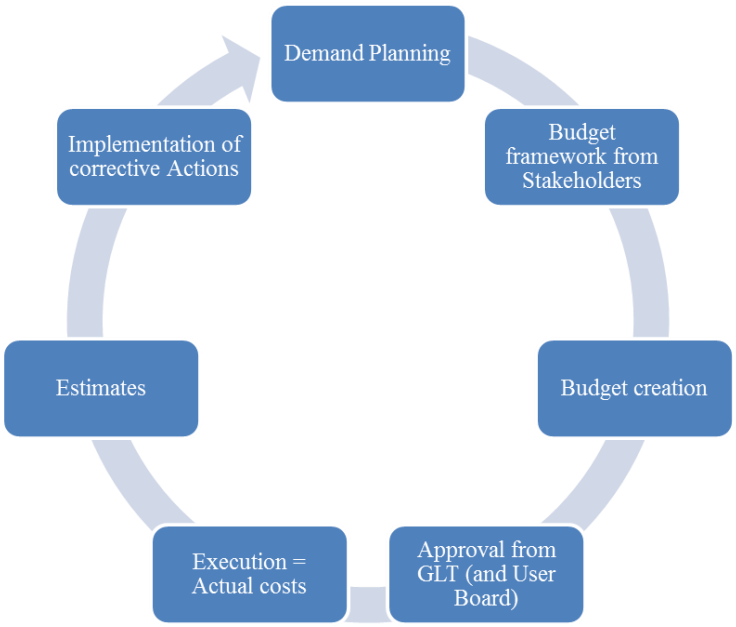

Figure 6. Budget process in functions (GBC 2013)

Group Business Controlling (GBC) has provided guidelines for budget process in units. In Energy Services this guideline is valid for Sales, General & Administrative (SGA) budget. SGA costs are calculated for cost centers that represent certain employee group or managers. SGA budget consist of personnel expenses, travel costs, IT-expenses, rents, consulting, internal services etc. In Energy Services SGA budget is prepared to a global Excel form by responsible persons and checked by unit controller. Budget then needs to be approved by GLT member and Energy User Board. After approval SGA budget is saved in SAP.

In service units SGA budgets are used as a base for SLA negotiations. Budgeting gives a possibility for demand planning with stakeholders and enables units to ensure that views for the future are similar. Service fees for next year are calculated based on budget and allocations are informed to other entities. SGA budget can be used for managing labor costs. In Energy Services actual costs compared to the budget are followed regularly.

After SGA budgeting round operative budgets for next year are made. In Energy Services operative budget consist mainly of electricity and gas sales and related costs. Operative budget is created in the same form and same Excel as monthly rolling forecast but more time is used to check that all estimates are correct.

Actual figures are compared to latest rolling forecast monthly to create variance analysis. Based on the variances corrective actions can be made. Quarterly, in a report called cost review, comparisons of actual figures to operative budget (RF10) are presented.

RF Excel is highly specific for the BU. Data for the calculations is imported from multiple sources and updated twice a month, for price premises and for RF reporting to HFM. Income statement and balance sheet structure in RF Excel (appendix 1) is in text book form (Järvenpää et al. 2010, p. 53). It is not similar to used SAP reports or HFM and that is why it is difficult to compare actual and forecasted figures.

Five year financial forecast (5YFF) is done every spring in every unit of the case company. Process starts with volume forecasts from divisions and macro premises from Treasury. Based on this information, the management base case (MBC) premises are created in the service units. In Energy Services this means calculating prices and volume for electricity, natural gas and fuels by mill and gathering these to one Excel file. This information is sent to Group Business Controlling. On the next phase units prepare income statement and balance sheet forecasts for next five years based on the given estimates. This information is reported to HFM. In Energy Services same lines in HFM are filled than in monthly RF but the calculations are in different Excel file.

3.4 Profit analysis

Although Energy Services is an internal service unit it aims to make profit. Actual income statement and balance sheet can be found in SAP and figures are analyzed in month end. EBIT is checked and reported to multiple stakeholders. Energy Services profit consists mainly of PVO contribution margin which is the difference between PVO energy production costs and internal PVO transfer price to mills. PVO transfer price is defined and fixed separately for each quarter based on electricity market price.

Lot of time in Energy Services EBIT-analysis is used for PVO contribution margin calculations. For these calculations there is an internally built Excel file

called electricity report. It is filled every month with information from SAP, EMS and FORE. Calculations in this file show how much electricity the company has got from PVO in a month and what is the production volume and costs when divided to different PVO production forms (hydro power, nuclear power, coal condensing). Actual figures are compared to figures in latest rolling forecast. Unit's report of EBIT-analysis can be seen in figure 7.

kEUR	RF12	act. 1/2016	Diff.	
Natural gas sales				k€
Natural gas purchase costs				k€
EBIT from natural gas				k€
SGA income				k€
SGA costs				k€
EBIT from SGA Pooling				k€
EBIT from Electricity				
-Invoicing process based deviation				k€
-PVO sales to mills				k€
-PVO sales to the markets				k€
-Production cost in PVO				k€
PVO contribution margin				k€
EBIT, total				k€
Electricity, GWh				
-PVO sales to mills				GWh
-PVO sales to the markets				GWh
PVO generation, total				GWh
PVO production cost price				€/MWh
Market Price (Nord Pool Hki)				€/MWh

Figure 7. EBIT-analysis

EBIT-analysis is sent every month to CTO and Segment Other Controller. Actual figures, RF figures and the differences between them are shown by profit center. EBIT in profit centers natural gas and SGA pooling is aimed to be near zero every

month. Most of the differences between actual and forecasted figures should be in EBIT of electricity of which PVO contribution margin explains majority. Electricity market price and PVO electricity generation volumes and production costs are shown in the report for info. Written comments are added with these figures to explain more in detail what is causing the difference between actual figures and RF.

In addition to electricity report actual figures are collected every month to Excel called profit file. Figures are checked from SAP and EMS and are filled to the Excel by hand. Profit file shows actual and estimated figures for year for the whole unit and divided by profit centers. Figures are presented in the same form as in SAP profit and loss statement. Profit file is used as source of data for monthly report called statistics. It is also used for checking correctness of actual figures in month end and for internal monitoring of the accumulation of profit.

Analyzing EBIT in month end is somewhat problematic as actual figures and rolling forecast are presented in different form. Lines and calculations in rolling forecast are not similar to SAP. Differences in PVO contribution margin can be found with separate calculations in electricity report but other differences in figures may be left without explanation.

A lot of effort in the unit is used for EBIT-analysis. EBIT is mainly formed by difference in PVO production price and transfer price to mills of which neither Energy Services team can directly affect. That raises a question if a service unit should rather emphasize reports that show the value created for the company than analyzing the actual EBIT. In Energy Services FI that could mean for example highlighting the benefits of centralized procurement. For electricity and gas that info is already shown monthly in Statistics report but it could be underlined.

3.5 Reporting

Reports have to be constructed specific for each responsibility group inside the company. These target groups can for example consist of a single employee, BU head, division management or company management. Reports should include information that is relevant for the receiver. To collect this data different

responsibility centers can be used in accounting such as profit centers and cost centers. Also benchmarking or balanced scorecard could be used to deliver information of performance of the unit. (Bragg 2007, p. 217)

Reporting in case BU consists of mandatory reports to Segment Other controlling and group controlling that are not easily changeable and other internal reports that are more free in form. Monthly reporting can be divided to future forecasts that are done before month end and analysis of actual figures after month end. Quarterly reports concentrate on analyzing performance of the last quarter. Future reports 5YFF and business plan are done once a year. Flash report and other ad hoc reports are done when needed. As a service unit Energy Services is presenting figures for its own actions but also gives support to group controlling and mills in energy price estimates. Lot of information for the reports comes from mill ECM files and that’s why it is very important that those files are updated regularly.

Also non-financial information of the performance of the unit is presented to management regularly. Operational development in Energy Services is described for Energy User Board in monthly comments. This report includes mostly operational information but also some financial data. Energy Services has three KPI’s which are not directly connected to financial performance. Key performance indicators are: 1. Relative energy price development for power and fuel; 2. Hedging performance for power and fuel; 3. Emission trading performance for EUA's.

