INCREASING CAPITAL INVESTMENT TRANSPARENCY ACROSS A MULTINATIONAL MATRIX ORGANIZATION

– Public version –

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Management Summary

This study is conducted at Company X in department 1.1 and department 1.2. The objective is to generate a consolidated view of department 1 finance processes and to provide a view on how the business decision support can be improved in the 2016 performance reporting cycle. From thorough analysis of financials reporting, we find that different interest in the same financial figures between department B and department 1 cause cumbersome tracking processes and high control costs. A twofold solution (I. and II.) is provided to increase business decision support and decrease data control costs. The impact on financials reporting processes is visualized in Figure 0.1.

Figure 0.1.: High level overview of the implications of the proposed solutions on the general finance reporting processes, from the current situation towards two separate processes. Dotted lines are control steps.

I. Focus performance reporting on the business basics
Department 1 should accept the difference in interest for finance reporting and change reporting to incorporate more management relevant information. Central performance reporting is oriented around certain measures on aggregation level I, therefore finance tracking is structured similarly. From this study we conclude that central performance reporting should become more focused on the business to better provide business decision support, i.e. the full scope of the business at its basics. Accountability of budget management on certain financial data is with department B, but currently department 1 has a similar process with the same data that they want to get aligned. Instead of getting aligned, the focus should be altered, meaning department 1 should report on its business and let department B manage the current measures used. The recommendations are therefore:

(a) Adopting a greater business orientation in department 1 performance reporting by incorporating a more complete coverage of activities;
(b) Certain finance measures should be reduced as they do not fully provide management relevant information;
(c) Incorporate historical trend analysis to provide better insight; and
(d) Lessons can be learned from department 2 that already uses previous mentioned
measures in managing their business.

II. Implement a department 1 data split at department B reporting
The previous solution does not cover that department A requests the current measures from department 1. As long as this is the case there will be a need to keep reporting certain finance figures in department 1. The best way then to reduce control costs is to implement a single reporting system that contains finance data. In this case the central department B financial system, system 3, seems most promising to have a change implemented by adding extra reporting lines together with a couple of process changes. This system can then be used as input by department 1 to report out the necessary finance figures for department 1. Summarized:

(a) Add specific department 1 reporting lines in system 3; and
(b) Use system 3 for department 1 reporting, therefore implement several process changes.

Using the department B system with a department 1-split in finance information makes it obligatory for department B to keep department 1 data apart. This will decrease the difference of interest in reporting because it requires the reporters to better use department 1 inputs, making it a shared process.

Further research is required to design the specifics of performance reporting, advised is to start with a brainstorm with the department 1.1 regional managers on what decisions are common and need to be supported.
Preface

To firm up the master Industrial Engineering & Management, I conducted a graduation study at Company X. This research provides insight in finance reporting processes and proposes solutions to the current problems. While partially positioned at the department 1.1 team and partially at the department 1.2 team, I was provided with high level insights in Company X’s operations as well as the sector as a whole. Here there was a more detailed personal introduction of the company.

I would like to express my gratitude for the hospitality of the teams in department 1.1 and department 1.2 of Company X, I would not have been able to conduct this research without the proper inputs and time of many of you. Supervisor 1, special thanks for your continual support to reflect ideas and provide me with the necessary insight in the department 1 business. Supervisor 2, I really appreciate the insights you provided me in the department 1 finance business, and supervisor 3 thank you for providing me the right mentorship. Lastly, I would like to thank Berend Roorda and Henk Kroon. I am glad you were my supervisors, I always enjoyed your classes and your pleasant way of tutoring. Both of you really added an extra dimension to my report.
# Acronyms

**Most used acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>IOC</td>
<td>International Oil Company</td>
</tr>
<tr>
<td>JV</td>
<td>Joint Ventures</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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**Other acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>FTE</td>
<td>Full Time Employee</td>
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<tr>
<td>FX</td>
<td>Foreign Exchange</td>
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<tr>
<td>HSE</td>
<td>Health, Safety and Environment</td>
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<td>IIS</td>
<td>Integrated Information Systems</td>
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<td>LLI</td>
<td>Long Lead Item</td>
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<td>MI</td>
<td>Management Information</td>
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<td>MRI</td>
<td>Management Relevant Information</td>
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<tr>
<td>OAPEC</td>
<td>Organization of Arab Petroleum Exporting Countries</td>
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<td>OPEC</td>
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1. Introduction

This study is conducted at entity X, a global entity of Company X. I will further refer to the company as X. The current energy sector experiences a tense competitive situation that brings extra focus to performance and efficiency. Reducing budgets and realizing savings are key to stay competitive but it requires close monitoring of performance. Reporting on these matters gives the management the insights required for decision making but delivering these insights remains difficult.

This Chapter will provide an introduction to the study. Section 1.1 gives some background to Company X and how department 1 is placed in the global structure. Section 1.2 explains why the study is relevant for Company X and Section 1.3 identifies the specific issues of the case study examined. Section 1.4 defines the scope and Section 1.5 explains the goal of the study. In order to accomplish the goal, the study is structured with some research questions in Section 1.6 and afterwards the approach for answering these questions is described in Section 1.7.

1.1. Company description

Company X operates in the energy market in a relatively small but currently highly developing focus industry.

— Deleted due to confidentiality —

1.2. Motivation

Oil and gas prices have dropped significantly (+/- 60%) over the last year. While writing this report these prices dropped to USD 27.63, respectively USD 2.14. At the current Brent prices we are experiencing the longest oil price decline since 1986 (Deloitte, 2015), already more than double intermediate price drops in days length (450 days) and still ongoing.

The big International Oil Companies (IOCs) all undergo the effects as their products sell for half of the price within a year. A new reality creates a new playfield for the traditionally production focused IOCs. Being a winner in a declining industry requires new strategic focus areas (Deloitte, 2015). With declining cash amounts it does not seem attractive to do portfolio upgrades through acquisitions and/or divestitures. Other players in the same game might encounter more difficulties coping with the new playfield and can be obtained relatively cheap(?). However, only few have the means to make such deals. Other players might consider consolidations to reduce cost and/or strengthen power, or acquire new talent that others had to let go.

