

UNIVERSITY OF WESTERN AUSTRALIA

BUSINESS SCHOOL

ACCOUNTING

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ACCT3323: Strategic Management  
Accounting

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THE UNIVERSITY OF  
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# Chapter 1

## Introduction to the unit

### 1.1 Content and learning goals

These notes discuss four different accounting tools to manage an organisation's strategy: budgets, incentive contracts, cost accounting, and the balanced scorecard. The first one, *budgets*, are a quantitative expression of a business plan for a specific period of time (p.184 in [Horngren et al. 2012](#) or p.387 in [Langfield-Smith et al. 2008](#)). Budgets typically permeate the entire organisation and most employees collect information to put in the budget or they might even be directly responsible for managing a subset of the budget. *Cost accounting* is the domain of the accountants. Product cost calculations are a large input into the budgeting process but these cost calculations are also directly used to evaluate the viability and efficiency of investments, production lines, outsourcing decisions.

When employees manage part of the budget and make decisions on how to implement the firm's strategy, the headquarters will want to make sure that employees work in the best interest of the firm. Firms will introduce explicit and implicit *incentive contracts* to reward good behaviour and punish bad behaviour.

Budgeting and costing aims to quantify all the information that goes into strategic decision making and strategy implementation. That does not mean that all business decisions are only driven by these figures. Managers often use their own experience and intuition to augment the quantitative information. The *balanced scorecard* tries to formalise the interplay between objective information and subjective knowledge by summarising the firm strategy in a limited set of causally linked financial and non-financial measures. While budgeting and costing are often seen as merely strategy

implementation tools, the balanced scorecard also serves as a way to form and evaluate an organisation's strategy. Nevertheless, a full balanced scorecard implementation requires careful planning. While the balanced scorecard for top management should be concise, more complexity is introduced when each lower level department needs its own balanced scorecard to aid in fulfilling its part of the overall strategy.

From these brief introduction, you should take away two main messages. First, each of these management accounting tools will be heavily tailored to the organisation which means that for instance the budgeting process will differ significantly from firm to firm. Second, these tools are often big and require investments in both time and money.

The first goal of this unit is to help you understand why and how any of these accounting systems are being used in real organisations. In the workshops, we will discuss and analyse 6 case studies drawn from the Harvard Business Case repository. These cases allow us to study real business practises and deal with real complexities of these systems within the limited time frame of this unit. Once you have a good understanding of the advantages and the disadvantages of the business practices in its context, you will be able to formulate improvements to these cases.

This process reflects real-life management accounting implementations which are also consistently revised and updated. Consultants and in-house specialists will come up with improvements and try to convince upper management to implement these improvements. The key expectation of this unit is that you become better at analysing complex management accounting system and are able to communicate and evaluate potential improvements to the system.

That is why we are trying to mimic the business process in the workshops. In groups, you will first discuss and present, your answers to the questions I pose for each case (see [the last chapter](#)). Another group will react and hopefully improve upon your answers in the workshop. They then have a week to write a short report with the best possible answers to the questions. Of course, later in the semester the roles will be reversed and you will be asked to discuss the work from another group and to write a report.

To be able to analyse a real case study and answer the questions, you will need a thorough understanding of the important theories that systemically explain the use of management accounting systems. This text mainly deals with these theories and they are the basis for the analysis of the case studies. The next three chapters give an introduction to the general principles of why organisations use management accounting systems to implement and revise their strategy. The three following chapters are dedicated to the different management accounting systems, we discuss in this unit: budgets,

cost accounting, and the balanced scorecard. The rest of this chapter will deal with the more mundane issues of how this unit is structured and how you will be assessed.

## 1.2 Structure

There are two components to the assessment for this unit. For an overview you can also have a look [at the unit outline](#). You will see that one form of assessment that you might expect is not there, i.e. the mid-semester exam. This unit has only one, final exam. This exam counts for 50% of the final mark. The final exam will consist of six questions about two or three different case studies. You will get the case studies before the exam and you can bring them to the exam together with all written material such as the lecture notes, your notes from the workshops and other annotations you have made when studying for this unit. This means that the exam is an *open book exam*.

The other components consist of group work and your contribution to the group work. During the workshop, you will work in groups on different case studies. You will present a solution to the case study (1) for 20%, discuss other students' presentation (2) for 10%, and write a report on a case study (3) for 20%. You can find my expectations for the presentations, discussions and reports in [the guidelines](#). These three activities mimic the decision process that firms go through when tackling a business problem where they start from an initial brainstorm with a tentative proposal, that gets criticised, and improved into a final plan.

The structure of the workshop ensures that you will have ample time to prepare these three activities during the workshop through discussions and presentations in the week before the assessment of the three components. To avoid or at least diminish the risk of free riders in your group, you will have the opportunity to evaluate the contribution of the different members of your group through SPARK. Your individual mark for each of the three group assessments will be adjusted by the SPARK score. In other words, if you contributed more and were better prepared for the group work, you will get a higher mark than your group members.

In total, there will be 10 workshops. I will assign you into temporary groups for workshop 1 and 2 (week 3 and 4) of 3-5 students. During week 1-4, you will have time to form your own groups. If you are not enrolled in a group, I will assign you to a group. The groups will be finalised before workshop 3 (week 5) in order to accommodate late enrolments and unenrolments. I have gone back and forth between letting students choose their own groups and allocating you into groups myself. In my experience, self chosen groups are less prone to conflict but also less diverse in their opinions. I for

know settled on letting you choose your own group members because a conflict free group is better for learning than a diverse group. Nevertheless, if you have problems in your group with a group member, you can always contact me and I am happy to mediate if necessary. In general, my experience with group work has been that students who contribute to the group have a high mark and students who do not contribute a lot have a lower mark.

In the first workshop, you will discuss the first case study which you can find on [LMS](#). I expect that you have read the case study when you come to the workshop. During the workshop I will start off with presenting two sets of questions about the business case. You can find the questions in [the chapter on the business cases](#). In the first half of the workshop, you will have the time to come up with an answer to one of the two sets of questions. In the second half of the workshop, one group will present their solution for question 1. Another group will get the time to evaluate the answers in the first presentation. Afterwards, I will open the floor for further comments and improvements on the solution. We will follow exactly the same procedure for question 2. This is the general structure of the workshops that I will use for this unit. In the second workshop, two groups that have not presented or evaluated will have to present or evaluate the second case in the same format. There will be no assessment in the first and the second workshop. These workshops will help you to get used to the format and the expectations I set for participation in the unit.

## 1.3 Assessment

### 1.3.1 Guidelines

#### 1. Group Solution

- Try to be as complete as possible. Think about the case from different angles. Think about the cost side, strategic considerations, the influence of competitors, sellers and customers, and the other, general economic circumstances. Think about transaction costs and think about specific and general knowledge.
- Be precise and specific. Clarify your solution with specific examples from the case. Use the numbers, tables and examples that are given in the case to illustrate a broader point.
- Present your solution consistently. Make sure that your answers to different questions do not conflict with each other.



- If multiple solutions are possible and you can not choose, present them both. It is no weakness to acknowledge that you do not have all the information to take a definitive decision.

## 2. Presentation

- The presentation should be no longer than 20 minutes per group. Aim for 15 minutes.
- Send your slides to me and the group who has to do the evaluation on the deadline date that is given in the calendar on [LMS](#).
- Slides are not a summary of your talk. Use your slides (1) to give your audience a feel of the general structure of your talk and (2) to visualise what you are saying.
- Limit the number of lines of text on your slides. A good rule of thumb is to not use more than 7 lines of text per slide.
- Limit the number of slides in your presentations. 1 slide per minute should be the maximum.
- Try to use visual elements. Summary tables can be handy to give a general overview but they quickly become difficult to read. You can use graphs to visualise the costs of different products or different costs of one product.
- Look at and talk to your audience. Try to make contact with your audience.
- Talk in a speaking language not in writing language. How we form sentences and the words we use is different in writing than when we speak. For instance, we normally use shorter sentences when we speak. Keep in mind that a presentation is speaking not writing.
- Try to tell a story with an introduction, a middle and an ending. Do not give a mere summary of facts. Think about what knowledge your audience needs to follow your story.

## 3. Evaluation

- You have 10 to 15 minutes to evaluate and discuss with the other group.
- You can prepare some slides for the evaluation but it is no requirement. Slides can come in handy if you want to discuss some tables.
- You can ask questions of the students who have presented. If it is not clear how they calculated some issues or what the assumptions are, you can ask them.
- You can offer other options that were not mentioned by the group. Maybe, you looked at the case from a different angle.

- You can offer your alternatives to the solution and discuss it with the other group. If you have different solutions it is important to identify why you have differences.
- If you do not agree with some aspects of the solution presented by the other group. Explain why they might be wrong.

#### 4. Report

- Submit the report as a PDF-file on [LMS](#) (TurnitIn) at the latest one week after the workshop (see the calendar on [LMS](#)).
- Write up the best solution(s) to the question in 2-4 pages. You can add more pages in Appendices with tables and illustrations as background information. One or two summary tables/illustrations/graphs can appear in the main text of 2-4 pages but do not overdo it.
- Think about the lay-out and readability of your report. Make sure it looks professional and finished. This does not mean that you need to use a lot of unnecessary illustrations or different fonts.
- Use full sentences and paragraphs. Try to avoid enumerations (so, do not follow the style of this section).
- See the heading Group Solution for my expectations on the quality of the report.