It should be noted that although similar kind of information is imported to different reports, for example electricity price by mill, there is some variances in data depending on what components are included in each calculation model. For streamlining processes it would be advisable to check that in all group reporting same calculation model is used for same figures. This way figures could be more easily explained and understood.

Monthly reporting

Monthly reporting process of Energy Services FI is presented in figure 8. Figure shows where the information for the report comes from, what is the name of the

report and for whom it's meant. Reports that are marked with red are reports that can be influenced by personnel in the unit. Blue boxes only present the actions needed before reporting. Sign off is an obligatory control on month closing where the EBIT and balance sheet amount is confirmed for previous month and after that they cannot be changed.

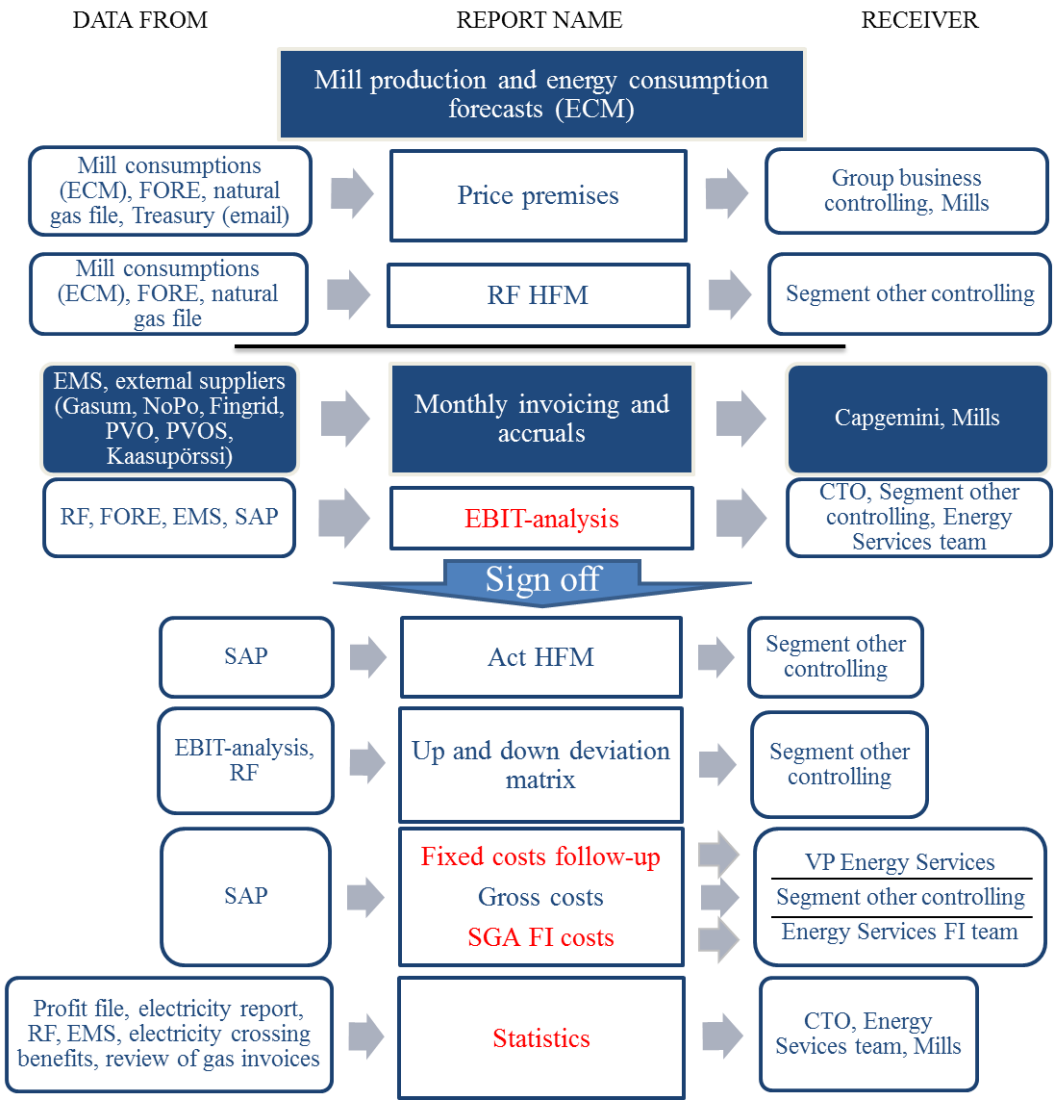

Figure 8. Monthly Energy Services reporting

Monthly reporting can be seen to start with creation of price premises. Premises are Excel files that are shared in company's intranet and they contain information that is used in divisions and units for rolling forecast update. Price premises are done monthly at least for energy, logistics, pulp and wood costs. Energy price premises is based on production and energy consumption forecasts that mills have

updated to their ECM files. Further price calculations for FI mills are done in Energy Services RF file with updates of PVO production price and PVO transfer price to mills that is received from Treasury. Energy price premises contain purchased quantity and price for electricity, gas and peat separately for each mill in CE, SWE and FI for next 12-15 months. For units' own rolling forecast Energy Services RF file is usually updated again few days after delivering price premises.

Monthly invoicing and accruals start the reporting period on month end. Energy invoices for Finnish mills are created with energy consumption information from EMS and with data of invoices from external suppliers. Sales and purchase invoices that belong to the previous month are accrued.

To check that the EBIT for the previous month is correct and that the accruals are fine, information from invoices, SAP and EMS is brought to profit file and to electricity report. With complex calculations in electricity report the variance analysis of actual EBIT compared to RF is performed as described in previous chapter. EBIT-analysis is one of the most important reports that are done in Energy Services. This report is closely followed by unit management and unexpected figures in this report often raise questions. Electricity report file would also include good information of electricity procurement on Finnish mills that is not presented regularly. Besides EBIT-analysis, actual EBIT and RF difference is presented in up and down deviation matrix that is sent to Segment Other controlling. Also future events that may occur and affect EBIT of the current quarter are entered to this report.

After Sign Off cumulative actual income statement, balance sheet, notes and CAPEX is saved in HFM. Information goes to the HFM straight from SAP but needs to be checked afterwards because there are few small mapping errors. Reporting of actual figures and rolling forecast to Hyperion is one part of mandatory monthly reporting that all the units of the company need to perform. This information is checked by division controllers.

SGA costs of the unit are reported monthly in three different ways. Information for all the reports is derived from SAP and presented in Excel. Report named

fixed costs follow-up contains SGA costs for the whole unit including cost centers in Sweden and Continental Europe. Despite the name this report doesn't contain any other fixed costs but the SGA costs. Fixed costs follow-up is send to VP Energy Services. Report called gross costs is sent to Segment Other controlling team. This report doesn't go to details but it has all the costs for Energy Services SGA cost centers summed up together. In the report, monthly estimates of SGA costs are presented based on yearly budget and actual figures are compared to those. For Energy Services FI team controller prepares report called FI SGA costs. It contains actual costs and budget for all the Finnish Energy Services cost centers and has very detailed explanations for the variances.

Performance of Energy Services FI is described comprehensively in monthly statistics. Statistics report is meant for whole Energy Services team, CTO and contacts in Finnish mills. It is 15-page Power Point that is prepared by controller, operations manager and development engineer together and shared on Energy Services page on company's intranet. Report shows development of electricity prices, electricity consumption and CHP generation at the mills. Operating profit actual for the month and year for Energy Services FI is presented and compared to budget and rolling forecast figures. Procurement of electricity and natural gas is presented in GWh. Report has one slide where benefits of centralized procurement in Finland can be seen. For subsidiary grid company actual and budgeted financial figures and transmission amounts in GWh are described shortly. Report also includes diagram for CO2 emission yearly free allocation and expected emissions per mill.