Difficult decisions will be made where expenditures are reduced and/or refocused as people will be let go and projects where people were working on for years are cancelled or postponed. At the current considered long term oil price, many projects are not able to reach their break even and they are therefore cancelled or postponed. Industry-wide the effects are getting clearer as more IOCs drastically cut in their project plans
and other expenses. An alternative approach to become a winner in the new reality is to focus on enhanced efficiency and performance to get the break even down.

1.3. Problem identification

It was only last year (2014) that company X started to put more focus on the efficiency and performance topic and that drive is now maturing throughout the company. Department A is targeted to deliver \( x\% \) savings in 2015 compared to the 2014 activities plan, \( y\% \) savings next year and the same the year after. Half of these amounts are assigned to be delivered by department 1. Realizing these savings are up to the local department 1 teams, driven and supported by the central department 1 team.

Of the 100% investments planned for 2015, a major part of this is expected to be in department B business. Most of this expenditure and some department C spend is governed by department 2, a big organization focusing on specific work. This work is closely monitored and managed which results in a transparent view on the expenditure in and a good view on how savings are accomplished, they own these numbers themselves after all. The point is that department 2 projects on average only involve 25% department 1 related scope. Their main accountability lies with a certain piece of project work. On the rest of expenditures of company X, department A has no similar transparent view on the expenditures or savings. The final estimates of financials reported in management meetings are not always recognized by all of the departments.

The current competitive environment demands management to agree upon a plan of activities for the next years where company X is operating competitively compared to the industry. This management team needs credible information to be able to make the right decisions on allocating resources and assessing performance.

![Figure 1.1: Transparency of expenditure budgets in 2015. Department 1 has a big share of the complete expenditure budget where extra transparency is required.](image)

A big part of the department A budget is expensed in department 1. Of this budget, merely \( x\% \) is also closely monitored by department 2. This leaves the other \( 1-x\% \). in the less transparent data bucket. This means that if department 1 could deliver more transparent information on their financials, then a major part of the department A transparency problem would be tackled. In this context the problem is identified as:

"The current department 1 organization is not fully able to deliver to the department A management team ambition towards transparent finance decision support in order to answer to the current competitive performance environment."
1. Introduction

1.4. Research scope

The problem identified reflects a department 1 decision support issue, the impact is however company wide. Expenditure data from department 1 is used within department 1 but also reported to department A and department B management levels. Therefore this research comprises expenditure data flows with a department 1 component in them and not all capital flows.

Here was further explanation about how this research follows the company structure of data reporting and organization structure. Furthermore we address the specific processes that are included in this research and those parts that are not.
1. Introduction

1.5. Research goal

The identified problem in Section 1.3 expresses the demand for more robust and transparent data reporting. In order to achieve the savings in department 1 credibly, the organization needs to get a more transparent view on their expenditures and accordingly their savings to be able to report correct figures to their management team. Next year and the year hereafter the targeted savings are even bigger than the amount of this year, stressing the importance of the problem at hand. The hypothesis is that by mapping the current way of working we will identify inefficiencies that can further be examined. With this background, company X’s demand for this project is:

“Generate a consolidated view of the department 1 financial processes and create a view on how the business decision support can be improved in the same process cycle in 2016.”

1.6. Research questions

This research looks for insights in the business support function of expenditure reporting in company X department 1, therefore there will first be mapping of current process flows. The second part comprises of problem identification and selection. Finally we create a view on how financials could better support business decisions in the 2016 reporting cycle.

1. How can the current expenditure business support be defined at company X, specifically department 1?
   1.1 Who are the business decision makers?
   1.2 What systems are used to deliver this support?
   1.3 What are the roles and responsibilities?
   1.4 What relevant developments took or are taking place?

   Process overview and mapping will be provided that crosses all the sub-questions.

2. What are the possible improvements to be identified in expenditure reporting of the case study?
   2.1 What are the different expenditure reporting improvement possibilities?
   2.2 What problem has the highest realizable benefit?

3. What is written in literature and by other professionals on the issues encountered in the case study?
   3.1 Deleted
   3.2 What are common pitfalls in the structure identified towards business processes and how can these be linked to the case study?
   3.3 What management information flows are applied at company X, and how are these explained?
   3.4 What can we learn from the industry professionals?

4. What solution can company X use to address the problems identified?

5. What organizational changes are desired to implement the solution?
1. Introduction

1.7. Research approach

A full process description is provided in Chapter 2. This includes the organizational study where the current reporting processes including financial data are mapped and explained in detail. This “company X’s practice” gives insight in current working practices and issues that are encountered while working with the financial data. Chapter 2 concludes with the most important problems identified where the one with the highest impact on the problem statement will be chosen for further study in Chapter 3. Chapter 4 provides background from literature to the examined problem and practices found in company X. This Chapter also includes a section about the industry professionals that is not journal based but based on published articles from certain companies and institutes. With these insights a solution split in two parts is created and further detailed in Chapter 5. Chapter 6 explains how these solutions can be applied in practice, the implementation. Finally, we summarize our findings in Chapter 7 together with some additional recommendations.

The information in the organizational study of Chapter 2 is gathered from several resources. The start was to read trough manuals. Hereafter I was involved in several smaller tasks regarding data collection, control and presentation. This provided a feeling with some processes, abbreviations and data. To get a singular overview of the processes and systems a lot of reading was performed from old presentations and information pages, but predominantly interviews with people from many different departments gave the best insights. I created the systems overview with people that actually used and/or designed these systems to get the in- and outputs correct. The roles and responsibilities mapping was predominantly done by letting people explain their data collection, submission and other relevant processes. Chapter 4 required some papers to get the background information on organizational structure and management accounting practices. In this process, literature reviews per topic structured the search. To get more in dept industry knowledge, information was collected directly from the companies in the market like consultancies or service providers.
2. Organizational study

This Chapter will introduce the current situation at company X. This will help us get insight in what are the underlying factors impacting the problem statement in Section 1.3. Chapter 2 gives insight in the current process structure for collecting and reporting financials with a department 1 focus. First we will analyze the data on the expenditures. There are many different stakeholders and systems involved in these reporting lines, we will therefore explain in Section 2.1 what systems are in place with their corresponding data flows to back the decision support processes. Section 2.2 clarifies who are involved in the processes from input to output. With the stakeholders and used systems we are able to map the processes and these will be summarized and visualized in Section 2.3. Next we provide some background of the types of decision supported in 2.4 and some data analysis in 2.5. By analyzing these flows and incorporating the information gathered in many interviews we summarize the issues in a problem tree in Section 2.6.