#### 1.3.2 Rubrics

<b>Group Presentation (20%)</b>			
Criteria	High Performance (16 - 20)	Good Performance (13.5 - 15.5)	Unsatisfactory (0 - 10)
Answers to the questions			
Succinct introduction of the case study setting.	The group provides a short but complete introduction of the case firm with only the elements relevant to the answers.	The group provides a sufficient introduction of the case firm with mostly relevant elements to their answers.	The group provides an introduction of the case firm but sticks to the case study text and does not adapt it to the questions.
Answers to the case study question.	The group answers the questions correctly for closed type questions and gives additional examples, insights and interpretation. They answer open ended questions creatively.	The group answers most questions correctly with some additional examples, insights or interpretation and answers the open ended questions as expected.	The group answers most questions correctly but sticks merely to the answers. The group answers the open ended questions as expected.
Relevance of the answers.	The group focuses on the questions at hand and does not introduce irrelevant tangents.	The group rarely strays away from the questions.	The group sometimes strays away from the questions.
Overall conclusion after answering all the questions.	The group ties the different answers together and tries to interpret them in light of the theory in the lectures.	The group gives a complete summary of the answers.	The group gives a decent summary of the answers.
Presentation and delivery			
Use of visual aids	The slides or other visual aids are consistent in style across presenters, support the talk (through graphs, pictures, and tables) without containing the whole talk.	The visual aids or consistent in style. The aids are sometimes supportive of the talk, sometimes a mere summary of the talk. The visual aids contain some small typos or they are sometimes difficult to read.	The slides are incomplete, mostly sloppy and unprepared.
Presentation style	The presenters have good posture and make eye contact with the audience.	The presenters make eye contact with the audience most of the time.	The presenters have no eye contact with the audience and do not try. They merely look at their written preparation or the slides.
Speaking skills	The presenters speak clearly with good pace and volume. They use normal speaking/conversational language, different from writing language. The presenters speak mostly clearly with adequate pacing and volume.	The presenters use normal conversational language. Sometimes they rely too much on jargon and abbreviations without explaining them.	The presenters are hard to understand, talk too fast and/or to silent.

### Group Presentation (20%)

Criteria	High Performance (16 - 20)	Good Performance (13.5 - 15.5)	Satisfactory (10 - 13)	Unsatisfactory (0 - 10)
Organisation and team work				
Overall structure.	The answers to the different questions are logically linked together. The presenters refer to each others' presentation.	The presenters try to explain the links between the different presentations and answers. There are one or two contradictions between the presenters	The presenters do build on each others answers. There are multiple contradictions between the presenters.	The presentations do not have a coherent overall structure.
Structure of a single talk	The presenters build up story where they explain, not just tell, their answer. They use examples from the case study.	The presenters try to explain their answer in a coherent story.	The presenters are enumerating the answers as different points. There is no link between the different parts of an answer.	The answers are incoherent and the reasoning is very difficult to follow.

Group Evaluation (10%)			
Criteria	High Performance (8.5 - 10)	Good Performance (8 - 6.5)	Unsatisfactory (0 - 4.5)
Answers to questions			
Quality of evaluation	The group focuses on improvements and additions to the answers in the main presentation.	The group mainly focuses on improvements and additions but sometimes strays into merely presenting its own solution.	The group skips between discussing the main presentation and presenting its own similar solution.
Issues discussed.	The group focuses on the main issues with the main presentation and only adds critique on the details when time allows for it. The group discusses all questions.	The group focuses on the main issues with some detail critique. The group tries to discuss all questions but it is biased toward some parts.	The group mixes main issues with detail critique on presentation and slides. The group only focuses on a limited subset of the main presentation.
Communication and delivery			
Communication skills	The group politely explains how and why their ideas and solutions are different from the main presentation. The group is not afraid to point out when they believe the main presentation is wrong or incomplete.	The group politely explains their ideas and solutions. The group hesitantly points out mistakes when they believe the main presentation is wrong or incomplete.	The group merely explains their own ideas and solutions. The group rarely points out mistakes when they believe the main presentation is wrong or incomplete.
Specificity	The group refers back to the visual aids and/or talk of the main group to identify their own discussion points.	The group sometimes refers back to the visual aids and/or talk of the main group to identify their own discussion points.	The group does not refer back to the visual aids and/or talk of the main group to identify their own discussion points.
Clarification	When the tutor or another student does not understand, the group adequately reframes or clarifies their discussion point or their improvement to the answer.	When the tutor or another student does not understand a discussion point, the group adequately reframes or clarifies their discussion point or their improvement to the answer.	When the tutor or another student does not understand a discussion point, the group does not clarify their discussion point or their improvement to the answer.

<b>Group Report (20%)</b>				
Criteria	High Performance (12.5 - 15)	Good Performance (10 - 12)	Satisfactory (7.5 - 9.5)	
Unsatisfactory (0 - 7)				
Answers to the questions				
Succinct introduction of the case study setting.	The group provides a short but complete introduction of the case firm with only the elements relevant to the answers.	The group provides a sufficient introduction of the case firm with mostly relevant elements to their answers.	The group provides an introduction of the case firm but sticks to the case study text and does not adapt it to the questions.	The group provides no or an incomplete introduction for the case study.
Answers to the case study question.	The group answers the questions correctly for closed type questions and gives additional insight and interpretation. They answer open ended questions creatively.	The group answers most questions correctly with some additional insights or interpretation and answers the open ended questions as expected.	The group answers most questions correctly but sticks merely to the answers. The group answers the open ended questions as expected.	The group does not answer most questions correctly or the answers are incomplete.
Relevance	The group focuses on the questions at hand and does not introduce irrelevant tangents.	The group strays away from the question once or twice.	The group sometimes strays away from the questions.	The group goes on tangents that are not relevant to the questions.
Conclusion	The group ties the different answers together and tries to interpret them in light of the theory in the lectures.	The group gives a complete summary of the answers.	The group gives a decent summary of the answers.	The group gives a limited or no summary of the answers.
Presentation, Writing, and Organisation				
Use of tables and/or figures	The report contains one or two graphs, figures or tables that illustrate and summarise the answer. The graphs, figures and tables are appropriately annotated.	The report contains one or two graphs, figures or tables that illustrate and summarise the answer.	The report contains one graph, figure or table.	The report contains no graph, figure or table even though it might illustrate some of the answers.
Writing style.	The report is written in full sentences that are connected to each other. There are no straight enumerations in the report.	The report is mostly written in full sentences that are connected to each other. There is maximum one straight enumeration in the report.	The report is mostly written in full sentences. The connection between sentences is sometimes lost. There are some enumerations in the report.	The report contains incomplete sentences and a number of spelling errors. The connection between sentences is sometimes lost. There are a lot of enumerations in the report.
Specificity	The language is concrete without any vague words. The actors, people or groups in the business case are clearly identified when their actions or preferences are described. The report uses specific examples of the business case.	The language is mostly concrete without any vague words. The actors, people or groups in the business case are almost always identified when their actions or preferences are described. The report tries to use specific examples of the business case.	The language is not always concrete and sometimes ambiguous. The actors, people or groups in the business case are not always clearly identified. The report rarely refers back to situations and remarks in the business case.	The language is very vague. The actors, people or groups in the business case are conflated or not identified. The report is written on a very abstract, theoretical level. The report does not refer to the business case.

### 1.3.3 Peer evaluation questions

The peer assessment serves to moderate your individual contribution to the group work. When you finish a group assessment item, you will be asked to rate your contribution and that of your group members to the group work. You will have to answer the following questions.

1. How do you evaluate the group member's (your) preparation for the group discussions?
2. How do you evaluate the group member's (your) contribution to group discussions?
3. How do you evaluate the group member's (your) contribution to the organisation of the group work?
4. How do you evaluate the group member's (your) contribution to the group presentation?
5. How do you evaluate the group member's (your) contribution to the in-workshop evaluation of the presentation group?
6. How do you evaluate the group member's (your) contribution to the group report?

The potential answers for all questions are:

- (Almost) nothing
- Less than the other group members and you
- Similar to each other group member and you
- More than the other group members and you
- (Almost) everything

After your presentation or after you submitted your report, you will find a link on LMS to answer these questions anonymously. From the potential answers above, you can see that the peer assessment is relative to the average of the group. That means that

if you indicate that one group members (or you) contributed more, you also have to indicate that a group member contributed less than the average group member.

This will effect how I use the answers to give you a mark. Basically, if every group member more or less did the same amount of work in the group, every group member will receive the same mark. If someone did all the work, this group member will receive close to the maximum mark for the presentation (or the evaluation and report). If somebody did nothing for the group, they will receive a 0. The main idea of this evaluation component is to reward students who did all the work in their group and punish the ones who did nothing. If your group worked together cooperatively, your group marks for the report, presentation, and evaluation should be high. The survey is anonymous in a sense that I will not share your answers with your group members but I will know your answers.

#### 1.3.4 Exam

##### 1. Questions on the exam

The goal of this unit is to give you a methodology to understand and improve actual business practices. My philosophy is that you first need to understand what a business is doing and why before we can start improving on the current practices. This perspective is also reflected in the type of questions you will receive on the final exam. The first type of question is about showing your understanding of what the firm in the case study is doing while the second type of questions will ask you to give advice on how to improve the current practices. The discussion below also gives you an idea how you should use the theory in these lecture notes (and the lectures) and the case study material you will receive before the exam.

##### (a) What is the firm doing?

- i. Something with numbers: For these type of questions, you have to show that you understand the accounting technique by doing some calculations such as calculating a (flexible) budget, or a cost price (see e.g. ABC), or a transfer price. You can rely on the theory in the lecture notes to help you with the calculations.
- ii. Describe what the firm is doing and what the costs and benefits are. You have to use the theory on firm strategy, human capital and, integration of firms and transaction costs, to explain why a firm or supply chains needs a budget, a cost accounting system, a transfer price, or a balanced scorecard. Here, you can go back to the theory to look what the goal is of for instance budgets (e.g. gathering all information,



also specific knowledge, in one document) or a balanced scorecard (e.g. quantifying and visualising the strategy). You also have to look at the case specifically to know whether your answer matches with the description in the case. For instance, a cost accounting system has multiple functions (setting prices, discovering inefficiencies in production or loss making products) but they might not all be relevant for the case firm. So, your answer should be a combination of both the theory and the case study.

- (b) How can be improve upon the current accounting technique? Or do we need to improve on the current technique?

You need to explore either improvements to the accounting technique or explain whether the system is worth the costs. Now, you have three sources of information you need to use. First, you will have to examine the costs and benefits from your previous answers and weight them against each other. You will use the second source of information, the case study description to examine how big the costs are and how big the advantages (e.g. if someone in the case says “Without the balanced scorecard, I would not be able to do my job.” the benefits can be expected to be high). Based on the case study, and maybe the theory of the lecture notes, you have to imagine what could be improved upon. Your own creativity is the third source of information. Sometimes there will be proposed improvements mentioned in the text, sometimes you have to look for hints in the lecture notes (e.g. if the incentives of two departments are misaligned, we may need to change the transfer price between them). The lecture notes will also help you to realise what potential drawbacks are of your proposed improvements.