Quarterly reports

More comprehensive check on performance of the unit and of the company is done quarterly in management level. Quarterly MA reports are presented in figure 9. These reports are done in quarterly closing in addition to monthly reporting.

Figure 9. Quarterly reporting on Energy Services

Cost review is a report that is presented on a quarterly meeting usually by function head to CFO and other participants. Cost review describes what has happened in the unit in last quarter and year so far. Variances to budget and estimate are presented and corrective actions are proposed when needed. Cost review material in Energy Services includes SGA costs for the whole team, EBIT for Energy Services Finland and charts of energy market price development. Specific energy consumption by mill and emission trading are topics that are often considered. Cost review gives opportunity to go through also other important issues in the function with top management.

Quarterly information of SGA costs is sent to responsible persons to show how they are doing compared to budget. SGA costs are also reported quarterly on HFM. Unit controller only needs to check the data after Segment Other controlling team has confirmed that upload from SAP is performed.

Yearly and ad hoc reports

Yearly reports are meant for strategic planning. The case company has two yearly reports that are presented in figure 10. Ad hoc reports are meant to be created only when needed. In the case company there is only one commonly used ad hoc report and it is called Flash report.

Figure 10. Yearly reports

Energy Services has two yearly reports that are meant for long term future planning. Five year financial forecast is done is spring in two parts as described in previous chapter. Business plan is done in fall and it is meant to give information to company management that supports operational budget and SGA budget. Business plan includes presentation of the key strategic questions in the unit, long term financial targets, development of the number of employees and description of other important focus areas. This document is mostly filled by Energy Services management and financial information in form of KPI's is derived from HFM. Report goes to Segment Other controlling team.

Flash report is one common ad hoc report in the group. Flash report is meant for informing senior management of the company of big changes in divisions or in units' performance. Flash is sent when it is expected that EBIT for the current quarter will differ considerably from the EBIT that was noted in last RF. Limits in euros are defined separate for each division. Flash report includes written description of context, reason for the deviation, actions taken to compensate and the profitability impact. In Energy Services need of Flash report is usually caused by changes in PVO production costs.

4 INTERNAL BENCHMARK OF MANAGEMENT ACCOUNTING PRACTISES

4.1 Management accounting in group level

Group Business Controller and Senior Analyst in Group Accounting were interviewed to learn what information from the business units is used in management accounting in group level and how the information for external reporting is formed. The aim of this interview was to understand where the reported figures of a unit end up and for what they are used.

In Group Business Controlling (GBC) management accounting reports for Group Leadership Team (GLT) and Board of Directors are prepared. GBC designs timetables for internal reporting. It also checks that price premises and other needed information for estimates are available for use in mills and divisions. (Group Business Controller 2016)

The case company uses Hyperion Financial Management (HFM) as the only consolidation tool and it has separate applications for both internal and external reporting. In total HFM has four different applications. GROUPHFM is for monthly management reporting in group and division level and this is where units do their RF and actual reporting. SEFAHFM is for quarterly and annual external reporting. There is also SESDMHFM for quarterly sustainability reporting and ERAHFM for annual environmental reporting but these two are not further inspected in this study. In Group Business Controlling data from GROUPHFM is analyzed and exported for reports (Group Business Controller 2016).

In management reporting at group level the importance of variance analysis between actual figures, RF and budget is highlighted. In monthly reporting over fifty pages of financial information of performance of divisions and units is delivered to GLT and a summary to Board of Directors. This monthly report includes most of the information that is delivered from the units to divisions. In Segment Other it means for example data from gross costs and deviation matrix. Short description of performance of each unit is included. Actual figures are

compared to latest rolling forecast and to budget. Performance indicators include EBIT, EBITDA, cash flow, sales, ROOC/ROCE but they do change. (Group Business Controller 2016)

An extensive strategy plan for the whole company is formed in spring from 5YFF reporting. Business plans in fall are collected to give supporting information for the budgets and to form a comprehensive shorter term strategic report that is presented to CEO and CFO of the case company. (Group Business Controller 2016)

Group Business Controlling oversees that the price premises are delivered on time for monthly estimates and 5YFF and that the data looks reasonable. Price premises are collected from functions that count for most of the variable costs of mills. There are six premises: energy, pulp, chemicals, wood costs, paper for recycling (PfR) and transport. For most part Group Business Controlling is not able to see later if the prices have realized as forecasted because they can only see the actual total costs that include consumed amount. There was a study performed some time ago where it was asked from the mills how much they use the given price premises. The study concluded that in big mills the importance of the price premises is bigger than in smaller units. (Group Business Controller 2016)

4.2 Influence of external reporting

In the interview of Group Business Controller and Senior Analyst in Group Accounting the influence of external reporting to management accounting was explored. It is common that expectations of external stakeholders affect internal reporting of a company. Still, external reporting system should not restrict information generation for management accounting purposes. (Bhimani et al. 2012, p. 5)

Management reporting and external reporting in the case company are separated. Accounting and Reporting team (GAR) and Country Accounting Services (CAS) are in charge of the data for external reporting. Figures for external reporting are managed in consolidation tool SEFAHFM. Quarterly CAS checks the information in SEFAHFM after the books have been closed in SAP. Then the data is promoted

to GAR. From the units the only part that goes straight to external reporting is information that is not available in SAP such as commitments and sales by countries. Matching is done in GAR between data in SEFAHFM and GROUPHFM to see if there are any differences. (Senior Analyst, Group Accounting 2016)

KPIs in management reporting in the case company are very similar to KPIs that are reported to external stakeholders. The main difference in management accounting compared to financial accounting in the case company is that forecasts and variance analyzes are given a much bigger role in MA reporting. Also MA reports show more detailed figures in division and unit level. Most important non-IFRS KPI in the company is operational EBIT which is used for performance evaluation of the functions and as an indicator for resource allocations. (Group Business Controller 2016; Senior Analyst, Group Accounting 2016; IFRS accounting manual 2016, p. 20)

There was a project to re-define financial reporting controls about five years ago. With help of consultants very accurate process description and guidance for monthly, quarterly and yearly tasks were created. Similar but simpler instructions are also now made by GBC to internal reporting phases. (Group Business Controller 2016; Senior Analyst, Group Accounting 2016)

4.3 MA practices in mill units

Management accounting in mill units is very different compared to service units. In mill units product and customer profitability is closely followed so that changes to production can be made when necessary. Also stock levels and cycle times are closely followed. There are often more possibilities to influence profitability than in a service unit. Still some similarities can be found in MA tools and reporting.

For this thesis controllers in two Finnish mills of the case company were interviewed. Idea was to learn which tools are used for MA calculations and reporting in the units and what is reported to different organizational levels.

Interviews based on the questions below:

- What tools are used for management accounting in the mill unit?
- What are the most important reports? What is reported to different stakeholders?
- How cost centers and profit centers are used or are there some other ways for budgeting and monitoring realized costs?
- How are the yearly budget, RF and 5YFF made? What is the structure?

Management accounting in Finnish mills is based on SAP R/3. Also HFM is used generally in the company for reporting.