2.1. Systems analysis

2.2. Roles and responsibilities

2.3. Department 1 finance flows

2.4. Applied decision support

2.5. Analyze

2.6. Issues

We finish the organizational study by concluding with the issues that result in the problem identified in section 1.3. These issues and their causality were extracted from the interviews held in the organizational study and reflected with department 1.2. This section explains the issues that are summarized and visualized in Figure 2.1.
Figure 2.1.: Problem tree identifying the root cause of the problem statement, issues are explained in the current Section per number.
3. Possible improvements

From the issues in Section 2.6 two main improvement points arise. The first place to look for improvements is where department A and B are not aligned on information exchange. Secondly department 1 has its own expenditure collection process that is not a flawless process. Here we will explain what problem will further have the emphasis in finding a solution.

3.1. Department 1 tracking issue

3.2. Department A and B alignment issue

3.3. Research focus

In this report we will focus the study on one improvement area that has a high impact for company X but also fits the requirements from the University. Department 1 processes/systems can be redesigned to improve department 1 expenditure transparency. Solving the issues here will however not reduce the data control steps drastically and might require people to adopt to a new way of working again. The second improvement area addresses the issues much more at its root cause and is therefore chosen for further research.
4. Literature review

This chapter provides insight and background on the department A and B issues from external sources like journals and industry professionals. Section 4.1 provides information on how the structure of companies in the market developed the last decades to show how other players in the industry structure their business and what kind of related problems are common. Section 4.2 explains the financial flows identified in company X by literature and what processes and functions are most important. Finally, Section 4.3 provides a broad view of professionals from the industry on the focus issue from Chapter 3.

4.1. Organizational structure

Because we focus on inter-departmental information and data flows it is also interesting to study the organizational structure that affects these flows. The way departments are structured and cooperating within a firm, together with their information gathering practices, have a big impact on data flows.

Structure background In the energy sector, oil majors continuously adapt their organizational structure to their strategic interest. In 1970 the integrated oil companies had to deal with immense complexity due to the wide variety of activities and product ranges. Coordinating vertically between exploration, production, refining and marketing and coordinating horizontally between final products, created a very difficult type of administrative planned economic activity. These planning and appraising investments responsibilities made the oil companies develop more centralized organizational structures compared to other industries (Grant & Cibin, 1996).

The first big change started in October 1973 when the Organization of Arab Petroleum Exporting Countries (OAPEC) declared an oil embargo as a response to the U.S. interference in the war between Israel with Egypt and Syria. The prices rose quickly as supply stuttered. In 1979 the Iranian Revolution took place resulting in a new country leader. The first thing he did was nationalize the oil industry and throw out the major oil companies, that in their effect, combined with economic growth, again elevated the oil price that the OPEC could keep artificially high. For the IOCs this meant that between 1970 and 1980 many of their assets were nationalized and smaller (state-owned) competitors expanded quickly.

Backed by the rising oil price, the oil companies consequently started to focus on growth to deal with the new competitive and turbulent industry. Growth was implemented by the strategic focus on the quest for oil and diversification (Grant & Cibin, 1996). In this period functional organization structures were the main design that facilitated the growth strategies. Having functions in one place enabled innovations to

1OAPEC is the Organization of Petroleum Exporting Countries (OPEC) including Egypt and Syria (Wikipedia).
2http://www.federalreservehistory.org/Events/DetailView/36 - Oil Shock of 1973-74
be discovered and implemented (Schlumberger Business Consulting, 2015) but another advantage is the economies of scale by sharing resources (Duncan, 1979). Lower level managers however, do not have the required cross-functional information to be able to make decisions so they are pushed upwards in the hierarchy. Now that the environment became more uncertain and dynamic, this divisional structure faced information overload in decision making that slowed down decision making (Guldemond, ten Have, & Knoppe, 2010). Clearly this structure was not able to deal with fast changing market conditions but it remained in place due to the benefits of the high oil price (Grant & Cibin, 1996).

In the mid-1980s investments in additional energy production and slowing economic growth decreased the demand for oil and resulted in the first big decline in years. The oil price dropped significantly (U.S. Energy Information Administration, 2015), triggering a steep decline in profits for the IOCs and hitting an oil crisis in 1986. Grant and Cibin (1996) stated that the IOCs could no longer cope with the external environment in their current organizational design and needed to realign. The companies started looking for a way to be able to respond quicker to external changes, initiate an entrepreneurial drive for profit but would still allow a long term investment focus. Lots of activities were divested and a shift took place from a geographically-defined divisional structure towards a product-sort oriented divisional structure. Competitor I and II kept some geographical structure whereas others were already fully decentralized, but the main organizational form was with the divisions upstream, downstream and chemicals. Along this restructuring was a dominant trend of decentralization to cut cost resulting in an asset-based organizational design (Schlumberger Business Consulting, 2015).

To keep the central overview of their business, the IOCs coordinated their decentralized businesses with financial control and goal alignment (Grant & Cibin, 1996). This trend made efficiency increasingly important because due to active asset-management, low financial performance would lead to divestment of the asset. In the late-1990s and early-2000s this became increasingly important and companies created matrix structures to be able to share and implement discipline knowledge more effectively to harvest efficiency benefits (Schlumberger Business Consulting, 2015). The primary reasons to implement this matrix structure are summarized by Sy, Sue, and D’Annunzio (2005):

1. Allows companies to focus on multiple business goals;
2. Facilitates the management of information;
3. Enables companies to establish economies of scale within the function; and
4. Speeds response to environmental demands.

Anxiety of emptying resources raised the oil prices after 2003 and pointed the focus for the IOCs on the quest for new resources to secure their long term growth position. The result is a hybrid organizational form that has the centralized discipline knowledge for efficiency benefits but is decentralized where local knowledge is required. The hybrid structure acknowledges the different businesses and their need for a different approach.