## 2. How to answer an exam question for this units.

- Do not write too much. I am really thinking of having a rule where I will only read the first 7 sentences for each answer. But I won't.
- Be specific. Do not talk about generic "they" when you are actually talking about the headquarters in a franchising chain, the managers in a bank, or the divisions in a company (Unless it is clear from context for the reader, I repeat the reader).
- Do not give definitions straight from the lecture notes for important concepts such as transaction costs or balanced scorecard. I do know what these definitions are, I wrote the lecture notes. I also do not care that much about definitions. If you write definitions, I ignore them. Unless they are wrong, then I will subtract marks. I will see whether you understand a concept in how you use it in your answer.

- I subtract marks if you contradict yourself. If you give a good answer and then you add something which contradicts your answer, you will not get the full mark for the question.
- When I ask "Why does a firm do that?". I do not expect a long winding description of what the firm is doing and then "The firm is doing that because ... ". Start your answer with "The firm is doing that because... " Typically for such a question I will need somewhere in the start of your answer "because" or "the reason is ...".
- It is never enough to say that it is their strategy or their policy or that is necessary or because the firm thinks that it will lead to a higher profit. The question is then why do they think it will lead to higher profit or why do they have that strategy or why does it fit with their strategy.
- Also, when I ask to identify a potential problem it is not enough to say that there might be a conflict of interest. Explain how this conflict of interest will play out in the specific situation you are discussing.
- Do not rely on literal sentences from the case studies to build up your argument. These case descriptions are not always very well written and often contain phrases that violate a couple of the rules I mentioned above. You can use quotes from the papers as examples but it will not always work to build up a clear argument.

### 3. Some comments on content

- Sometimes more than one answer is (equally) correct. In that case, I grade the arguments not the specific solution. That also means that you need to provide arguments for your answer.
- Subjective measures are not necessarily bad measures. Biased measures are not necessarily bad measures. It is not always the best solution to try to unbiased measures or to make measures more objective.
- Quantitative measures are not the same as financial measures. Financial measures are quantitative but not all quantitative measures or financial measures, e.g. number of products sold.

# Chapter 2

## Strategy and investments

### 2.1 Strategy.

The categorisation of firm strategies is a source of a lot of debate. A company's strategy explicates how firms exploit opportunities in the market place that lie within their capabilities (Horngren et al., 2012) or their strategies specify the direction a company tends to take over the long term to achieve its mission and meet its objectives. Most management accounting textbooks focus on the distinction between cost leaders and differentiators (see p.5 in Horngren et al. 2012, p.14-15 in Langfield-Smith et al. 2008). Cost leaders provide products and services at prices that competitors cannot match. Examples of cost leaders are Amazon, JetStar, and Red Rooster. Typically, cost management will be an important tool for companies with a cost leadership strategy. Other firms try to differentiate their products and services from competitors. Apple is a prime example of a company that has been able to differentiate its iPhones and MacBooks to the extent that some customers almost see them as a different product category, separate from other smartphones and laptops. A subtler example is Subway that has successfully built an image of being a healthy fastfood alternative.

Although this distinction is useful and can even be refined further<sup>1</sup>, this text looks slightly different at a company's strategy. The established view of strategy in management accounting textbooks assumes that the strategy is decided upon at the top of the company and top management tries to implement that strategy with the help of management accounting tools such as budgets, cost accounting systems, incentive systems,

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<sup>1</sup>Some scholars recognise an intermediate, flexible strategy where firms try to adapt quickly to customer demands by frequently updating their products.

other performance measurement systems. While this assumption might be realistic in firms that are tightly controlled by a powerful CEO such as Steve Jobs (Apple), Jeff Bezos (Amazon, Blue Origin), or Elon Musk (Tesla, Solar City, SpaceX), it does not have to be true.

The approach in this unit is different in that it does not assume that the strategy of the firm is a deliberate choice of top management. For the purpose of this text, *the strategy of the firm* is determined by the investment decisions that give the firm a *difficult to imitate competitive advantage*. The assumption is that firms that have no sustainable competitive advantage will be copied, absorbed by others and finally disappear from the market place as they are being replaced by more efficient copy-cats.

The next section goes into more detail how firms can create difficult to imitate strategies. In the rest of the current section, I want to highlight three reasons why this definition is chosen for this unit. First of all, the idea of a strategy as a combination of difficult to imitate investments does not exclude that *nobody in the company exactly knows* what the crucial investments are. It is possible that top management only has a vague idea of which direction the company should take but top management is excellent at nurturing and motivating people to come up with new ideas<sup>2</sup>. In this case, the strategy is more bottom up than top down because the rank-and-file employees effectively set the direction of the firm. In addition, we will see that top management often has difficulties in clearly formulating what the firm's strategy actually is. One of the big stumbling blocks with the implementation of strategic measurement tools such as the balanced scorecard (see chapter 13 in [Horngren et al. 2012](#), chapter 14 in [Langfield-Smith et al. 2008](#) and [the chapter in these notes](#)) is exactly that top management does not have a concrete, agreed upon strategy.

The second reason for the coordinated investment approach to strategy is that an emerging, bottom up strategy can also benefit from management accounting tools. If nobody in the firm has an obvious grasp of the strategy, one might ask how the strategy can be implemented. A firm can use *management accounting tools* such as incentive contracts and targets to align the interest of employees with the interest of shareholders, i.e. creating long-term value. The joint effort of employees are now responsible for the emerging strategy. [As we will see](#), budgets can help to coordinate the needs of different divisions and allocate the limited funds of the company even when the firm does not know exactly how to execute the strategy. In other words, companies benefit from strategic management accounting tools even in the absence of a clearly formulated strategy because management accounting tools focus the attention of the employees and coordinate their efforts.

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<sup>2</sup>Maybe Google is an example of this strategy

Lastly, formal management accounting systems can *serve as a memory* for deliberate, top-down strategies. For instance, balanced scorecards are used to map a strategy and develop a system of measures to track the success of a strategy. When the executives who developed the strategy leaves the company, the balanced scorecard can help their successors to implement the same strategy. In other words, formal system can help to communicate the strategy not only across divisions but also across time.

In conclusion, *these notes treat a firm's strategy as the coordinated investment decisions that give the company a difficult to copy competitive advantage*. The advantage of this approach is that it allows for strategies that are not top down or not clearly formulated. This point of view relates more realistically to the actual use of management accounting to develop, clarify, and discover a firm's strategy.

## 2.2 Human capital versus physical capital

The term strategy in this unit refer to the crucial investments that give a company a difficult to imitate competitive advantage. In this section, we discuss a minimum requirement for a strategy to be difficult to imitate. A sustained competitive advantage requires that no other firm can apply the same strategy and improve upon it. Some argue that solely investing in technology or physical assets can always be copied by other companies because they can buy the same assets and technology. It is often argued that the *human capital* such as capabilities, tacit knowledge, reputation and trust of employees and suppliers are more important. The reason is that acquiring human capital takes time to develop and therefore can not be just bought. In other words, developing trust with employees or suppliers takes time in which the firm does not betray the trust. Another firm can pay the employees more to lure them away or go to the same supplier, but it will take time for them to establish the same working relationship. In other words, it is the working relationship that gives a competitive advantage.

Although there are some obvious exceptions such as the adage "location, location, location" for the tourism industry, there are striking examples of the importance of human capital over physical capital. One particular example is the rise of Japanese car manufacturers in the U.S. market. Recent studies have investigated why General Motors was not able to copy the strategies of Toyota despite having closely worked together in an alliance. Several researchers have highlighted that GM made considerable investments in automation during the time they learned the best practices from Toyota but it still took them two decades to catch up. One team of researchers concludes that the difficulty for General Motors was to copy the relations that Toyota had with its suppliers and employees which allowed Toyota to fully exploit the improved technology. For in-

stance, Toyota involved suppliers in the design process of new models and employees in continuous improvement of the manufacturing process. General motors tried to create the same efficiency gains through heavy handed monitoring and incentive contract. However, these formal practices prevented the development of cooperative relations between General Motors, its suppliers and its employees. As in turn out, it was the willingness to cooperate and communicate mistakes that made it possible for Toyota to become more efficient (Helper and Henderson, 2014).

This example also has immediate relevance for management accounting practice. One of the accounting practices that got popularised by Japanese manufacturers is Kaizen costing (see p. 203 Horngren et al. 2012). With Kaizen costing, the budgeting process assumes that costs of production will steadily decrease over time because of continuous small improvements to the production process. In Toyota, the actual decrease in costs is driven by incremental improvements in the production process discovered by manufacturing employees. Despite the lack of explicit incentives for the employees, they trusted that management would reward them for all suggestions to the production process. In General Motors, employees lacked the trust in management and incentive systems were difficult to devise which inhibited the effective introduction of Kaizen costing and continuous improvement programs (Helper and Henderson, 2014).

This example highlights that the successful introduction of new management accounting systems depends on other factors such as the culture of the firm. The case of Toyota reflects the importance of human capital in general. The next section discusses why human capital is difficult to imitate. The following chapter, will explain more generally why the combination of different investments (such as the relation with employees and formal budgeting systems) make strategies difficult to imitate.

## 2.3 Questions

These questions give an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

1. Pick a well known Australian company. Explain in one paragraph what their strategy is, i.e. which major investments in physical and human capital give them a competitive advantage over their competition.
2. Explain what your own human capital is. Which skills, capabilities, knowledge, relations, give you an advantage in the job market? (When you are drafting your

CV or going on interviews, you probably want to emphasise these aspects.)

## Chapter 3

# Strategic management accounting

This chapter explores in more detail how different combinations of investments can provide a sustainable competitive advantage. The first section notes that firms can invest in developing specific or tacit knowledge. The role of management accountants is to try to capture that information so that it does not get lost when employees leave the company. The second section highlights that some firms combine multiple activities in the production process. The integration of different activities requires systems that can generate synergies between the activities. The role of management accounting tools is to coordinate these activities and keep the different divisions focused on the overarching goal.