Mill A

First of the visited mills used Excel for most of its financial calculations. Rolling forecast, budget and profit analyses were all in different Excel files. Calculations were made using cost centers that reflected the production process. Different products, production lines and machines had their own cost centers and responsible persons. Profit centers were bigger entities that included multiple cost centers. (Controllers mill A 2016)

Budget proposal was made in the controlling team based on the figures from previous years. It was made separately for each cost center and send for checking to the responsible person. If there were some proposals to change the budget they needed to be well justified. In case there were bigger changes performed in a production line then the budget was considered more closely. Rolling forecast was updated monthly in Excel with new estimates. It was transferred to separate Excel file for automated loading to Hyperion. (Controllers mill A 2016)

Actual figures were filled to profit Excel file in the first days of a month. In a BU that is as big as this mill it is very difficult to check in few days that all the invoices and accruals are on their right places but indicative analysis was performed promptly. Profit file included one page which compared actual figures of the month to the estimate. It also showed estimate for next month, estimate for

the whole year and actual for the year so far. Lines in profit analysis match with information in budget files for easy comparison. Actual figures were filled to HFM by hand to ensure that all of them were correct. (Controllers mill A 2016)

Mill reports their performance monthly to the division and comments are sent in a Word document. Flash reports are often created because of fairly low limit compared to production volume. Reports inside the mill are mostly designated to the executive team, department heads, operations managers and project managers. Reports are specified for each receiver and they only contain information that is relevant in each case. Some financial information inside the mill is shared through their own production planning system which has a build-in dashboard application. Controllers also participate in meetings held by different production lines to deliver financial support to every part of the mill. Financial performance of a mill unit is confidential and only divisional performance is reported to external stakeholders. (Controllers mill A 2016)

Alongside SAP, Hyperion and Excels the mill uses few other tools in the MA processes. Some reports were created using financial accounting and controlling section of SAP BW (Business Warehouse). Data from SAP R/3 system goes directly to the web based BW module. SAP BW is more agile to use than SAP R/3 which is why personalized calculations can be fairly easily created and reports modified. For profitability calculations the mill uses Sting which is customized to the company from SAS activity-based management application. Using this application it is possible to evaluate profitability of each product or customer. Information from sales and stocks is derived from Fenix that is a system for sales and customer management. (Controllers mill A 2016)

Big part of management accounting in this mill was related to investment projects. There might be more than 100 investments in a year and that is why they need to have one of the controllers working mostly with these projects and supervising the costs. Also having investment centers in responsibility accounting is important. (Controllers mill A 2016)

Mill B

Other visited mill belongs to different division than mill A. In this mill also most of the MA calculations were done in Excel files. Biggest difference in MA practices in this mill compared to mill A was the use of system called DNAemico. This system was built many years ago for the use of few mills but it is no more used in other locations. (Controller mill B 2016)

Rolling forecast and actual figures are followed in Excel files. Actual figures are brought from DNAemico to the Excel. Form of the rolling forecast is the same as in DNAemico which is a bit different than in SAP. Information to DNAemico comes from SAP but the system converts figures to match the recipes of the different products. For example the use of chemicals and energy is distributed to different products with the percentages that the product recipe has in DNAemico. This way exact cost for each product is constructed and can be easily followed. Division has instructed the mill to use Sting for profitability calculations as other mills do but at this moment needed information comes from DNAemico. (Controller mill B 2016)

Actual figures are presented to the division in a Lync meeting. Information is gathered to a Power Point. Simple variance analysis with comments is prepared to compare the month's actual figures to RF. Inside the mill information to all the employees is presented in a monthly meeting. Mill controller collects information of development of employee numbers, accidents and financial figures. (Controller mill B 2016)

Budget is prepared by responsible persons of the cost centers and only checked by mill controller and division. 5YFF is prepared in division instead of each mill doing the planning themselves. In this division also emphasis on balance sheet is strong as it is regularly followed and reported to division. Currently other divisions are using the experiences of this division to develop their own balance sheet calculations. (Controller mill B 2016)

4.4 Management accounting in a service organization

One service unit for the thesis was visited. As service units are independent of the location they are placed in different countries and this unit was the easiest to access. The service unit procures wood and supplies it to mills. It aims for zero profit and has huge inventories both of which make it very different in financial operations compared to Energy Services. This unit belongs to Segment Other for why reporting is still very similar. Interview was executed in same way as the interviews in the mill unit. Questions of reporting to Segment Other and how the profit of a service unit should be showed were added to the questions that were asked in mills.

Although the aim for profit for month and year in this unit is zero they still make rolling forecast and actual profit reporting to HFM. Units' rolling forecast is prepared in Excel on the basis of the historical data and agreed wood prices. With actual figures reporting also an Excel that explains the variances to RF is send to Segment Other controlling team and the deviation matrix is filled. Variances that appear monthly in EBIT are then updated in wood prices next month but there is no separate balancing invoicing made later. Costs for wood procurement are invoiced from the mills in wood price that is defined for each mill and wood quality. Wood prices are updated every month and they are more carefully checked with mills quarterly. There is only one price on invoice and reporting from the unit to mills. It includes all costs from operations (wood procurement, logistics, fixed costs etc.). Forecasted prices for the mills are presented monthly in price premises. 5YFF premises are done as in Energy Services but it is very difficult to forecast the price development for so many years forward. (Financial Manager, Wood Supply Finland 2016)

Cost review is done quarterly and presented to CFO and Segment Other controlling team by the unit head. Business plan is made by the units controlling team. Budget is done for cost and profit centers by controlling team and checked by responsible persons. This service unit has multiple cost centers that are mostly divided by locations. There is also few profit centers but they are not as closely followed in finance team. As this service function has independent units in

different countries Segment Other controlling team gathers the data from different locations and makes some unified reports. Internal reporting besides Segment Other goes to executive team. (Financial Manager, Wood Supply Finland 2016)

Working capital follow-up in this service unit is very important because the inventories are so big. Those inventories are also checked in yearly audit. Good explanations are needed if the actual amount of inventories differs from the reported amount. (Financial Manager, Wood Supply Finland 2016)

Unit uses SAP but they also have their own ERP system. As this system is about 20 years old there is an ongoing project to replace it with a new one. This is a long project that also adds work of the financial team. There is hope that the new system would have even more support to financial reporting. (Financial Manager, Wood Supply Finland 2016)

There are KPIs in the unit for working capital, fixed costs, wood costs, safety and for the ERP project that are followed regularly. EBIT is the main figure when following the financial performance of the service unit. Every now and then, when the management in the company changes, there may be different projects to check that use of internal service units is still profitable. (Financial Manager, Wood Supply Finland 2016)

4.5 Internal benchmark of the current MA practices

4.5.1 Cost and profit center accounting

Responsibility centers are used in units to keep managers informed of performance of their responsibility area and to help with budgeting. Cost and profit center are only used for internal accounting in business units and there is no need to use them in reporting to top management.

Use of costs centers is important part of management accounting calculations and reporting because cost centers help to understand where and why costs occur. In mill units cost centers reflect the production process and might present for example a product or a machine. In service units for example geographical areas can be separated as cost centers. Profit centers include different amount of cost centers. Profit centers are close followed in units where the income is an

important part of the units' performance. Profit centers are not that important in service units where the income comes from other internal units of the company.

Cost centers in other departments of the case company are often used for bigger amount of costs than currently in Energy Services. In Energy Services there are some cost centers that include only few invoices a year. In Energy Services cost centers are well used for SGA cost follow-up whereas cost centers in operations are not used as efficiently as elsewhere. Also profit centers usually consist of many costs centers that are usable on their own which differs from the current situation in the case unit. This could be developed if cost centers would be rethought and costs would be divided in more reasonable sections. Profit centers in Energy Services are used to help with calculations and reporting, they don't have different responsible persons. This is supported by the observation that profit centers are not that closely followed in internal service units. Cost and profit center structure is not updated regularly in any of the units. New cost and profit centers are created when needed but often unused cost centers exist.

Responsibility accounting includes investment centers in some units. Amount of investments in a year depend on the size of a unit and nature of business. Big mill unit may have more than 100 investments yearly and service unit such as IT may have multiple projects ongoing simultaneously. Then some smaller units such as the case BU only have one or two investments in a year and this is why investment center are not needed in Energy Services.

4.5.2 Forecasting methods and budgeting

Budgeting and forecasting is an essential part of management accounting. Variance analyses between forecasted and actual figures are done in all the levels of an organization to evaluate the performance. It is important that the forecasts and budgets are carefully composed to support the business.

In the case company all the units do budgeting for next year in fall based on the budgeting process described by GBC. Rolling forecast is updated monthly and for variable cost evaluation mills get the price premises from the service functions. 5YFF and business plan are done yearly to support the strategy work of the

company. There is no common tool for forecasting in the case company but the final information is brought to GROUPHFM and consolidated for the analysis in group level.

All the units that were explored used Excels for forecasting. There is no unified way to do the rolling forecast but all the figures end up in HFM in similar form. When compared to other units RF calculations in Energy Services are well developed. Rolling forecast is not updated based on previous performance if all the information that is brought to the RF file is updated including mill ECM files for consumption figures.