As an example, competitor I manages their business globally by business and by function with shared operating processes and IT systems. Competitor II declared to structure their organizational body globally around different businesses as well in 2007. Other IOCs still maintain a more regional management structure (Inkpen & Moffett,
4. Literature review

Guldemond et al. (2010) explain the changes similarly and conclude that the petroleum industry now uses functional department with processes as overlays, resulting in a matrix structure. Sy et al. (2005) state that literature makes a difference between the functional matrix, the balanced matrix and the project matrix. The project matrix is similar to the process matrix of Guldemond et al. (2010) with an emphasize on project management. Employees move between functional departments and projects and functional managers serve in support or advisory role for the project managers. The balanced matrix is the classic model where staff is official member of two organizations and power and authority is equally distributed across dimensions. Finally, the functional matrix is characterized by employees that are full member of the functional department and processes are instituted to ensure cross functional collaboration. Project managers coordinate the efforts of the different functions where the functional managers are responsible for design and execution of their tasks (Sy et al., 2005).

— Explanation on company X structure deleted —

**Structure difficulties**  The functional matrix structure implemented provides substantial organizational benefits compared to a pure functional or process structure but it also has its weaknesses. Sy et al. (2005) deepened the traits in matrix organizations as explained by literature. From literature they conclude the matrix weaknesses as:

- Authority does not equal responsibility;
- Not every subordinate reports to one single boss;
- Creates conflict and ambiguity;
- Increased cost due to additional management and support required; and
- Increased resistance against change as traditional authority structure is lost.

Sy et al. (2005) conducted research towards the experienced difficulties at matrix organizations at seven major U.S. based corporations with an average revenue of USD 70 bln. The study also involved a major IOC and was based on surveys, interviews and workshops with 109 managers at the rank of vice president or above and 185 managers below this rank. The common experienced challenges by the sample group, split out between top-level and mid-level managers, are represented in Figure 4.1.

A challenging issue is aligning goals across different matrix dimensions. The study explains that objectives are often competing or conflicting between dimensions. Next, aligning goals and detecting misalignments might be the interest of the management, processes in enabling this are often inadequate. Poor timing, coordination and synchronization of work plans and objectives are also causing trouble in aligning goals and finally, insufficient communication and consultation is a factor that impacts the misaligned goals. The lesson here is that when cascading goals is performed properly, goals will add up on all matrix dimensions. For company X this would imply that department A, department B or any lower level, the company goals need to be the same. From Section 2.6 the issues suggest otherwise.
The second challenge following Sy et al. (2005) is confusion about roles and responsibilities. As organizations set up a matrix structure they generally fail to address roles and responsibilities at lower levels in the organization that is also indicated by the difference between mid-level and top-level managers’ perception of clearness in roles and responsibilities in Figure 4.1. This could come forward in unclear job descriptions and guidelines, confusion about who the boss is, unknown contact persons and in the end tension between employees. Sy et al. (2005) say that organizations need to provide clarity, accountability and information sharing. A common way to implement this is the implement accountability mapping tools.

Thirdly, tension is caused by the leadership as authority is shared between multiple leaders. The double reporting lines cause confusion over final authority and missing clarity on accountability. Leaders can be unaccustomed to collaborative decision making, creating extra pressure and delay in the decision making process. Getting it right needs a collaborative environment where people are problem solving oriented, compared to a political culture where employees focus on maintaining their status and power instead of solving the issue. Furthermore, high-performing matrix organizations say the best practice is to give decision making authority to those who have the best information, often local leaders.

The fourth issue is maintaining the matrix by keeping track of matrix performance. Senior leaders cannot intervene when they are not aware of problems, but only few actually measure matrix performance to track how well the company operates. Often employees do not see consequences or rewards for matrix performance so the efforts on the matter is low. The issue is to be resolved with a matrix guardian. This guardian should create a monitoring process to identify matrix problems and should have senior leadership support. The person should be able to make decisions but needs to preserve objectivity from any matrix dimensions’ interests.

Lastly, employee behavior is very important. Matrix organizations require higher levels of collaboration whereas most employees in large companies are silo-focused. As part of a certain department or dimension, the interests of others are often not concerned. Mitigating this behavior needs training to broaden employees’ perspectives and skills but leadership also needs to clearly define their expectations regarding matrix collaboration. Installing cross-functional teams and relationships will enable collaboration.
and increased interest in the on total company performance rather than unit-level
performance.

Concluding on the lessons from the matrix difficulties, making a matrix work needs
some extra effort. Special attention is needed to make sure goals add up across ma-
trix dimensions and roles and responsibilities need to be put to paper. Furthermore,
local authority needs to be enabled and a collaborative environment needs to be
formed. Measuring matrix performance with a matrix guardian will identify the cross-
functional problems and employees need to be trained and developed to manage in a
matrix environment.

**4.2. Management accounting**

After defining organizational structure we will now get some background on the data
collection processes involved in the scope of this research that cross the functional
boundaries.

**4.2.1. Management accounting versus financial accounting**

Within collecting financial information there is a difference between cost/financial
The identified expenditure sorts in company X fall under management accounting that
is the practice of providing suitable information for people within the company to help
them make better decisions. It is targeting decision support to improve efficiency and
effectiveness of operations (Drury, 2013).

Some data however, is also used in financial accounting that is concerned of cost
buildup meeting the requirements of external reporting for e.g. making profit and
loss statements (Drury, 2013).

The financial accounting flows are strictly controlled by regulators like the Securities
and Exchange Commission, the Public Company Accounting Oversight Board and
the Financial Accounting Standards Board to make sure inputs comply to generally
accepted accounting principles (Hansen & Mowen, 2007). The necessity to have trans-
parent accounting practices in the energy sector can best be shown by an example, see
e.g. the practices at Enron pre-2001 (Gordon, 2002). Management accounting informa-
tion like planned investments and the latest view on these plans incorporate financial
data but are not regulated to general accounting standards (Drury, 2013; Hansen &
Mowen, 2007). Investors care about whether a new activities plan fits their ideas for a
profitable and competitive company, but no regulator will care if the realized numbers
differ from the plan as long as these realized numbers are trustworthy.