### 3.1 General and specific knowledge

There is an important distinction between general and specific knowledge. The distinction is based on how easy it is to communicate information. *General knowledge* is based on information that is easy to communicate or interpret. In a business setting, the market price for a product or service is the quintessential example of general knowledge. If sellers' cost of production go up, the market price will increase. If the final customers value the buyers' products more, the intermediate market price will increase. In a well functioning market, the market price contains all the information that buyers and sellers need about the product. If there is more demand for the product (by the buyer), the price will go up. If there is more supply of the product (by the sellers), the price will go down. The market price is known to everyone in the market and can be understood by everyone in the market and is therefore general knowledge.



General knowledge is often based on objective information which can be agreed upon by all relevant economic agents. When there is no market price because the transaction happens inside a firm, management account information such as cost prices, transfer prices, performance measures, and budget targets have a similar function. Management accounting information aims to be objective information that everyone in the firm can use to improve their decisions. Thus, one function of management accounting information is to replace the role of markets in capturing and spreading information (Jensen and Meckling, 1995).

While the price or the cost of a product are easy to communicate to suppliers, customers or employees, other information is more difficult to transfer. We call this type of information *specific knowledge*. For instance, the design sensibilities of Jonathan Ive or Steve Jobs at Apple and the experience and negotiation skills of Warren Buffett are more difficult to transfer to employees. Production workers, such as the manufacturing employees at Toyota, gain unique insights in their job just by doing it. It is costly and often very difficult to impart this knowledge to new employees. They will only learn through their own experience. This is similar to how management often has difficulty to explain or quantify their own strategy in a balanced scorecard. It is not that they do not know what they are doing. They have difficulty to communicate it to other employees or to the outside world. Lastly, management skills are themselves difficult to transfer from one manager to another. Research has shown that one of the best predictors of bad management is whether the firm is led by a second generation owner-manager (Bloom and Reenen, 2010). In other words, while the founder of a company might be an excellent manager, they will often not be able to pass that skill on to their offspring.

One role of management accounting is to transform this informal and subjective knowledge into general knowledge that can be communicated to everyone in the firm or be stored over time. For instance, a founder's intuitive knowledge of who should be doing which work can be replaced by a formal hierarchy with clear job descriptions. The earlier mentioned role of balanced scorecards in communicating the firm's strategy is another example. Cost price calculations based on value chain analysis can formalise implicit engineering knowledge. The engineers might have an intuitive idea of which products are difficult to produce and which ones are not. However, other divisions might not be aware of these insights or understand where that knowledge comes from. If the production difficulties are captured in the cost of producing a simple versus a complex products, the sales people can use that information in setting the price and the finance people can incorporate that information in decisions to scrap product lines (Wouters et al., 2009; Wouters and Wilderom, 2008). In other words, the formalisation of intuitive, subjective, specific knowledge in numbers can help to transfer that information across the firm.

In conclusion, specific, subjective knowledge can yield a difficult to imitate competitive advantage for a firm because other firms cannot immediately build up the same knowledge. It is by definition difficult for firms to store and communicate that information throughout the whole firm. If specific knowledge is not formalised, firms risk to lose the knowledge when the employees leave the company. Management accounting systems such as performance measures are an attempt to make the subjective information more objective and general.

## 3.2 Markets, integrated firms, and transaction costs

### 3.2.1 Markets

In order for a firm's strategy to provide a competitive advantage, it is not enough that no other single firm can copy the strategy. The firm also wants to avoid that a number of firms together outperform the strategy. This is especially important for vertically integrated firms like Apple. For the production of the iPhone, Apple tightly controls the hardware design, the engineering of the computer chip, the operating system, the marketing and the retail experience. For the typical Android smartphone many more companies are involved such as Google, Samsung, Telstra, JB Hifi and they all have direct control over some of these activities.

The Android market approach has a number of attractive features. As each firm is a for-profit entity, they all have a strong incentive to be efficient. An inefficient firm will either be quickly put aside by their customers because their prices are too high or they will incur losses and run out of funding. The incentives in the market are in general much stronger than those for individual departments in an integrated firm (Williamson, 1979, 2002). The second feature of markets is that the price of the different products and services is a coordination mechanism between the individual companies. When customers are buying more Samsung phones, the retailers, such as Telstra, are willing to pay a higher price to subsidise Samsung phones. This is a signal to Samsung that their phones are popular and they should produce more of the phones that are in high demand. Although, Samsung is not in direct contact with the consumers, they still receive feedback on the popularity of their products<sup>1</sup>. What holds for the final product, also goes for all the intermediate components that make up the phone. Every supplier in the whole production process will get price signals that will determine whether they should make more or less of a product or product category. This is the famous invisible hand of Adam Smith at work.

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<sup>1</sup>Yes, of course this example is simplified.

### 3.2.2 Information in firms

Before explaining (some) of the advantages of the integrated company, let us turn to how these companies can try to mimic the price mechanism in the market. First, they can set up a *transfer pricing* system which is the most direct reflection of a market mechanism. A transfer price is a price paid by one division of the company to another for a product or service. For instance in a proto-typical manufacturing company, the production division assembles the product and the sales division sells to the final customer. The transfer price is a revenue for the production division and a cost for the sales division which allows the headquarters to assess each division's contribution to the firm's profit (See **further in the notes** for more on transfer pricing and chapter 22 in [Horngren et al. 2012](#) or chapter 12 in [Langfield-Smith et al. 2008](#)). Second, firms can allocate a budget to each division and assess whether the division used the budget efficiently. The allocation of budgets can also be used as a way to coordinate both divisions. If headquarters want to increase the number of products manufactured, they can allocate a larger budget to the production department (see **further in the notes** for more on budgets, chapter 6 in [Horngren et al. 2012](#) and chapter 9 in [Langfield-Smith et al. 2008](#)). Third, firms can use non-financial measures to evaluate and motivate employees instead of relying on market incentives. Similarly, firms can use a balanced scorecard to coordinate the different divisions by breaking up the firm's strategy in divisional strategies that are measured in separate, divisional balanced scorecards (see **further in the notes** for more on the balanced scorecard, chapter 13 in [Horngren et al. 2012](#), and chapter 14 in [Langfield-Smith et al. 2008](#)).

### 3.2.3 Integrated firms and transaction costs

Because performance measures and evaluation systems are rarely perfect, they often contain less information than the price in a perfectly functioning market. In addition, the incentives in firms are often less strong than in a competitive market. Firms will not as easily fire employees as they will change their suppliers. When markets seem to be better at summarising information and providing incentives, the question should be asked why vertically integrated firms still exist. In other words, why has the market of software and hardware manufacturers not driven Apple out of the smart phone market?

The advantage of an integrated firm is that it can combine all these functions at once and create synergies. Apple for instance has created its own system on a chip (SoC) which optimises energy use and performance for its software on its hardware. To get the best of this combination Apple needs to invest and coordinate the investments in the design of the chip, the software, and the hardware at the same time. The coordina-

tion of all these benefits is a delicate balancing act but if the benefits of this integration outweigh the costs of abandoning the market's price mechanism, an integrated firm has a sustainable, difficult to copy strategy. *The success of the integration will depend crucially on using the right management accounting systems to assign the necessary budget to all projects, hold divisions accountable for their contribution to the integrated goal, and communicate the overarching strategy to the different divisions.*

In the smartphone industry, other players such as Google, Microsoft, and Samsung, have with varying success moved towards more vertical integration. In general, all firms are combining multiple joint investments which they combine with specific knowledge. That is all firms are integrated to a certain extent<sup>2</sup>. The costs of having to replace the market mechanism with, among other practices, management accounting systems such as incentive contracts, performance measurement systems and budgets are called *transaction costs*. These costs can vary from having to hire consultants to install new systems, to the investment in technology, and retraining of employees. However, transaction costs have nothing to do with the operational costs such as more efficient production, energy savings, and downsizing of production employees.

In summary, a strategy in this text is defined as the combination of investments that give the firm a competitive advantage. While firms generate synergies from controlling more of the value chain, there are transaction costs associated with those synergies. Firms will try to find the optimal balance between the benefits of synergies and the costs of managing their investments. As a results, not all firms are necessarily trying to get more vertically integrated. Some firms choose a strategy that tries to remove transactions costs. The success of companies such as Uber and Amazon shows that some firms do not shy away from creating markets, and using a pricing system as the core of their strategy. Uber, for instance, manages demand and supply for driving services through a dynamic pricing system.

### 3.3 Questions

These questions give an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

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<sup>2</sup>Most management accounting textbooks touch upon integrated firms when talking about the outsourcing and make-or-buy decisions (e.g. Chapter 11 in [Horngren et al. 2012](#) or p860 in [Langfield-Smith et al. 2008](#)). However, I believe the focus in those chapters understates the importance of the integration and coordination in firms.

- I. When lecturers and tutors assess students, they use general and specific knowledge.
  - Give an example of an assessment item where the lecturer uses general knowledge to evaluate the students and one where the lecturer uses specific knowledge.
  - For each example, explain the advantage for the teacher of using that particular assessment item.
2. Give an example of an Australian company that successfully integrates different investments to create a sustainable competitive advantage.
  - What are the most important activities that this company is combining?
  - Why have competitors not been able to copy this strategy?
  - Which formal (accounting) systems do you think this firm relies upon that its competitors do not have?

## Chapter 4

# Implementation problems and transaction costs

The implementation of a new management accounting system just like almost any change in managing a firm is prone to be a difficult process. Based on the previous two chapters, some of these difficulties can be easily explained. The implementation problems are part of the transaction costs associated with implementing management accounting systems. You can also read a nice general overview of these problems by Deloitte if you follow [this link](#).

### 4.1 Change resistance

It is not unusual that changes to a company are met with resistance or hesitations. One of the reasons is that people are generally averse to uncertainty and risk. The spirit of this reasoning is best captured in the saying: "Never change a winning team". New systems can create more risk for employees. A new incentive system which pays a bonus depending on imperfect performance measures make the compensation of an employee depend on uncontrollable measurement error. One way to convince the employees to accept the uncertainty in the new system is to pay higher wages or bonuses which is one example of a transaction cost for the company.