Budgeting process in all the units is quite similar. In some units responsible persons assemble their budgets independently and budgets are only checked by the controlling team. In some units the controlling team prepares the budgets and they are sent for comments to the responsible persons. In Energy Services SGA budget is done by responsible persons which suits the unit this small.

4.5.3 Profit analysis and performance measurement

Profit analysis and variance analysis go together in management accounting. Actual figures can be understood when they are compared to forecasted figures. Performance measurement is much wider concept than only analyzing profit. It also should include the analysis of others KPIs and non-financial figures.

Units have very different ways of comparing actual and budgeted figures. These comparisons are mostly done in Excel files. Every unit researched uses SAP for correct figures but for the calculations this information can be filtered thought the units own systems. Profit analysis is done also in the service units that aim for zero profit.

This review of profit analyses didn’t bring out best practices that would serve Energy Services. Profit analysis in the case unit is in good level and the differences to forecast can be quite precisely explained. This is mostly due to the small size of the unit but also the calculation methods are good.

This internal benchmark didn't support the need to report the financial performance of a service unit in any other way than using the common measure operational EBIT. There is every now and then further research done in the company whether the use of shared services is profitable but this information doesn't have to a part of regular reports. It depends on the needs of the service unit management. In the case unit performance measurement should be understood to include more than just financial performance of the unit. Performance measurement can include many non-financial figures that support the strategic goals of the unit and the company. More informative packages of data could be delivered to the management instead of many different reports.

4.5.4 Reporting

Certain part of the internal reporting is determined by the Group Business Controlling that assembles joint reports of the performance of the whole company to the GLT and Board of Directors. Information for these reports comes from the divisions which acquire the needed information from the units. In Energy Services this means in practice all the regular reports that go to Segment Other controlling team.

Amount of management accounting reporting in Energy Services is a lot for a small unit. In some areas there is more reporting than in big mills. This is partly outcome of the organization structure where information is reported to Segment Other, mills, CTO / User Board and inside the business unit for management and other team members in different countries.

Amount of reporting in other units is bigger in costing calculations of products and management of operating capital. Product costing methods are not that relevant in Energy Services reporting as pricing decisions are not done inside the BU. As Energy Service has no stock and internal payment times are decided in group level there is no reason to start to follow operating capital more closely. Also Energy Services work with big suppliers (PVO, Gasum, Fingrid) and for example new payment terms are not easily negotiable.

5 IDENTIFIED AREAS OF IMPROVEMENT AND IMPLEMENTATION PLAN FOR THE CHANGES

5.1 Identified areas of improvement

5.1.1 Improvement areas found in the study

In this study the current process of management accounting in the case unit has been presented. Internal benchmark was made to learn what belongs to MA in other units of the company and to find out if there are some best practices that could be implemented in the case unit. This study started with some previously identified improvement needs in the case unit which have not dramatically changed during the research. The Head of the Energy Services is changing soon after the completion of the study and this will possibly have some impact on reporting practices in the case BU.

Lean service process was identified in the theoretical part of the research and this is what should lead the development of the MA processes in the case unit. Lean service process starts with understanding the needs of the customer. The service level and the service cost are defined in SLA. The SLA between Energy Services and the other divisions of the company describes the tasks that the case unit needs to perform. It defines how the service fees are allocated to other units and what the payment terms are. Instructions are given to service fee documentation and tax liabilities. Transfer prices for electricity and gas are not included in SLA but internal customers still have an important part when deciding them. There are no instructions in the SLA for financial reporting of the case BU but the unit should give support in environmental reporting and reporting in areas such as green certificates, business risk management for energy and assumption for energy cost development. (SLA 2012)

Lean service process and cost management support each other. In the case BU cost consciousness is well managed as the responsible persons have an active part in the budgeting. They also receive monthly or quarterly a report of current costs compared to budget for check-up. Yearly SGA costs rarely go over the budget.

From the internal benchmark it was learned that the current processes in management accounting are in good level in the case BU. The case unit has very high standards in its actions. Rolling forecast gives accurate estimation of the performance of the unit and it is based on highly developed calculations. Variance analysis between forecasted and actual figures can be done soon after the month end and precise explanations for the variances can be found.

Internal benchmark concluded that the amount of reporting in the case BU is a lot for a small unit. However, it would be recommended to include more non-financial data in management accounting reports in the case BU. Lot of non-financial data is already given to the management of the unit but it could be more bonded with financial figures. Reporting inside the BU could be rethought to give relevant information of the performance in more compact form. This includes that controller would have a bigger role in reporting also other than financial figures.

In theoretical part it was presented that marketing skills should be used in internal service units to ensure their existence in future. Internal benchmark didn’t support the need to present the financial performance of the unit in other way than using operational EBIT. There is no clear guideline how the service unit should show its financial performance, this also depends on the needs of the management. It is recommended that Energy Services would show the benefits of the centralized procurement of gas and electricity in Finland as a part of reporting also in future.

To benefit the most from having internal service units the trust between the customer and the service unit should be on a high level. This is why it is good to share some MA information with the customers and make the operations transparent. In Energy Services information of the performance of the unit is shared monthly in statistics report. Also mill specific information is shared in mill ECM files.

Internal observations in the unit suggest that some modifications to MA calculations and processes are needed. Although comparison of forecasted and actual figures gives precise information, the variance analysis could be done easier and it could give even more transparent data. This analysis could be

developed with changes in cost and profit center structure and also with modifications to RF Excel. Needs of the company and the form of the organization has a big impact on the management accounting of the service unit. This is mostly seen in the case unit in reporting needs. Also current reporting methods in the case BU use a lot of resources. Development ideas to reporting are presented later in this study.

Based on the research it could be concluded that financial performance of a service unit is not that important feature but a service unit can help to create value for the company with efficiency and cost management. Also the knowledge that is kept inside the company is valuable as the service unit can be used for consulting purposes. Service unit operations should support the strategy of the company. The key is the efficiency and that the tasks that support the core business are well managed. In the case BU consulting of other units in the energy efficiency improvement leads to cost reductions in the company but at the same time it also lowers the income for the unit. So this value created for the company is not showing in the financial figures of the service unit.

5.1.2 Are the old tools enough?

Cost-benefit balance should be kept in mind when evaluating management accounting systems. A new tool could make calculations and reporting simpler after it has been implemented but will the benefits be higher than the cost of the system? Implementing a new system may also require personnel resources and a lot of training. (Bhimani et al. 2012, p. 6)

In search for new tools IT controller was interviewed for Webbased cost reporting. IT department has developed this tool for the use of their controllers for cost follow-up and reporting purposes. The system is similar to QlikView and in IT they call it as Consolidated Reporting Tool because it brings the data together from different sources. The system uses cost center list to reflect the organization structure and account list for cost flow information. Data for the system can be brought for example from SAP, Excels or even HFM. The system is particularly useful if the unit uses SAP for actual, estimates and budget. The best part of this

system is the dashboard that shows all needed information at a glance and can be easily modified. (Senior Controller, IT 2016)

For Energy Services this system would be best suitable for SGA cost follow-up. But as Energy Services is such a small unit these calculations could be performed and dashboard created simply in Excel. Also new tools for cost management are not needed because Energy Services have only little possibilities to affect the costs of the operations. There is not much bargaining power towards the external suppliers. SGA costs can be influenced and they are already monitored closely and easily with SAP. Cost accounting methods in the unit are in good level when the changes to the cost centers are made.

Excels are used for many calculation in other units as well. They can be modified to fit the special needs of the unit. Use of Excels for so many calculations is more surprising in bigger units of the company than in Energy Services. It was also learned from the internal benchmark that many units use their own information systems to support management accounting calculations and reporting. In the case BU there is the Energy Management Systems (EMS) that could include even more data for management accounting. There are already some reports that can be exported from EMS, such as invoicing data but more use of EMS can be considered in future. At least PVO contribution margin calculations by share could be transferred from electricity report to EMS to enable continuous follow-up (GWh and €) ant to ease the pressure in month end reporting.