**4.2.2. Functions**

According to Drury (2013), management accounting is in place to support the decision
making process. In this process he makes a difference between the planning process
and the control process. The planning concept is about the business plan creation
where different alternatives are evaluated and finally approved it becomes the bud-
got for the next year. The control processes is about comparing actual and planned
performance and in responding to divergences from the plan.
4. Literature review

Drury (2013) state that cost and management accounting systems overall have three functions:

1. Allocate costs between cost of goods sold and inventories for internal and external profit reporting;
2. Provide relevant information to help managers make better decisions; and
3. Provide information for planning, performance measurement and continuous improvement.

The first requirement is very much a condition for financial accounting and not so much applicable for department A or B management accounting reporting. The second function is that the financial data should be meaningful in decision making. This means that besides cost allocation to products and inventories, the system should be able to address differences in profitability between various segments of the business. This information on the value chain supports resource allocation, (dis)continuation decisions and product/service mix decisions.

The last function is that information should be provided to set goals and targets, but also to compare the achieved results. Management accounting should assist in controlling costs and improving efficiency and effectiveness of operating (Drury, 2013). Management accounting systems serve different functions and are mostly recorded in one single database.

**Budgeting**  In developing information for planning, control and performance measurement, the management accounting system particularly needs to support the budgeting process. Budgeting involves coordinating activities in a company by preparing detailed plans for future periods (Drury, 2013). The traditional approach is to prepare a weekly or monthly budget for the next year, once a year. A rolling budget (or continuous budget (Hansen & Mowen, 2007)) is a process where every quarter the budget of that quarter is reviewed and updated, but also an extra quarter is added to the full budget such that a full year is covered in the plan. The advantage is that this more continuous process results in more realistic target setting as managers constantly keep looking forward.

**4.2.3. Management accounting systems**

Systems and tools like system 4 are management accounting systems that are in place to facilitate management accounting. Management accounting systems, or sometimes referred to as management information systems or accounting information systems, are the basis for management accounting. Most multinationals standardize the global flow of information and with integrated IT systems they force all (foreign) divisions to adopt similar accounting practices.

Each organizational function used to have its own information system but with the development of more sophisticated IT systems, information systems are increasingly integrated (see e.g. ERP systems). The literature on the link between management accounting and integrated information systems (IIS) was examined by Rom and Rohde (2007). They state that there is consensus in literature that systems are designed
4. Literature review

around a task focus, so management accounting processes define the IIS design. E.g. as the design of the management accounting reports change, so must the IIS in order to create the report. On the other hand it is argued that the relationship is unidirectional and the IIS thus also influences the management accounting processes.

Williams and Seaman (2000) state that change in management accounting and control systems have an effect on management relevant information (MRI) that in its turn affects performance. So in order to improve performance, a management accounting system should be designed to improve MRI.

— Explanation on company X system structure deleted —

**Quality cost: cost of compliance and non-compliance** Management accounting systems can provide cost of quality reports giving indication on cost involved with (preventing) quality failures. The four sorts of quality costs are prevention cost, appraisal cost, internal failure cost and external failure cost (Drury, 2013).

— Explanation on company X deleted —

The optimal investment in compliance costs is achieved where cost of quality is at a minimum. Drury (2013) argues that it is better to achieve zero-defects than achieving 100 percent quality compliance. This means in order to get to the optimal investment in compliance, one needs to focus on eliminating internal and external failure costs. Translated to the case study this means a management accounting system design will minimize the (non-)compliance costs where it focuses on alignment of data across departments and not on correctness of data.

4.3. Industry professionals

Very little is touched upon in literature on the specific issues encountered in this research. The collection of expenditure data for management accounting purposes with the combination of a complex organizational structure is not common practice that has been examined in literature. Here we will predominantly examine what the service providers and consultancy firms in the industry have to say on the matter.

In a collaborative report between Morgan Stanley Research and The Boston Consultancy Group (Rats et al., 2015) give some background and explain how the sharpest underperformance of any-three year period since 1973 occurred. Upstream-industry contributed most to this trend due to a steeper increase in costs than FCF and returns, almost tripling in 10 years. Rats et al. (2015) are also judicial towards capital allocation of the oil majors. They find that over the last years (1999-2014), an incremental USD 1.00 in operating cash flow results in increase of capex of USD 0.97. This strong correlation implicates that the availability of funds and not the attractiveness of opportunities could be the most important driver for expenditure. With current oil prices below break-even levels, operating cash flows are expected to diminish, and thus the availability of cash flows too. Expenditure is therefore expected to be decreased in relative rate to cash flow change.

In order to cope with the developments in the industry Rats et al. (2015) state that companies in the oil industry need to evolve on three aspects; operating cost, business model reevaluation and corporate culture.
4. Literature review

4.3.1. Cost reset

First of all, the cost need a drastic reset and Rats et al. (2015) point towards several improvement areas in the upstream business. The McKinsey&Company authors Graham, Katsap, Roelofsen, and Sharma (2014) agree by stating that IOCs need to focus strictly on cash by radically reducing cost and improving asset efficiency. Regarding freeing up cash, Graham et al. (2014) state that the focus needs to be a reassessment of value creation instead of cost cutting exercise that jeopardizes future profitability and growth. Company X’s increased focus on performance and savings confirms this trend in practice, but Rats et al. (2015) say that most operators have only just begun on this journey and that this focus will not be temporary. This will mean that this cost reset has interest of top-level management for long term that emphasizes the importance of an improved expenditure reporting process. The industry specialists/consultants advise several key areas where in the business the cost reset should take place (Graham et al., 2014; Rats et al., 2015), but we will not go into detail here.

4.3.2. Business model reboot

The second development needs to take place in the operating model according to Rats et al. (2015). They state that the Upstream-industry is evolving to niche specialists and that the big players should create a network of focused businesses that can fit the massive scale and not obstruct it with complexity and overhead. Bertocco and Padmanabhan (2014) point towards an improved advanced-data analytics strategy to deal with the current competitive environment.

These Bain & Company partners state that big data\(^4\) in operations could aid in creating value but that the IOCs should revisit their business model in order to achieve that value. They find that many IOCs have invested in their data analytic capabilities but that many still struggle to get it to deliver tangible business value. Functions in a company all might have a lot of data, but the operating model should bring it together. If it does not create the “single version of the truth”, fast enough and for the right people, it is hard to improve performance. Their advise for an operating model that suits the current needs is:

> “Executives need to create a pathway for collaboration among functions, with better systems and processes that allow not only for rapid and integrated sharing of data, but also for organized decision making with clear lines of accountability.”