A different reason for employees to resist new management accounting systems is that these systems often try to replace the employees' subjective judgements with objective information. The employees might feel that the accounting system is inadequate

in capturing all the nuances or they might feel their influence diminished because their judgement is less important. The difficulty for management is to distinguish between legitimate claims of flaws in the management accounting system and employees trying to protect their power over the decision or production process.

In addition, management accounting systems such as budgets that direct the behaviour of employees can clash with established unspoken rules. Divisions will develop informal norms based on the day-to-day operations that top management is not aware of. New formal systems can disrupt and harm these norms. Sometimes that is the intention of the company because they want to change the culture of the division. However, in other situations, the implementation of a formal system might disrupt an otherwise smooth running division<sup>1</sup>. It might not always be easy for a company to decide whether a local division's resistance to a formal system is motivated by their own interests or by the fear that the new system will impair the functioning of the division.

## 4.2 Fit with the environment

As mentioned above and in the Toyota example, the success of a new cost accounting or budgeting system depends on the existing firm culture and norms. There exists a large body of academic studies that focus on how the benefits and costs of accounting systems depends on the environment in which the firm operates. This section is meant to give a couple of examples of the circumstances that make some accounting systems a better fit for the organisation's environment. This is by no means a complete overview but only an illustration of the difficulty to match an accounting system to the firm's environment. An important corollary of context specificity is that a one-size-fits-all approach is rarely going to work. A cost accounting approach that is successful in one firm is not necessarily the best approach for another firm. Similarly, if a firm's environment changes, the accounting system that was adequate in the old environment might no longer be optimal in the new environment.

One issue that we will revisit later on in more detail is when a more complex cost accounting system is more useful. The advantage of a more elaborate and detailed cost accounting system is that the estimated cost prices for individual products are more precise (Labro and Vanhoucke, 2007). Better cost estimates allow firms to set smarter

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<sup>1</sup>A well known example of this phenomenon is documented in a study on day-care centers. The introduction of a penalty for late-coming parents increased the number of late parents. Before the introduction of the penalty, the parents might have felt shame (because of a social norm against being late), with the penalty in place they felt they could just pay for the convenience of showing up late (Gneezy and Rustichini, 2000)

prices. Some textbooks have argued that in competitive markets, better cost systems are more valuable because profit margins will be smaller. On the other hand, in competitive markets, firms will not be able to charge more than the price that competitors charge because customers can easily defect to the cheapest producer. In other words, firms do not need an elaborate costing system to find out the right price for their products. They only have to match the price that competitors are setting.

Another controversial issue is whether budgets are more or less valuable when the firm operates in a more uncertain environment (Hartmann, 2000). In an uncertain environment where it is difficult to predict consumer demand, the firm will have difficulty in setting up a realistic budget at the start of the year. The uncertainty makes planning more difficult because for instance expected demand and expected purchasing prices are unsure. On the other hand, the budget and actual deviation from the budget during the year might provide information of changes in customer demand. If we plan to sell 100,000 units and half-way through the year we have sold only 40,000 units, we know that we should adjust our plans for the year. Uncertainty clearly effects how firms can use budgets but this does not necessarily mean that budgets are useless in high uncertain environments.

The strategy of a firm has also been highlighted as a factor that might influence the use of an accounting system. For instance, cost control and consequently cost accounting systems are valuable to firms who are following a cost leadership strategy. One important technical issue in cost accounting systems is how to assign costs from inventory and unused capacity. Most text accounting books devote a whole chapter to this issue (see chapter 20 in Horngren et al. 2012) The following example will demonstrate that firms with a similar cost leadership strategy can have totally different investments in inventory and capacity and hence in the need for an inventory costing system. Amazon is a very aggressive price cutter in almost every domain and they guarantee fast delivery by having a very extensive network of warehouses where inventories are constantly updated. OnePlus is a manufacturer of high end Android Smartphones at below market prices. Their strategy was to keep costs low by requiring potential customers of a phone to sign up during a limited subscription period. In the next step, they produce just enough of the phones to satisfy the demand <sup>2</sup>. OnePlus is fully aware that they might have some potential sales but they prefer to not have any unsold inventory. From a cost accounting perspective, Amazon has to have a good grip on the cost of its inventories and warehouse capacity to keep its margins sustainable while OnePlus does not even have to consider the issue.

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<sup>2</sup>The subscription model has changed but the phones are still not easy to buy and fairly rare. OnePlus has abandoned its tactic of using subscription but it still uses the strategy to match production as good as possible to actual demand for the phones and not to expected demand



The goal of this unit is to make you aware of the difficulty to adapt the accounting system to the firm's environment. The examples above indicate there are not even simple one-to-one relations, i.e. we can not even establish whether budgets are more or less valuable with uncertain customer demand. This unit will emphasise the importance of investigating the specific circumstances of an organisation that help or hinder the implementation of a new accounting system. Unfortunately, I cannot and will not give you any easy answers in this unit. The reality is too complex for that.

### 4.3 Specific knowledge and employee involvement

Often the introduction of a new system will require specific knowledge about the new system that is difficult to communicate. This knowledge can take two different forms. For instance changes in the budgeting process will require the *technical knowledge* of how budgets work. This is also the knowledge that these notes are trying to teach you. When firms do not have the required experience internally in the form of a finance department or a dedicated management accountant, they can turn to professional or academic consultants. The role of all these specialists will be to try to understand the goal of the new system and translate it in a functional accounting system.

However, this is not the only form of specific knowledge that is needed for the introduction of a new accounting system. Because the success of a new system is context specific, the implementation requires intimate knowledge of the specific environment in which the accounting system will operate, i.e. *operational knowledge*. For instance, the measures in a new performance evaluation system need to be relevant and understandable for the decision makers who will use the system. The design of the system has to take into account what the needs are of the users of a system.

The employees that will be using the new system may have already developed their own unofficial accounting or budgeting system in spreadsheets. One danger of a top down implementation of a new system is that it ignores the experience of these users. The disadvantages of this approach are twofold. First of all, the new system will ignore valuable information that might inform the design of a better system. The local data or metrics that have already been collected may also help to develop a prototype of the new system that uses actual measurement from the actual operations. The second disadvantage is that the local users are already more familiar with their own unofficial accounting system and are not always willing to switch over to the new system (Wouters et al., 2009; Wouters and Wilderom, 2008). Implementations that take into account the operational knowledge of current users will encounter less resistance to change of these users.

In order to ensure that users of the new system are using it, the implementation of the new system will require their involvement in the design of the system. This means that the more knowledge employees have, the more they will interact with the information, or will be held accountable for the measures in the system, the more their input will be important for a successful implementation. This consultation process is often time consuming and will constitute an important transaction cost of the implementation process. Furthermore, a successful implementation will require to get the communication right between the employees with operational knowledge and management accountants and consultants with technical skills. Lastly, the use of a more complicated accounting system might require additional training for the users. All these changes and implementation steps are of course another source of transaction costs of a new accounting system.

#### 4.4 Trial-and-error

All the above considerations highlight the difficulty in taking into account all possible obstacles to the design and successful application of a new management accounting system. Taking into account all these factors can make the development of a new accounting system highly complicated. If a firm relies on specific knowledge from the rank-and-file, has an integrated firm strategy, and operates in a complex environment, implementing a new accounting system is equivalent to an optimising problem with a lot of moving parts.

To circumvent the impossibility of designing such an optimal system, firms usually implement accounting systems through a process of trial-and-error. For instance, firms will design a prototype for a cost accounting system and trial it in some of their divisions or for some of their products. Often the prototype is being used in concert with an existing system to compare and contrast the differences. If the differences make sense and can be explained (e.g. a labor intensive product has a higher unit cost under the new accounting system), the new system is probably an improvement. However, if the differences between the old and the new cost prices are difficult to explain, the firm will want to investigate the hidden assumptions behind the new costing system ([Wouters and Wilderom, 2008](#)).

The use of prototypes and a gradual rollout will be especially useful if many different rank-and-file employees have to be involved in the system's development. The gradual approach allows to include the specific knowledge of the employees when it is most needed. For instance, while the basic strategy and design of the balanced scorecard is mostly driven by top management, lower level employees might have better knowledge

how to design specific performance measures in their area of expertise. For instance, the sales people might have a better idea how to measure repeated sales as an indicator of customer loyalty. That is, do we need to count the number of customers that buy from our company every week, every month or every year?

When an accounting system has been implemented for the first time, the firm will still want to regularly evaluate and refine the system. Changes in the environment or in the strategy might require the development of new measures or render some measures obsolete. A cost accounting system can turn out to be too complex and evolved to use and needs to be simplified. Incentive contracts or budget procedures might have unintended consequences where employees can game the policies for their own best interest without contributing to firm value. For any sufficiently complex accounting system, it will be difficult to predict the behaviour of all employees that interact with the system. As a result, the firm will need to monitor any unexpected reactions and gradually improve upon the existing accounting system.

## 4.5 Overview

The previous chapter explained how firms replace market mechanisms such as price signals and incentives at a cost, i.e. transaction costs. The above discussion on the difficulties of implementing management accounting system revealed some examples of transaction costs of running a firm. In this specific case, they all refer to explicit and implicit implementation costs such as paying higher wages, the opportunity costs of trial-and-error, the time lost through involvement of rank-and-file employees or the fee to be paid to external consultants.

One obvious but often ignored cost of the implementation of new systems is that employees might need convincing to accept the new system. One way to overcome initial reluctance to a change is to increase the wage of the employees. Especially changes to the compensation structure go in hand in hand with increases of the labour cost. Another related cost is the time of retraining and communicating the changes to employees. These activities often negatively effect short-term productivity of the rank-and-file employees.

The current chapter also shows why management accounting systems are not always able to fully replace market mechanisms. It is not evident and it can take a lot of incremental improvement before a management accounting system is sufficiently fine tuned. Both an imperfect fit with the environment and frictions with the existing company culture can lead to more disagreement and less cooperation and communication.