Based on observations, SAP could be utilized more effectively in the units if there was more training. Actual figures in many units, including the case BU, are in SAP. There are many features in SAP and reports that support management accounting but not all of these are commonly known. There are many instructions on how to use SAP in the company's intranet but they are not easy to understand if the user doesn't have a long experience from the use of the system. SAP support should be got primarily from the key users but there is not enough personal training for them. SAP support can also be received from the SAP helpdesk but there is the risk of not being understood if this support is not available in the language of the user.

5.2 Simplification of MA processes

5.2.1 Changes in cost and profit center accounting

Current cost and profit center structure in the case BU doesn't give enough support for the internal calculations. There are many cost centers that are only used as a technical part of allocations and also cost centers that are not needed anymore because of the changes that have occurred in last few years in the organization structure and in the operations of the unit.

When this study started there was an idea that one more profit center could be added and some cost centers withdrawn from use. The first proposed new structure is presented in appendix 2. This structure would have simplified a lot the follow up of actual figures. However, when implementation of this change was considered, it was noticed that changing the profit center structure would be quite difficult. For example human resources, that make the allocations for personnel costs, commented that it is not advisable to change the profit center behind a cost center. New cost centers for the personnel costs should have been created but also all the previous cost centers needed to be followed till year end. Similar issues would have been faced in many phases of the MA processes so it was decided that during this study only the cost center structure is modified (table 2). More efficient use of cost centers should ease the MA processes on its own. Changing the profit center structure could be executed in later stage if still felt necessary.

Table 2. New cost center structure

PROFIT CENTERS:		
"POWER"	"NATURAL GAS"	"SGA"
COST CENTERS:		
FI SGA costs	Natural Gas Costs	Mill Allocation
Energy Efficiency SGA		
PVO		
Internal purchaces		
Nord Pool		
Transmission		
Hedgings		
Balancing invoices		
Depreciations		
Other service costs		
Power Grid		

These modifications in cost center structure don't require changes in any calculations or reports. Only the new cost centers need to be considered when the invoices and accruals are booked in SAP. However, with some modifications to calculations in RF the new cost center structure would benefit the MA processes the most. After year end the old cost centers should be removed from use.

5.2.2 Comparing actual and forecasted figures

Better matching information between RF and actual figures is needed for easier profit analysis in the case unit. Currently the variance analysis is made on electricity report but only the PVO contribution margin part and the deviation by profit center can be explained. Actual figures can be found in SAP and besides the electricity report they are also brought to the profit file in month end for reporting purposes. Profit file and RF file should be changed to better support each other and the new cost center structure.

Previously income statement and balance sheet structure in the RF Excel was difficult to modify as extra care needed to be taken to ensure that RF transfer to HFM would not be compromised. HFM reporting form had determined the way that income statement and balance sheet were presented in the RF file although the form of the figures was not perfect for this use either. New HFM reporting page was made to the RF Excel for transfer using Smartview and to enable modifications to RF income statement for own use. For units own balance sheet follow-up the HFM reporting form is suitable.

To streamline the processes it was decided that profit file and RF file are merged. RF income statement is modified to show the income and costs by profit center (figure 11). Profit file is no more needed. Now the actual figures for each line can be brought from SAP in month end and comparison to forecasted figures can be made. Some of the actual data comes straight from an account in SAP and some information is collected by using cost centers. A column that calculates the forecast for the whole year with actual figures so far and RF figures for the coming months should be added. Also budgeted figures could be shown in the RF file. Calculations that are currently made in profit file and are needed for reporting, such as sales by countries, are transferred to RF Excel.

Power:
Sales to company mills
Sales to subsidiaries
Sales to NoPo
Other income (grid subsidiary)
Total electricity costs
-PVO
-internal purchaces
-Nord Pool
-transmissions
-hedgings
-balancing
Other expenses
-Grid subsidiary
-Service costs
-Depreciations
-SGA costs FI
-SGA income
EBIT for Power
Natural Gas:
Sales to company mills
Sales to subsidiaries
Total natural gas costs
EBIT for Natural Gas
SGA:
SGA income from mills
Total SGA costs
EBIT for SGA Pooling
EBIT (power + gas +SGA)

Figure 11. New income statement structure in RF/profit file

5.3 Development of reporting

5.3.1 Expectations for reporting

Energy Services have many stakeholders that require management accounting information regularly. Units' financial figures are reported to CTO, Energy User Board, Energy Services team, mills and to Segment Other controlling team from where they go to Group Business Controlling.

Reporting that goes to Segment Other cannot be easily influenced by the case unit as the form of the information is standardized. Figures and reports that are needed are defined by Group Business Controlling. They also make the timetable and instructions for the reports.

Reporting inside the case unit consists of EBIT-analysis, Statistics, fixed costs, FI SGA cost and cost review. Energy Services FI team is interested especially in

monthly FI SGA costs and EBIT-analysis because they help to analyze the performance of the FI part of the unit. All the workers in Energy Services FI have access to wide range of financial data and for them the Controller is also very easily reachable for ad hoc reports.

CTO of the company was interviewed to get a clear view of what management accounting information the top management uses and what are the development needs in reporting from the case unit. Management is most interested in the specific energy consumption of mills, the carbon footprint development in longer term and PVO allocations. This information is needed to follow the company strategy. The key word that came up was streamlining processes. It would be ideal to have only one system that produces needed information and use of Excels should be reduced. Current amount of reports is enough and the data is quite easy to read but in future the information could be given in a more compact form. Information from different areas could be consolidated. (CTO 2016)

VP of Energy Services was in same line with the CTO in that financial figures of a service unit are not that important because the interest of the company is the value that the service organization brings with its operations. For example increase in internal sales in Energy Services unit is not desirable because there should rather be a decrease in energy costs in mills and in sales in the service unit if the energy efficiency goals are achieved. Service unit is more a cost than a profit center and should not make too much profit. Energy prices and PVO allocations were seen important as well as SGA costs because they can be influenced. (VP Energy Services 2016)

It was found out that there are currently few reports that the VP of Energy Services sends to Group. Some of these reports also include financial information. Quarterly reporting includes price risk assessment, unit cost inflation and energy balance. Price premises for investment calculations are done twice a year. Price risk assessment and unit cost inflation reporting could possibly in future be the responsibility of the controller. Calculations for these reports are in company's intranet. (VP Energy Services 2016)

Customer satisfaction index (CSI) is used to measure how the customers see the performance of Energy Services. The areas that are regarded in CSI are communication, statistics and reports, energy savings, market and overall satisfaction. KPIs for energy price development, hedging performance and emission trading performance are included in the scores. In yearly CSI survey a questionnaire is send to the mills and KPI's are calculated. In 2015 customers were quite happy with the quality and content of the reports. Reports are delivered in time and they are relatively easy to understand. Based on the results there is no certain area that should be developed although there is always room for improvement. (CSI 2016)

Mills get their MA information from the case unit in price premises, ECM files and statistics. There are no strict rules for MA reporting in Energy Services SLA. There is rarely any comment about information in Statistics but price premises and ECM files are very important to the mills. According to the interview performed in this study the Controller of the mill B would be happy to provide development ideas for the mill ECM files. This mill has high energy costs and that is why they are very interested in energy related information. They also need to recalculate energy invoices to other mill in the same site in month end so they need the invoices from energy services as soon as possible.

5.3.2 How reporting could be improved?

It was learned from the study that service unit performance is described with financial and non-financial data. In Energy Services the interest is on PVO allocations, specific energy consumption, carbon footprint, SGA costs and customer satisfaction index. EBIT of Energy Services FI is followed through variance analysis.

Reporting process can be rethought to use fewer resources when some changes to the reporting processes are made and the content of the reports is modified. There is no need to increase the amount of reports. When the Head of Energy Services has changed all reporting of the unit should be checked to be relevant. Reporting responsibilities of the employees and managers should also be checked and possibly some tasks can be reallocated.