Riccardo Bertocco and Vishy Padmanabhan - Partners Bain & Company

The authors say that most systems currently in place were designed for the financial needs for the center and not for operational needs. These systems are created to support back-office functions that didn’t require quick and cross-functional collaboration (Rats et al., 2015). Rats et al. (2015) say that in order to get it to work, IT should organize around decisions rather than siloed processes.

— Explanation on company X system structure deleted —

The statement on a collaborative model is confirmed in a Schlumberger Business Consulting (SBC) paper of combined articles from industry professionals (Rostand, 2015a):

\(^4\) We consider big data the data that takes more time to manually analyze than to program a tool that automatically does the analytics for you.
4. Literature review

“Overcoming industry challenges requires oil and gas companies to embrace new ideas beyond those from their respective sectors. This includes learning from other capital-intensive sectors, such as the aerospace and automotive industries, that have adapted their operations to collaborative working models.”

Antoine Rostand - Global Managing Director SBC

In this report, Rabley and Ashraf (2015) write that collaboration is required to tackle the challenges that come with the complexity and inefficiency faced by the industry. They specifically highlight the Upstream model and compare it with the capital intensive automotive industry. Three main transformations for the Upstream model are advised: Improved efficiency through joint operator-supplier integration, technology integration with collaborative design and performance alignment. Especially the last two will impact the processes identified in this study.

Attention must be paid that integration is not equal to bundling, the whole is only greater than the sum when working in concert and not just with the same system. They state that “Integration works only if alignment is achieved across the operator’s organization, in particular between asset teams and functions (drilling, completions, production operations).” The collaboration can aid in decision making where the asset is mostly focused on longer-term performance and production whereas the function is often focused on cost and cycle time. Saadat, Bonny, Cleto, and Kallar (2015) in the same paper go into more detail for operators, but a focus on integration is still the main advise. They advise a model that dismantles silos between different parts of the organization. The management system for the E&P\textsuperscript{5} value chain needs to be harmonized for cross-function, cross-asset collaboration. In this system, decision making needs to be data-driven that requires an information-rich environment for support.

Although the performance alignment note (Rabley & Ashraf, 2015) is more meant for multiple organizations in a value chain, the company X in-house structure between departments can very well be applied to their advise. Rabley and Ashraf (2015) state that biggest barrier for performance improvement is the current transactional relationship. An aligned set of objectives is required by agreeing on similar performance metrics and creating transparency through open information sharing. The current information flows between stakeholders is remarkably constrained and a ‘share only what you absolutely need to share’ mindset is present. A company should go to a corporate ecosystem where data flows effortlessly across participants.

4.3.3. Culture change

According to Rats et al. (2015) Upstream lacks a cost-conscious culture and the current focus lies at safety, volume and reliability. This originates from high oil prices where high marginal profits were made on each extra barrel sold; production was king. As the focus was on safety, volume and reliability, the IOCs promoted people who had been successful on these aspects. Currently only few senior leaders in the majors are at their current position because they kept the cost low. Because systems and performance measures were designed to these interest, cost management failed and the recent cost escalation is huge compared to other heavy industries like the automotive industry. SBC managing director Rostand (2015b) presented a similar comparison at several conferences where he showed lessons to be learned from other industries, like the difference in leaders between the automotive industry and the oil and gas sector.

\textsuperscript{5}Exploration & Production
4. Literature review

The industry is primarily lead by people with an engineering degree (71%) whereas this is only (29%) in the automotive industry. The amount of MBAs is very comparable but the people with a business school background are only minimally represented at the IOCs (14%) compared to the automotive industry (55%).

Without any behavioral change, the cost cutting initiatives will fail says Rats et al. (2015). Realizing more savings than just the low hanging fruit requires delayering (removing levels of the organization and rethinking how and where decisions are made) of the organization and creating a cost-conscious mindset, e.g. by introducing lean methodologies.

Finally Rats et al. (2015) say that changing culture must focus on cost transparency, cost focused performance management and leadership. Emphasis on a cost-conscious culture needs to be carried by the senior leaders throughout the firm and successes need to be shared. Accountability on cost management needs to be clear and especially transparency needs to be increased. In order to better address asset costs, systems might require upgrades to achieve the right level of management information.

4.3.4. Performance measurement

The previous three aspects of Rats et al. (2015) explain the need for cost transparency and cost focused performance management, Bertocco and McCreery (2014) write about how this can be addressed in reality for the oil and gas industry. These Bain & Company partners state that oil and gas executives might need to revisit the way they manage performance in order to get the right decision making insights, discussions and actions. First of all they say executives need to focus their resources and reporting systems on the information that matters the most and they should start with these three questions:

1. How do we measure our performance?
2. What decisions do we need to get right to succeed?
3. How can metrics help improve our decisions?

The first question addresses the strategic background; how do we measure success, but more what really is success? The second question is about how an organization evaluates what it knows and acts on this information to create value. Last, companies need to decide on the metrics that are most important to track and monitor. Bertocco and McCreery (2014) say that these metric, mostly the key performance indicators (KPIs), should give a balanced overview of the firm for the complete picture of company health and performance. They allocate metrics in five subjects that need to be covered by the KPIs in Figure 4.2.

Figure 4.2 incorporates some ideas for oil and gas players, not specified on department 1. Still, this overview can be applied for department 1 by looking at the five categories and translating them for this department. Bertocco and McCreery (2014) also give the main issue in using KPIs in the oil and gas industry. Due to global practices with big differences in geology, geological conditions and organizational structures, comparison by means of KPIs is often difficult, therefore benchmarking on KPIs across diverse assets can be dangerously misleading.

— Explanation on company X performance reporting deleted —

The last advise of Bertocco and McCreery (2014) is to connect performance to incentives in order to ensure accountability. They state that performance management
4. Literature review

Figure 4.2.: Bertocco and McCreery (2014) KPI groupings to provide a balanced overview of a company’s health and performance. Source: Bain & Company

and incentives need to be aligned to the operating model. Many oil and gas players have recently moved from an asset-based model to a functional matrix form, however only few have realigned performance indicators and incentives to new accountabilities. Often the function is very much involved in day-to-day operation whereas the asset leader is still accountable. One of the most effective ways to ensure alignment is to tie compensation to performance.