These are transactions costs caused by the less than optimal design of the system.

In addition, the size and complexity of some systems will make the use of the system more costly. Budgets, even when they work well, are sometimes argued to be (too) time consuming. The time to ask every division at all levels for their budget needs and to reconcile these needs with each other and the overall business strategy is a daunting task.

The current chapter gives a range of costs that firms have when they replace market mechanisms with accounting systems. If firms can keep these transaction cost under control they will be able to reap the benefits of integrating different investments. In the following chapters, three accounting systems will be discussed. In each chapter, we will focus on how accounting can help with replacing market incentives and price signals by coordinating different divisions and investments outside of the market, and translate subjective knowledge in objective information.

## 4.6 Questions

These questions gives an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

1. Assume that UWA wants to develop a new reward system for lecturers based on a survey of the employers of their students one year after graduation. What might be the implementation problems of such a reward system?
2. Assume that you are in charge of developing and implementing the reward system above. What would be the most important steps you take when implementing this system?

# Chapter 5

## Budgets

### 5.1 What are budgets (good for)?

*Budgets* are a quantitative expression of a business plan for a specific period of time (p.184 in [Horngren et al. 2012](#)). They are the quintessential accounting tool. All though not necessarily all firms use budgets ([Hope and Fraser, 2003](#)), the majority of firms still uses them ([Libby and Lindsay, 2010](#)); both large multinationals and start-up firms, both firms with high profit margins and razor thin margins have budgets. The ubiquity of budgets indicates that budges can serve different functions in different environments.

Budgets are used for planning and communicating investments, implementing strategies, gather feedback on the success of investments, and to motivate and evaluate employees ([Hansen and Van der Stede, 2004](#)). The versatility of budgets can easily be explained through the lens of strategies as a combination of investments. When long-term budgets are informed by the strategy, they are quantified versions of more ambiguous strategic plans. The yearly operational budget translates the plan for the year in concrete targets and budget allocations. The advantages of a quantified plan is that it easier to communicate the numbers through a large organisation compared to fuzzy qualitative plans.

The budget also forces a company to make choices between different investments. While a university might have the aspiration to offer the best education, perform world class research, work with industry, and influence the public discourse, budget constrains both in time and money will make it very hard to accomplish all these objectives. As such, the budgeting process will inform the strategy, i.e. which combination of investments in teaching, applied, and basic research are feasible. Once these decisions are

taken, the budget allocation to different projects makes it clear for the whole university which projects have priority for top management.

The budget allocation and budget targets also serve as a way to evaluate the performance of employees and divisions. The explicit and implicit incentives based on the budget allow the firm to align the interest of the firm with the interest of the employees. When divisions exceed their assigned budget, the performance of their manager will negatively evaluated which affects their bonuses and promotion changes.

Alternatively, budgets can set the boundaries within which employees have to do their job. This approach to budgeting is appropriate when employees have more autonomy because of their specific skills such as in the fashion industry (Davila and Dittilo, 2011) or at Google<sup>1</sup>. When the employees are expected to be creative in their task, the firm wants to set boundaries to the creativity in order to insure that the employees work together, or perform the more routine tasks as well. For instance, I am, as a lecturer, happy to look through the latest news for examples I can use in my lectures. However, I need some external motivation to finish marking on time because that is a more dreary task.

The problems that are associated with budgets often stem from the difficulty to combine the different and sometimes conflicting functions. A lot of these problems are related to the problem that middle managers and rank-and-file employees have specific knowledge which top management wants to incorporate in the financial plan. However, the employees also know that the budget will be used to evaluate their subsequent performance and that the information they give top management will determine the budget they get allocated. As a result, employees have an incentive to game the budgeting process. When asked for their input, they try to steer the budget in a way to get more budget allocated to their own projects. The next section will describe how this problem affects the process of setting up the budget.

## 5.2 The budgeting process.

This section describes the budgeting process as it is often presented in textbooks and how a practitioner implements budgets in his start-up. There are a significant number of differences between these two approaches. Therefore, the final part of this section will reconcile both perspectives.

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<sup>1</sup>For Google, I am referring to the famous rule where some of the computer engineers have to spend 80% of their working time on assigned projects while they can spend 20% of their time on their own chosen projects. The budget allocation in this case is time not monetary resources.

### 5.2.1 The textbook approach

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

Based on [Horngren et al. \(2012\)](#)

This approach is the typical decision making approach. First gather the information, based on the information make a plan, execute the plan.

In the first stage, the organisation has to decide what the overall profit target is for the year and what the important competitive factors will be. Is the company able to increase sales and maintain a decent profit margin or will competitors enter the market? The company will also investigate potential changes in its costs such as labour costs and costs of raw material or services.

In the second stage, the firm collects information about customer demand and competitors to reduce the uncertainty in its estimates. The firm will use publicly available information, historical internal data, general knowledge from consultants, and specific knowledge from employees. Consultants for instance can share benchmarking data from comparable organisations. An example of internal knowledge is the market insights of sales staff, who have a better understanding of customer preferences and customer demand than top management.

In the third and fourth stage, top management will use this information to make predictions about potential costs and revenues. These predictions will also guide which investments and projects are worth pursuing and which products might have to be cancelled. Finally, the decisions will be made explicit in the form of budget allocations and budget targets for different departments, geographical areas, product lines, or employees.

In the fifth stage, the decisions imbedded in the budget are implemented by all employees. The firm will communicate the budget and should explain how the targets and allocations are determined. During the course of the year, the firm will compare the actual performance to the predicted performance in the budget. The firm will learn which projects are performing as planned and which ones will need additional attention.

### 5.2.2 A practitioner's perspective

1. Determine the goal and the resulting constraints and reduce the available budget by 10%-25%
  - Based on increase in sales compared to last year
  - Based on aspired profit/loss
  - Based on engineering growth rate
2. Communicate the budget to the team
3. Encourage the managers to do the best they can with the budget allocated.
4. If one group can perform more with more money, allocate more from the 10%-25%.

Based on [Horowitz \(2014\)](#)

[Ben Horowitz](#) is a partner of the venture capital firm Andreessen Horowitz and co-founder of three start-ups in Silicon Valley. He has given [guest lectures at Stanford University](#) on his experience as an entrepreneur. In the [blog post](#) cited above, Horowitz discusses how following the textbook approach can introduce serious tensions in a start-up firm. The main issue is that different divisions have an incentive to build in budgetary slack (i.e. easy targets) or ask for higher budgets than strictly necessary.

To avoid this problem, Horowitz proposes a more topdown approach. The budgeting process should start from certain constraints on the new budget. The constraints are in place to *limit* the growth rate of the firm's operations and thus its costs. The growth rate can be in terms of the actual budget numbers or the employee count of the previous year.

The next step is to communicate the budget to the employees in the company and motivate the employees to perform as good as possible within the budget constraints. Importantly, the rank-and-file are far less involved in setting the budget. Only a limited amount of the total budget is allocated based on the input from the employees and this allocation is treated as an exception (step 4).

### 5.2.3 Reconciling the differences

The differences between the two approaches reveal a number of important features of budgets. First of all, there is not necessarily one budgeting approach that works for



every firm and every approach has its own sets of advantages and disadvantages. The textbook approach seems to be more appropriate in larger established firms while the Horowitz approach is more apt for start-up firms. This part will go into more detail why this is the case.

The textbook approach is more vulnerable to budgetary slack creation and budget gaming. In other words, employees will distort their true knowledge to get easier targets or more budget. The distortions make it more difficult to assess different investments and plan for the next year. To avoid budget gaming, firms sometimes opt to not evaluate the employees based on budget targets which takes away the incentives for employees to create budget slack. Planning and allocating the budget of different divisions is probably more important in larger firms with multiple business than in a start-up. The former have more activities and investments that need to be coordinated. Similarly, the more diverse the organisation, the more difficult it is for top management to be involved in every aspect of the business. As a result, the local, specific knowledge will be more valuable for planning the following year's operations.

In contrast, in a start-up firm, the future of the company is even more unpredictable than in an established firm. Planning one-year ahead might be a difficult task because the product, the market, and the organisation are still rapidly changing. For such a firm, guiding the behaviour of the employees is more important than planning for the next year. Furthermore, start-ups are often more cash constrained and any serious budget overrun can have disastrous consequences for the survival of the firm.

Established firms have also more tools they can use to avoid budget gaming. They can create a culture where employees are committed to the budget process. In Johnson & Johnson, employees are often promoted internally which means that managers have worked with the employees they are supervising and they have experience with and trust in the budget process. In other words, managers have sufficient knowledge of the day-to-day process to understand when budget demands by subordinates are not realistic. They have experienced and absorbed the norms that make the budgeting process work (see p. 202 in [Horngren et al. 2012](#)). Other firms provide incentives to managers and employees for accuracy in their budget proposals. They pay a bonus for budget estimates that are difficult and accurate (see p. 202 in [Horngren et al. 2012](#)).

Start-up firms will have difficulty to develop such tools. For instance, a start-up will often not have the opportunity to only promote current employees as they will have to hire new people to expand their operations. In the short lifetime of a start-up, it is not always possible to develop and maintain the norms that are necessary for a positive budgeting culture as in Johnson & Johnson. Furthermore even for established firms, there are transaction costs involved in establishing a culture or using incentive

contracts to secure honest budget proposals. Johnson & Johnson has to exclude a lot of potential employees because they prefer to recruit managers from inside the firm. The transaction cost of an incentive contract for honest budget proposals is that firms have to pay a bonus for when employees submit honest budget proposals.

### 5.3 The budget as an evaluation and feedback tool

The budget can serve as a feedback tool during the year to assess whether the firm's predicted performance is in line with actual performance. The comparison between actual and planned budget is also called *variance analysis*. A variance analysis is valuable to adjust the operational plan when problems are detected and to make sure that employees follow the intended strategy because the analysis can detect changes from the plan. In other words, a variance analysis is useful for budgets that have a planning focus and for budgets that guide the employees behaviour.