According to this study no changes are currently possible in Segment Other reporting. Reporting tools and templates are similar for all service units and the information from the reports goes to group level reporting. As these reports are obligatory there was a thought if they could be utilized in reporting inside the unit also but this idea was discarded as these common reports do not reflect the operations of the case unit well.

Reporting to top management could be in more compact form and both financial data of the units' performance and non-financial data could be followed in one report. Quarterly cost review information should in future include less financial figures that present the profit of Energy Services FI. Fixed costs and variance analysis of EBIT should still be included in the report but also other areas of Energy Services should be followed and consolidated information brought to the report.

There was a thought that fixed costs reports would be made less often. SGA costs could be followed monthly only by controller and reported forward quarterly or when there are some big differences in the costs. If this idea was implemented it should be ensured that cost consciousness in the organization would stay in high level. SGA FI cost report is needed monthly also in future.

EBIT-analysis and Statistics can be modified. Energy Services performance in Finland can be presented with benefits of centralized procurement of electricity and gas but this information should be showed as divided to the mills so that it could be better understood. New cost center structure won't affect the reports much. Information that has been brought from profit file to Statistics is no longer needed in same form.

Well composed charts and tables enable quick check of the current situation. Also use of charts enables more information to be showed in the same figure in an understandable form. This should be kept in mind when the reports for example to the CTO are modified in future.

5.4 Implementation of improvements

Execution of the improvement ideas can be divided to two parts; the changes that were done during the research and the changes that need to be performed in the future. There were not as many development areas in the MA processes in the case BU as originally thought. Most of the improvement needs were small changes in the processes and tools used (table 3).

Table 3. Improvement needs and development ideas for the processes

Process	Current level (poor, moderate, good, excellent)	Improvement needs	Development ideas
Cost and profit center accounting	Cost center accounting: -SGA, very good -Operational, poor Profit center accounting: good	Amount of SGA FI cost centers should be reduced to simplify budgeting and cost follow-up Operational cost centers need to be updated and start to be followed Profit center "Power" includes a lot of data which makes it difficult to use in variance analysis	Cost centers FI ADM and FI OPER are merged to one cost center FI SGA Operational cost center structure is renewed so that all costs centers in future are relevant At this point no changes to profit center structure because those would be difficult to implement
Forecasting methods and budgeting	Excellent	No changes to forecasting or budgeting methods	New structure in RF income statement to help with profit analysis
Profit analysis and performance measurement	Profit analysis: good Performance measurement: good	Even more accurate profit analysis and simplified process Set of financial and non-financial measures for balanced performance measurement	Change in RF income statement structure and combining RF-file and profit-file Set of KPIs for use inside the unit (only for Energy Services FI or for all areas)
Reporting	Moderate	Cost-benefit relationship, use of less resources to produce the data Financial and non-financial data more combined Consolidated information for the top management	Small changes to contents of the reports that are used inside the unit Rethinking of the reporting responsibilities Review the whole set of internal reports (both financial and operational) with the new Head of ES

During this study changes were made to cost center structure and to RF file. Both of these changes were made to ease the variance analysis in month end. Cost centers for operational costs had not been efficiently utilized for many years and the cost center structure needed to be updated. Invoice booking to the new operational cost centers was started before the study ended. Rolling forecast and profit file were merged to the same Excel. Modifications were made to the RF file to separate the HFM reporting part and the RF income statement for internal use inside the unit. Still, the performance of the new RF Excel was not explored during the study. Also the benefits of the new cost center structure are to be seen in future. Making modifications to the reports was started when the needs of the management were identified. Change in the reports will happen in time with small steps.

Instructions on how to develop the MA practices in near future were composed. Timeline to describe in which order and when the changes in the processes should be performed is presented in figure 12. Many of the changes are caused by the modifications in the cost centers. In addition, reporting needs and responsibilities should be checked with the new Head of Energy Services. Also the tasks of the controller should be updated. Change to the profit center structure that was not executed during this study could be performed in year-end if still felt necessary though this would cause a lot of extra work.

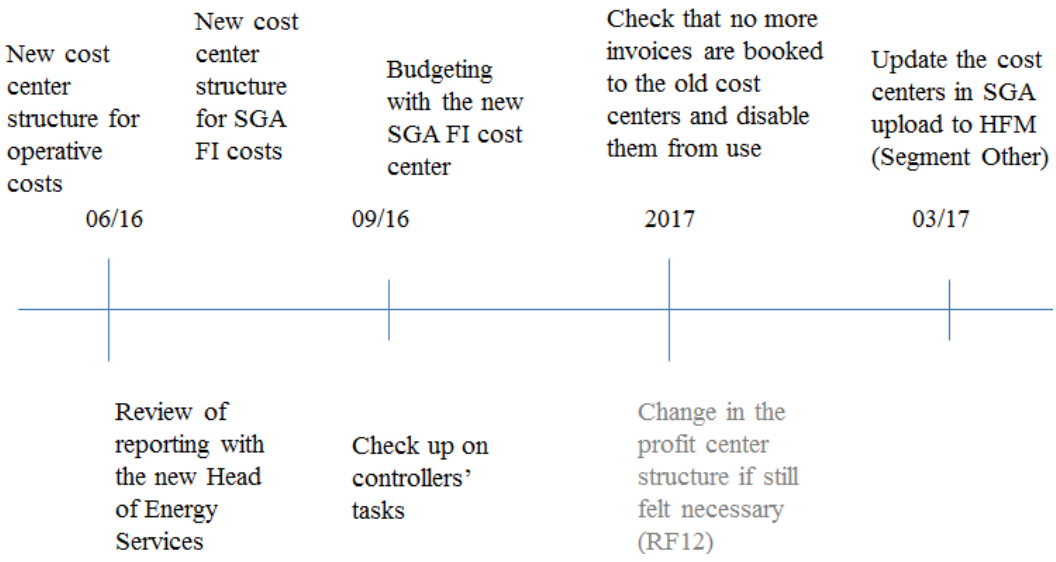

Figure 12. Timeline for the changes

6 RESULTS AND RECOMMENDATIONS

In this chapter the answers for the research questions are presented and generalizable features of management accounting in shared services are discussed. Findings in the empirical part of this study are highly specific for the case unit. The case unit is unique in its operations and in the organizational structure.

First research question of this study was: *What kind of processes and tools are currently used for management accounting in the case BU?* From the literature review the most important features of management accounting concerning this study were found to be support for management in decision making, performance evaluation and strategy work. Phases of management accounting could be divided to planning and control. The empirical part of the study started with mapping the whole financial process of the unit from the controllers' point of view. Profit and cost center accounting, which enables the follow-up on costs and can be used for financial calculations, was presented. Next the budgeting and forecasting process was described. Profit analysis and the importance of PVO contribution margin were introduced. Monthly, quarterly and yearly reports were collected together to show the amount of the reports and to present to whom they are meant for. Tools used for management accounting in the unit were recognized to be mainly Excels, SAP, HFM and EMS. As the mapping of the process was made also the development needs in each phase were thought.

Second research question was: *How the management accounting processes could be developed to be more efficient so that they would serve the lean organization model?* Lean service process was shortly described in the theoretical part of this study. Important was to learn how to determine waste and to understand the value-adding processes from the customers view. There was no need to further present lean methods. The needs of the internal customers and the value creation for the company had to be kept in mind when evaluating the management accounting practices in the case unit.

Based on the SLA and other observations the value created for the company in Energy Services comes mostly from various consulting tasks, energy efficiency

work, centralized energy procurement in Finland and also from lobbying activities in different associations. Financial tasks in the unit are supportive processes though the service costs need to be closely monitored.

According to the study only small changes to the management accounting processes in the case unit could be done although there were only few requirements in the SLA and from the customers' side. Because of the many stakeholders it is difficult to reach perfectly lean management accounting model. There are also some tasks related to internal controls that the unit needs to perform although there is nothing to report because of the form of the operations.