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Concluding on the industry professionals, there is a common tendency for focus on cost reduction to deal with the new competitive environment, but with a value assessment approach. Many consultants agree that the current business model needs to evolve towards a system that enables cross-functional collaboration in order to deal with more volatile environment. The process and systems need to be designed for quick and integrated data sharing at the right level of management information. Besides the structure itself, the firms should stimulate a change in corporate culture. The culture should focus on the cross-functional collaboration and requires support by senior leaders. Lastly, it is argued that IOCs could rethink their performance measurement and connect this to incentives to create accountability.
5. Analysis and solutions

In Chapter 1.3 we stated that the current department 1 organization is not fully able to deliver to the department A management ambition towards transparent expenditure decision support in order to answer to the current competitive performance environment. After looking at the issues in the current operating practices as well as literature insights, this Chapter will focus on consulting improvements at company X to improve the stated problem. We propose two solutions; one that addresses the overall focus and ability of management reporting in department 1 whereas the second is about resolving issues in cross-functional data sharing.

5.1. Report more management relevant information

5.1.1. Current process

— Explanation on company X performance reporting deleted —

5.1.2. Constraints

We are looking for more transparency in management reporting within department 1, but we need to take several constraints into account. Change in performance reporting should better support the decision making processes like in Section 2.4. Solutions that work, but at all costs, are not desired. The proposal should eliminate waste and make things simpler.

We will not look for a single department 1 performance system because initiatives already show that a solution is sought, but not yet fully deployed. It is definitely recommended to implement a singular system for monitoring department 1 performance, this is the way forward to keep a single overview and to keep collecting data in the same system/format. Because of the ongoing developments, we will not go deeper into how such a system should be designed. We will recommend changes in the current way of working to improve processes at the central teams.

5.1.3. Solution

The design of management reporting is not delivering enough insight to management. Following Williams and Seaman (2000), a management accounting system or reporting line, should be designed to improve management relevant information. Similarly, we bear in mind the key functions of management accounting systems from Section 4.2.2 applied to department 1; provide relevant management information for decision making and provide information for planning, performance measurement and continuous improvement (Drury, 2013). We look at the basis of performance measurement following Bertocco and McCreery (2014) to see how company X can improve.

Basic performance measurement design is about the strategic goals of the business and about how to measure the business performance on these goals.
5. Analysis and solutions

— Explanation on company X business basics deleted —

Focus on business basics — Explanation on company X business basics link to performance reporting deleted —

Department 2’s business is closely linked to their performance measurement, department 1 should apply something similarly to a lesser extent. Department A (specifically department 1) should revisit to what extent certain metrics are required to make the decisions, to what extent certain metric provide key management relevant information. Monitoring and scoring of the business should be refocused on the business basics and not just on certain measures. This would mean a significant reduction of time that needs to be spend in finance on a couple of measures that do not provide the complete story. We acknowledge the need for these measures, but such measures should be separately measured from the complete business performance.

Change performance reporting metrics Next to the different approach to performance measurement, performance reporting metrics should be changed to give a balanced view of the business. Department 1 should revisit whether the current metrics are most important to track and monitor performance on strategic priorities. Lessons can be learned from department 2.

— Explanation on company X how performance reporting should be changed in detail deleted —

Summarizing this recommendation, performance reporting should be revisited. Management should ask themselves what measures are required for decision support; what really is key relevant information. The focus should be changed. From this perspective, the recommendations regarding performance reporting are:

1. Focus performance reporting on the complete business of department 1;
   1.1 Concentrate on xxx to align with how department business is managed;
   1.2 Reduce certain financial measures in reporting;
2. Change performance reporting metrics;
   2.1 Incorporate all work that department 1 calls their job;
   2.2 Use historical trend analysis to see if you are improving or getting worse; and
   2.3 Revisit some performance indicators that support decision making.
5. Analysis and solutions

5.2. Reduce work with a department 1 split in system 3

The previous Section proposed to keep the key issue in reporting lines between department A and B and to reduce the certain financial reporting. This solution would solve the control issues of financial data at the very basis. However, we are aware that it is rather difficult to completely change performance reporting focus and thereby the financial processes. Furthermore, financial processes in department 1 are very much dependent on management needs from department A and are not likely to change all of a sudden. Therefore this Section will focus on how the financial processes could be made leaner when we are to keep collection of certain financial figures and reporting needs in department A.

5.2.1. Current process

— Explanation on company X reporting lines deleted —

5.2.2. Constraints

— Explanation on company X reporting lines deleted —

The solution should incorporate some basic design requirements. First of all, the reporting lines to department B cannot be overcome. In company X, the budget owner is department B whom also is in charge of the official process in reporting financials to central management, the financial accounting process (Drury, 2013; Hansen & Mowen, 2007). The financial accounting process will stay at department B and thereby also the systems in place to support this process. Such reporting systems like system 1, 2 and 3 also support management accounting (Drury, 2013; Hansen & Mowen, 2007) as a management accounting system. Considering the user base and developments around these systems, we look for a solution that does not require rigorous system changes or totally new systems.

— Explanation on company X reporting requirements deleted —

It is desired that department A and B have the same data and we thus require a singular reporting structure that forces persons to a more collaborative working environment and to align their goals (Sy et al., 2005). Lastly, granularity needs to be maintained to keep decision making support as it is and the benefits of a possible implementation should weigh up against possible negative aspects (e.g. implementation cost).

5.2.3. Possibilities

In order to significantly reduce the reworks and controls we look how the current financials tracking process could be structured. There are only a couple of systems available that could host a single reporting structure that all stakeholders can use; system 1, 2 and 3. We will explain the pros and cons on each of them next.

— Explanation on implementing a solution at company X reporting systems deleted —

Figure 5.1 shows the biggest issues of the possibilities examined. The last option examined and described next, system 3, is also the proposed solution because it best fits the requirements.
5. Analysis and solutions

Figure 5.1.: Solution possibilities and their fit with the solution requirements. A (+) means there is a fit. Other remarks show the biggest constraints that need to be taken into account.