The rest of this section builds on the first case study on **Easy Business Company Limited**. The case describes how Cindy Sin starts a new recruiting agency. The following presents a simplified and slightly altered cost structure of the new business. Cindy's revenues are driven by the number of vacant positions she can fill. She expect to earn 2000RMB for each of the 250 positions she will fill over the course of a year. For a recruiting agency, most of the costs are fixed costs. I assume there are two important variable costs, a bonus for the sales people per position filled and the cost of advertisement in the local paper. Following the case study, I assume that the bonus is set at 300RMB for each year. Normally, advertisements are not variable costs, i.e. Cindy would have to pay for the advertisements whether the position is filled or not. I assume here that Cindy was able to negotiate a deal with the paper where she only had to pay for the advertisement once the position is filled.

Category	Revenue/cost per position
Revenue	2,000
Sales Bonus	300
Advertisement	100

Table 5.1: Variable costs and revenues Easy Business

In addition to the variable costs, Cindy expects to have 300,000RMB in fixed costs.

### 5.3.1 Level 1: Static-budget variances

The actual and the planned, budgeted cost and revenue figures are shown in the next table. The difference between the budget and the actual results is calculated in the level 1 variance analysis. The differences are also called *static budget variances*. The variances are denoted by (F) for favourable variances and (U) for unfavourable variance. Variances are favourable when actual revenues exceed the budget and when actual costs are lower than in the budget. Unfavourable variances happen when sales are lower and costs are higher than budgeted.

The actual operating income of 40,000 RMB is 60,000 RMB lower than in the budget. The level 1 analysis splits the differences up over the different revenue and cost components which helps Sindy to figure out why operating income is lower than expected. It is easy to see that part of the explanation is that Sindy could only fill 225 positions compared to the 250 positions she expected to fill. The total variable and fixed costs are lower than expected which dampens the effect of the decreased sales. In order to improve the profitability of Easy Business, Sindy will want to know whether the lower sales are the main reason for the drop in profits or whether it is driven by other causes. The level 2 analysis in the next section will try to disentangle the sales drop from other factors.

	Actual (1)	Static-budget variances (2) = (3) - (1)	Budget (3)
Positions filled	225	25 (U)	250
<i>Revenues</i>	405,000	95,000 (U)	500,000
Bonus	63,000	12,000 (F)	75,000
Advertisements	<u>27,000</u>	<u>2,000 (U)</u>	<u>25,000</u>
<i>Total variable cost</i>	<u>90,000</u>	<u>10,000 (F)</u>	<u>100,000</u>
Contribution margin	315,000	85,000 (U)	400,000
Fixed costs	<u>275,000</u>	<u>25,000 (F)</u>	<u>300,000</u>
<i>Operating income</i>	<u>40,000</u>	<u>60,000 (U)</u>	<u>100,000</u>

Table 5.2: Level 1: Static-budget variances Easy Business

### 5.3.2 Level 2: Flexible budget variances.

The *flexible budget* calculates budgeted costs and revenues with the actual output for the year instead of the budgeted output. In other words, the flexible budget adjusts the original budget after the fact for the actual number of positions filled instead of the budgeted number of positions filled. The flexible budget for the variable costs is thus calculated as 225 times the variable costs in Table 5.1. The fixed costs are not expected to change when the output changes. As a result, the flexible budget fixed cost is the same as the budgeted fixed cost. The result can be seen in column (3) of Table 5.3.

	Actual results (1)	Flexible-budget variances (2) = (3) - (1)	Flexible budget (3)	Sales-volume variances (4) = (5) - (3)	Budget (5)
Positions filled	225	-	225	25(U)	250
Revenues	405,000	45,000(U)	450,000	50,000 (U)	500,000
Bonus	63,000	4,500 (F)	67,500	7,500 (F)	75,000
Advertisement	<u>27,000</u>	4,500 (U)	<u>22,500</u>	2,500 (F)	<u>25,000</u>
Contribution margin	315,000	45,000 (U)	360,000	40,000(U)	400,000
Fixed overhead	<u>275,000</u>	<u>25,000 (F)</u>	<u>300,000</u>	0 (U)	<u>300,000</u>
Operating income	40,000	20,000 (U)	60,000	40000 (U)	100,000

Table 5.3: Level 2: Flexible-budget variances for Webb Company

The difference between the budget and the flexible budget is called the *sales-volume variance*. This part of the level 2 analysis indicates how much of the difference between the actual operating income and the budgeted operating income can be explained by the difference in positions filled. The total effect of the drop in positions filled is a decrease in the contribution margin by 40,000 RMB which is 2/3 of the total decrease in operating income. It makes most sense to look at the contribution margin and not at variable revenues and costs separately because the latter move per definition in the same direction.

The difference between the actual results and the flexible budget is called the *flexible-budget variance* and is calculated in column (2) of Table 5.3. The flexible-budget variance for the revenues indicates that even accounting for the lower than expected positions filled, Easy Business lost 45,000 RMB in sales compared to the the budget. This difference is the result of a lower price per position filled which is calculated in Table 5.4. The actual price per position filled of 1,800 RMB is indeed lower than the expected price of 2,000 RMB. Similarly, we can see that the flexible-budget variance are favourable for the bonus indicating lower bonuses than expected while the advertisement variance is

unfavourable indicating higher than expected advertisement costs. These findings are also supported by the actual unit costs in Table 5.4. Finally, the variance for the fixed costs shows that Easy Business had 25,000 RMB lower fixed costs than expected. All in all, the results show that the remaining 1/3 of the variance between expected and actual income is driven by a lower than expected price per position filled and significant cost savings in fixed costs.

Category	Revenue and cost per position
Revenue	$405,000 / 225 = 1,800$
Sales Bonus	$63,000 / 225 = 280$
Advertisement	$27,000 / 225 = 120$

Table 5.4: Actual variable revenues and costs Easy Business

There are a number of possible explanations for the lower sales and the consequent sales-volume variance. For instance, the competition of other recruiting agencies might have been harsher than expected or the labour market might have been looser than expected and firms did not have that many positions to be filled. Another possibility is that the sales people were not willing to work hard enough to fill positions because they did not receive a high enough bonus (1,800 RMB instead of 2,000). While Cindy cannot directly control the competition and demand, she can control the bonus she pays. The variance analysis gives her a tool to evaluate whether it is worthwhile to increase the bonus for sales staff if it leads to more positions filled.

Finally, the flexible-budget variance for the advertisement cost gives an indication of how well Cindy was able to control the advertisement cost given the actual positions filled. The advertisement costs are 20 RMB higher than expected per advertisement. There are two main explanations for the higher than expected advertisement costs. From the case description, we know that the advertisement costs are paid per word. Easy Business either had more words per advertisement than expected and/or the price per word was higher than expected. With some additional information, a level 3 budget analysis can separate the contribution of those explanations to the flexible cost variances.

### 5.3.3 Level 3: Price variances and efficiency variances.

The level 3 analysis separates the flexible cost variance in a price variance and an efficiency variance. The *price variance* of a variable cost indicates the additional costs of an increase in the cost per variable input. The *efficiency variance* quantifies the cost of consuming more of the underlying input per unit of the sales. In the case of Easy Business, the input is the number of words, cost per unit is the price per 10 words, and the unit of

production is the number of positions filled. In other words, the price variance reflects the effect of an increase in the cost per words in the advertisement (not the additional cost of the advertisement itself!). The efficiency variance reflects the cost of using more or less words per advertisement. We use the information in Table 5.5 to calculate the price and efficiency variance.

Budgeted words per advertisement	50
Actual words per advertisement	80
Budgeted price per 10 words	20 RMB
Actual price per 10 words	15 RMB
Budgeted cost per advertisement	100 RMB
Actual cost per advertisement	120 RMB

Table 5.5: Actual and budgeted advertisement for Easy Business

The prices variances in Table 5.6 are calculated as follows. First, we need to calculate the total number of inputs necessary, i.e. the total number of words in the advertisement. For the flexible budget, the actual numbers filled (225) times the budgeted number of words per advertisement (50) gives the total number of words. The actual number of words used is calculated as  $225 \times 80$ . The price variance is then the difference between the total actual cost and the actual number of units used times the budgeted price per 10 words. The efficiency variance is the difference between the latter cost and the flexible budget cost of advertisement.

Table 5.6 shows that the price variance is favourable with 9,000 RMB and the efficiency variance is unfavourable with 13,500 RMB. These variances are the direct result of using more words (efficiency variance) than expected at a lower cost per 10 words (price variance). There are multiple potential explanations for these variance. The positions may have been more complicated and need more words to advertise. Or alternatively, Sindy was not carefull in crafting the advertisements and used too many words.

The price per words might have been lower because Sindy found a cheaper outlet to put the advertisements in. However, the change of outlet could also be the reason for the lower number of positions filled. A variance analysis cannot attribute the variance to one of these cause but it can help in evaluating whether the favourable price variance was worth the unfavourable sales-volume variance. In this case, the trade-off is definitely not worthwhile.

As outsiders it will always be difficult for us to understand, what the deep underlying reasons are for the budget variances. These questions can be better answered by employees with specific operational knowledge. For instance, Sindy might have heard from applicants that they learn about the position through other means than the out-

let and they normally only check the traditional newspapers. A common refrain of this text is that formal systems such as budget variance always need to be complemented with specific knowledge from employees.

	Actual results (1)	Price variances (2) = (3) - (1)	Actual inputs (3)	Efficiency Variances (4) = (5) - (3)	Flexible budget (5)
Positions filled	225				225
Total words	18,000		18,000		11,250
Price per 10 words	15 RMB		20 RMB		20 RMB
Advertisement	27,000	9,000 (F)	36,000	13,500 (U)	22,500

Table 5.6: Level 3: Price and efficiency variances for Webb Company

## 5.4 Budgets and non-financial measures.

Traditional management accounting tools such as budgets have often been criticised for being to focused on financial measures such as profits and cost prices. The analysis in the previous section shows that judicious use of budget variances allows the management accountant to link the cost overruns to operational measures like the operational efficiency of employees or the use of raw material. This text will further on discuss the **balanced scorecard** as a tool to explicitly include non-financial measures in management accounting systems. However, it is important to note that to a certain extent budgets already include productivity measures. The strength of variance analyses is that it allows to compare for instance efficiency and price variances. Similarly, we can compare the impact from lower unit sales (a non-financial measure) on both variable costs and revenues (financial measures).