It was identified in the beginning of the study that a better tool for variance analysis between actual and forecasted figures is needed. For this, the cost center structure was renewed during this study and RF and profit files were combined. However, there was no time to test how these changes work so further development might be needed. If the new cost center structure wouldn't help the variance analyses in month end then modifying the profit centers could be rethought.

It was learned that new IT tools are not needed in the case BU because the cost-benefit relationship needs to be considered and a unit this small can work with Excels. In the company level more personal SAP training should be arranged so that the system could be utilized more efficiently. Also building a common management accounting system that would enable for example fluent RF updates, variance analysis and dashboard creation should be considered to reduce the need of Excels in all the units.

The last research question was: *How could reporting be modified to better support management decision-making?* It was learned from the theory that in reporting the key is that the reports include relevant data for the receiver that is in easily understandable form. Reports should include data that is financial, non-financial, objective, subjective and both history and future oriented. Management accounting key question were summarized by Horngren et al. (2009) as follows: How the information helps the managers to perform better in their tasks? Are the

benefits of the produced information higher than the resources needed for its creation?

Energy Service has a lot of reporting for a small unit. There are many stakeholders and managers at different levels that receive the reports. Reports include both forecasts and analysis of historical data. Managers in the Energy Services organization were interviewed, as proposed by Järvenpää et al. (2010), to get information of what kind of data is needed for management decision making and how they see the current level of the reports. Top management was mainly interested in figures such as specific energy consumption of mills, the carbon footprint development in longer term and PVO allocations but also variance analysis of the EBIT and fixed costs were checked. To help managers perform in their tasks the importance of operational measures was highlighted.

In renewal of the reporting the changes in the organization will affect the next steps of the process. As further research was made on how each of the MA reports could be modified it was noticed that there are not many reports that could be left undone. Development needs in the reporting in future include small changes to the content of the reports and rethinking of the reporting responsibilities. Some changes to the reporting inside the unit can be made and the views and needs of the new Head of Energy Services should be surveyed. Also the KPIs of the unit could be rethought to be relevant enough to use in monthly reporting to show the performance of the unit with only few figures.

Most value from this study was for the case unit. For the case unit the most important learning from the research was that all in all the management accounting processes in the unit are in good level and that no big changes needs to be performed. Better knowledge of the financial processes in the case company was gained. As Häusser (2013, p. 205) described efficiency and service level should only improve in time in a unit with continuous improvement culture, and employees in the organization that requires high standards should become true experts.

Also the management accounting processes of the unit are now well documented. Before this study started there was already detailed instructions made on almost all of the tasks of the controller but this research gave more information of why each step needs to be performed. In future the level of communication should be kept high also in management accounting side to better understand the needs and knowledge that the stakeholders have. As the case unit is isolated geographically from other units there is no natural information sharing. Participation on yearly Segment Other controller meetings is important.

In scientific level this study introduced a new management accounting case in an internal service unit that belongs to shared services function. Shared services was described as a way to organize internal service units under the same entity. It was learned that the parent company usually expect efficiency and cost reduction from the internal service units. Responsibilities for the service unit and for the customer are defined in service level agreement. Open information sharing and trust between the units builds strong bond between internal service unit and the customer. Group of experts that is gathered to the service unit and the knowledge that is kept inside the company can be used for consulting purposes.

Cost management can be achieved with lean service process and by increasing the cost consciousness in the organization. Needs of the customer are in key role when identifying waste in the service process. Still, it is not always possible to refine the processes as lean as wanted because there are many other stakeholders in the organizations besides the customers and they all have their own needs.

There are no common measures recognized for performance measurement of an internal service unit. Profit making ability is determined with transfer prices. Financial measures cannot be used alone to evaluate the performance of an internal service unit but also a set of non-financial measures is needed. Operations of the service unit should support company strategy and be value-adding. For example in the case unit value created only with centralized energy procurement in Finland can be easily measured in monetary metrics. It was learned that a service unit should always measure customer satisfaction to understand the development needs for the processes.

More research is needed on management accounting in shared services. There is not much research on how the needs of the company affect management accounting of internal service units or how the organizational form in shared services affect the management accounting processes. Internal service units are often very different in their shape, size, location, responsibilities and operations so it’s difficult to make generalizations.

7 CONCLUSIONS

This study presented a unique case on management accounting practices in an internal service unit. Aim of the master's thesis was to map the current management accounting practices in the case unit and to find place for improvement. There is not much research made on how the features of an internal service unit under shared services affects the management accounting processes.

Theoretical part of the research was executed as a literature review. Important features of management accounting were presented including the support for management decision making and strategy work. Special features of internal service units were described and as well as the reasons for the establishment of the shared services. This information was used when the performance evaluation of internal service units was discussed. Lean service process was presented as a way to control the costs in a shared services unit. It was learnt that the organizational form and culture in the organization affect the accounting practices. This also needs to be noticed when management accounting reports are created. The information in the reports needs to be relevant for the situation and presented in understandable form for the receiver.

Multiple methods for data collection were used in the empirical part of the research. Current management accounting processes in the case unit were mapped based on participant observation of the researcher and also based on the internal documents. To understand the financial processes of the whole company and to find best practices for the management accounting processes internal benchmark was made. Experts in other units of the company were interviewed.

It was found in the study that the current management accounting processes in the case unit are in good level. The unit has very high standards in its operations and most of the development needs were triggered inside of the unit. Only small improvements to the processes and reporting were proposed.

In internal service units the importance of the customers' requirements needs to be remembered in all processes. Performance evaluation should be based on the value that is created for the company. All of the value cannot be presented in

monetary measures and this is why both financial and non-financial measures are needed for the performance evaluation.

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APPENDICES

Appendix 1. Income statement and balance sheet structure

INCOME STATEMENT

INTERNAL SALES: ENERGY	
EXTERNAL SALES ENERGY	
SALES TOTAL	
INTERNAL SALES: SERVICE FEES	
OTHER OPERATING INCOME	
TOTAL INCOME	
ENERGY COSTS	
GAS	energy costs, gas
	energy costs, electricity
Internal	internal electricity purchase
External	external electricity purchase
	- PVO
	- SPOT
	- grid fees
OTHER OPERATING VARIABLE COSTS	
	- other variable costs
	- financial hedges
TOTAL VARIABLE COSTS	
PERSONNEL COSTS	
OTHER FIXED COSTS	
TOTAL FIXED COSTS	
OPERATING NET EXPENCES	
EBITDA	
PLANNED DEPRECIATIONS	
	- intangible assets
	- depreciations, IT
	- depreciations, machinery and equipment
	- depreciations, other fixed assets
OPERATING PROFIT/LOSS (EBIT)	

BALANCE SHEET

FIXED ASSESTS TOTAL
- intangible assets
- computer software
- machinery and equipment
- other tangible assets
TRADE RECEIVABLES INT
TRADE RECEIVABLES EXT AND OTHER
TRADE RECEIVABLES TOTAL
TRADE PAYABLES

Appendix 2. Proposition 1 for new profit and cost center structure

New structure for profit and cost centers option 1:

PROFIT CENTERS:			
"ELECTRICITY"	"NATURAL GAS"	"SERVICES"	"SGA"
COST CENTERS:			
PVO	Natural Gas Costs	Depreciations	Mill Allocation
Internal purchaces		Other service costs	FI SGA costs
Nord Pool		Power Grid	Energy Efficiency
Transmission			
Hedgings			
Balancing invoices			

Main changes in the structure:

- Profit center electricity aims at only PVO contribution margin amount of profit and it only includes costs that are further charged from the mills
- New profit center “services” for revenue and costs that are not directly related to electricity or natural gas sales or SGA
- All FI personnel costs go straight to profit center SGA
- All SWE & CE SGA cost allocations to same cost center
- Costs that are further invoiced from the grid subsidiary under one cost center

Where do these changes influence?

- Changes in profit and cost center structure influence calculations in RF, profit file and electricity report
- From reports the changes will be seen in fixed costs report, EBIT-analysis and statistics
- Changes in personnel cost allocations and in SGA reporting to HFM

What is achieved?

- Profit center electricity is easier to follow
- No allocations between profit centers electricity and SGA are needed