5.2.4. Solution

The last option studied is a change in system 3. By building further onto the current IT structure in place, the only possible way to get department 1 specific information is to create new reporting lines.

— Explanation on solution at company X reporting system 3 deleted —

Concluding on this solution, a single financial reporting system should be used to get the amount of work down and the transparency up. System 1, 2 and 3 were examined on implementation possibilities where system 3 shows most potential to have a change implemented. This change would consist of extra reporting lines to make sure that department 1, is able to use the system 3 outputs.
6. Implementation

This Chapter will elaborate on how the solutions from the previous Chapter can be implemented at company X. Applying the first solution from Section 5.1 requires a more general restructuring of performance reporting and a few examples will be explained in Section 6.1 that show in what direction performance reporting should be designed. Implementation of the second solution from Section 5.2 is more extensively explained in terms of process and system changes in Section 6.2 to enable more alignment across departments.

6.1. Revisiting performance reporting

Section 5.1 explained the need for focus on performance reporting on department 1 business basics and that the current performance reporting metrics should be changed. Department 1 can learn from department 2, in implementing a xxx focus in department 1. Their reporting on their business performance is a major process. The system 1 and the related process are quite comprehensive and not one on one applicable to department 1, we can however learn some lessons from department 2.

— Explanation on what learnings can taken deleted —

Tracking criteria

Data submissions and timeline

Reporting processes
6.2. Financial alignment across department A and B

As argued in Section 5.2, the need for certain financial information might not directly be fully overcome. Therefore, a second solution was designed to improve the alignment across departments and reduce work in controlling data. This Section will further elaborate how the data split can be implemented in the current workflows and what changes are required. Figure 6.1 shows exactly where in the current reporting processes changes are required. The subsequent Subsections explain the changes in detail.

Figure 6.1.: Proposed changes to the current process flow to implement a data split. The numbers are explained in the next Subsections. (E.g. no. 1 in Subsection 6.2.1 etc.)

6.2.1. System change

6.2.2. Process change 1

6.2.3. Process change 2

6.2.4. Process change 3

6.2.5. Process change 4
7. Conclusions and further recommendations

This study explains the processes in finance reporting. We identified the issues in these flows and proposed a twofold solution that covers the problems with the highest impact on the problem statement. This chapter summarizes the lessons from this research for company X and provides some recommendations along this study to address further issues and developments.

7.1. Conclusions

The problem addressed in this research is the lack of full transparency in financial business decision support in department 1. The objective of this research is to generate a consolidated view of the department 1 financial reporting processes and to provide a view on how the business decision support can be improved for the next performance reporting cycle in 2016.

First, we analyzed the systems, people and processes involved that deal with department 1 finance numbers. This organizational study shows some issues in finance reporting between department A and B, but also problems in department 1 processes. With this overview we could map the flows and identify the underlying factors that negatively influence the financial reporting processes.

Main issues — Information on key issues deleted —

Further research in literature and at industry professionals was conducted on the problem with the highest influence on the key issue.

— Explanation on the key issue, its origin and its influence on the current organization deleted —

Solution I In order to reduce costs, we argue that the key issue should be accepted. Department A should increase management relevant information by refocusing on their business instead of controlling with department B on current figures. The complete business of department 1 consists of xxx, therefore performance reporting should also revolve around this topic. The current business cannot be scaled into only current performance measurements. Department 1 should report performance on xxx basis and reduce certain financial measures that cause a need for control. Furthermore, performance reporting should be revisited more complete by incorporating more business focused measures. Measures 1, 2 and other measures can significantly increase insight in the business and improved risk management.

— Information on implementing solution I deleted —

Solution II If certain financial data reporting in department 1 will not directly be overcome, we continue to see the need for a solution that aligns financials between department B and 1. A management accounting system should focus on cross-functional
alignment of data and not on correctness of data. Multiple industry professionals (consultancies, service companies) recommend to move towards systems that enables cross-function collaboration and that these systems need to be designed for quick and integrated data sharing. Together this means company X should adopt a singular system that maintains financial data by improved collaborative processes between departments.

Provided with the insight in systems from our systems overview, we were able to distinguish the systems and processes that could be changed to improve the financials transparency. Our finding is that adding reporting lines in system 3 is the best possible solution.

— Information on implementing solution II deleted —

Concluding, the focus should be altered towards the new proposal, meaning that department 1 should focus more on its business and reduce certain finance reporting. If certain financials remain needed to be reported, the best way to reduce the control costs is to implement a single finance reporting system. In this case system 3, seems most promising.

Figure 7.1 visualizes the how finance process flows should be designed in case these solutions are implemented.

Figure 7.1.: High level overview of the implications of the proposed solutions on the general finance reporting processes. Reporting has full focus on the business in each department thereby overcoming control steps. A short control step at the top will continue to exist if department A numbers are reported at department B, or this step can become a full reporting line if system 3 is used as system for certain finance numbers.
7. Conclusions and further recommendations

7.2. Further recommendations

During this study we encountered several developments regarding financial reporting. Going forward with the proposed solutions we want to make some recommendations on the solutions as well as some other topics.

7.2.1. Solution I. - Going forward

This study addressed the issues in financials and performance reporting and concludes that performance reporting should be revisited. This study stated a few recommendations that should be taken into account, but a detailed design for a reporting system is not given. If management accepts this solution, the next step is to design the specifics. Therefore, a thorough study is required on what decisions need to be supported, what measures best provide the required insight and finally to design how this is going to be visualized. We advise to start with a brainstorm with the department 1.1 managers on what decisions need to be supported, e.g. the input that was used for Section 2.4. This study shows that performance reporting needs to be focused on the basics of the business and not on things that might fall outside of the accountability of department 1. It is important to keep this in mind when management starts making requirements on what they think performance measurement should show them.

7.2.2. Solution II. - Overcoming additional problems

7.2.3. Overcoming a future problem

7.2.4. Information on company x entities issue
References


References


Appendix A.

Roles and responsibilities scheme for department 1
financial flows
Appendix B.

Financials flows per location
Appendix C.

System 4
Appendix D.

Reporting codes system 3