## 5.5 Responsibility accounting and decentralisation.

The following section is based on chapter 8 and chapter 22 of [Horngren et al. \(2012\)](#). One of the roles of budgets is to bring together all information and knowledge from different divisions <sup>2</sup> in a firm. By combining and quantifying all information in one

<sup>2</sup>Divisions can stand for departments, business units, geographical regions, and many other designations for parts of a firm.

place, the firm can plan and coordinate the activities of the different divisions in a large integrated firm.

The strategy of the firm will have a big impact on how a firm structures its different divisions. Some firms will split up the firm according to geographical locations, others choose to have divisions for different product lines, and others have different divisions for different business functions such as sales, production, and purchasing. Charley's restaurants in the **Charley's Steak House case study** are organically organised according to the geographical location of the restaurants while **Whirlpool** is organised according to different product lines. Big international firms will often have an organisational structure over multiple dimensions in a so-called matrix structure.

The strategy will also affect which divisions in the firm take operational and investment decisions and to what extent the headquarters take the decisions. Centralisation and decentralisation will determine the role of the budget. In a centralised organisation, the budget serves as a repository of all information and knowledge in the firm and helps central headquarters in taking strategic decisions. In a decentralised organisation, the budget helps the autonomous divisions to communicate with each other and coordinate investments that are dependent on each other. The following section on transfer pricing will explain in more details how budgets help the coordination between divisions. The important insight is that transfer prices are artificial prices for an intermediate product that is sold from one division to another and that price serves a similar function as a **market price** for independent firms.

The remainder of the section focuses on how and why firms decentralise divisions. Every division is a responsibility center for the budgeting process. Cost centres are accountable for costs, while revenue centres are accountable for revenues only. Typically supporting divisions such as maintenance and accounting are cost centres while sales is the quintessential revenue centre. When a division is responsible for an entire product line it will often be accountable for both costs and revenues as a profit centre or when it is also accountable for investments as an investment centre. In the budgeting process, the investment centres performance will depend on the comparison between the revenues, costs, and investments in the planned budget with the actual revenues, costs, and investments.

There are multiple reasons why headquarters decide to decentralise decisions to divisions. Geographically decentralised divisions often have better specific knowledge about the preferences of customers, the capabilities of suppliers, and employees, or the local political environment. As a result, a decentralised division will be more responsive to its environment than headquarters. Because a decentralised division does not have to wait for directions from headquarters it will not only detect changes in the local envi-



ronment quicker but also react quicker to changes in customer preferences or supplier capabilities.

In addition to improving decision making, decentralisation improves the motivation of managers in the division. In line with the idea of empowerment, managers with more responsibility are more likely to take initiative and work harder in the interest of the firm. For instance, lower level managers with more autonomy are more likely to develop management skills than managers who can take fewer decisions.

However, decentralisation can have a negative impact on the firm's performance as well. Decentralised divisions focus more on their own responsibilities and performance while neglecting their negative impact on other divisions. Microsoft is a prime example of a company that instigated competition between its divisions. One of the main sources of competition between the divisions is for the limited budget to develop new projects. The divisions have to convince headquarters that they deserve investments in their projects. However, that competition can turn ugly when different divisions do not want to accommodate their projects to benefit others. For instance, the Office division was for a long time not willing to adapt their software for a touch and stylus interface<sup>3</sup>.

Another disadvantage of decentralisation is that some activities and functions of the firm might be duplicated. That is why firms often centralise some supporting functions such as HR administration, accounting, or purchasing. In Charley's restaurants, Charley Turner is still responsible for the purchasing function for all four restaurants. Centralisation of these functions is an example of how firms can economise on the transaction costs of running a business.

## 5.6 Transfer pricing: On the intersection of cost accounting and budgeting

The **Virginia Mason case** shows the importance of setting the right price in order to coordinate cost reduction in the whole supply chain. Before the introduction of the Total Supply Chain Cost (TSCC) contract, that introduces a new pricing system, Owens & Minor bears the cost of improving delivery while Virginia Mason reaps all the benefits. As a result, Owens & Minor has little incentive to improve delivery quality while Virginia Mason has little incentive to consider the costs of better delivery (see also [here](#)). The TSCC contract and the gain sharing contract essentially redistribute the costs and benefits so that Virginia Mason bears part of the costs of just-in-time delivery while

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<sup>3</sup><http://www.nytimes.com/2010/02/04/opinion/04brass.html>

Owens & Minor reaps some of the benefits of reducing the supply chain costs.

The use of a price mechanism to align the incentives of two independent entities is not only important between two firms. Transfer prices are used within firms to coordinate the actions of independent divisions. Because the transfer price is a revenue for the supplying division and a cost for the acquiring division, a transfer price also allows headquarters to evaluate both divisions as **profit centres**. The rest of this section focuses on the role of transfer prices to evaluate, motivate, and coordinate division. However, an important function of transfer prices is overlooked in this discussion. Multinational firms will use transfer prices mainly to optimise their taxes<sup>4</sup>. The discussion here is restricted to transfer pricing of divisions in one country or where tax considerations are of a minor concern.

There are three different ways to set the transfer price. Firms can follow the market price of companies selling and buying the same product in a competitive market. Firms can calculate a transfer price based on the cost price for the product or service. Lastly, they can let the different divisions negotiate over the transfer price.

### 5.6.1 Market price

The market price is often seen as the preferred method for transfer prices if there is a competitive market for the product or service. For instance, [Horngren et al. \(2012\)](#) give the example of Horizon Petroleum, a Houston based company, with a crude oil transportation division and a refinery division that operate as independent profit centers. The market price for crude oil in the Houston market is \$85/barrel. If Horizon Petroleum sets the transfer price at the market price, the transportation division has no incentive to sell crude oil on the market and the refinery division has no incentive to buy crude oil from the Houston market.

These incentives do not change when the market environment and the price change. As in the previous section, we see that the market price is a powerful aggregator of all necessary information. At the same time, both divisions have an incentive to manage costs because they are evaluated as a profit center. If the transportation center is inefficient, the costs of transportation will outweigh the revenues it receives from the transfer price. Similarly, if the refinery division makes many more additional costs in addition to the transfer price, they will have to sell the refined gasoline at a loss to the customers.

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<sup>4</sup>For instance: [How Ireland got Apple's \\$9bn profit - AFR, 6 May 2014](#)

## 5.6.2 Cost-based transfer price

Another option for firms is to use transfer prices that are based on cost accounting calculations. The variable cost of transport at Horizon Petroleum is \$1/barrel and the fixed cost is \$3/barrel. Let us assume that the headquarters will allow the transportation division to have a 5% profit margin, so that the transfer price will be 1.05 times the total cost. To illustrate the problems with a full costing approach for transfer pricing, consider two alternatives for the refining division. They can either buy crude oil directly from the Houston market at 85\$/barrel or they can ask the transportation division to buy from Gulfmex at another market for \$79/barrel. The problem is that the transportation division has to transport the crude oil to Houston at the costs described above (Horngren et al., 2012).

In the current set-up, the transfer price would be  $1.05 \times (79 + 1 + 3) = \$87.15$ . In other words, the refining division would prefer to buy on the Houston crude oil market. In contrast, the headquarters would prefer that the crude oil is bought from Gulfmex because the only relevant costs for the firm as a whole are the variable transport cost of \$1/barrel and the purchasing price of 79\$/barrel. These costs are lower than the cost of buying at the Houston crude oil market. In this case, the full cost transfer price creates incentives for the divisions to not act in the best interest of the firm. One option that the headquarters can take is to overrule the refining division but unfortunately that takes away the autonomy of the division<sup>5</sup>.

An alternative approach to full cost transfer pricing is to only take into account the variable costs. In this case, the variable cost is \$80 for the Gulfmex crude oil. The disadvantage of using the variable cost is that we can no longer evaluate the transportation division as a profit center because it will always be loss making as a result of the fixed costs, which are not covered by the transfer price. Furthermore, using costs for transfer prices creates perverse incentives for the transportation divisions. Because they will always recover the costs that are used in the transfer pricing calculations, they no longer have an incentive to manage these costs. Moreover, they actually have an incentive to exaggerate the costs in order to receive a higher transfer price.

Despite the theoretical advantages of market prices and the disadvantages of cost-based transfer prices, the latter are still quite popular in firms. A first obvious reason is that not for all products, there is a close to perfect market with an informative market

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<sup>5</sup>This example in the textbook ignores that the transportation division could still buy from Gulfmex, transport the crude oil, and sell on the Houston market for \$85. If the market is sufficiently competitive this would cancel out any negative effects of full cost transfer pricing. I am just following the example in the book here because it is quite hard to get around these issues ones you start assuming that markets are efficient and all divisions are rational.

price. Another problem with using a market price is that it indicates that the firm is not doing anything that can not be done by two independent firms. In other words, a firm that uses the market price does not have a competitive advantage **compared to the market**.

One advantage of the full costing approach is that it protects the divisions from volatility in the market price. The cost-based transfer price can be fixed for a longer period of time and guarantee the transport division of steady demand and the refining division of a steady supply which might help in planning their respective production schedules.

More complicated combinations are often used to set a range of possible transfer prices. For instance, the headquarters can decide that the transfer price should be between the variable cost (\$80) and the market price (\$85). The variable cost is the minimum price to convince the transportation division while the market price is the maximum the refinery is willing to pay. There are several options to split the difference between the minimum and the maximum. The headquarters can set an equal split rule (\$82.5) or they can use more complicated rules based on the variable costs that each division bears to produce the final product. In the latter case, the division with the highest variable cost gets more of the surplus which might again lead to exaggerations of reported costs.

### 5.6.3 Negotiated transfer price

A last solution to split the difference is a negotiation between the two divisions. The advantage is that this allows the divisions to accept one-off offers to make use of excess capacity. Consider a one-off order for the refining division which they can fulfill if they can buy crude oil at \$82/barrel. The market is not willing to supply at this price but the variable cost of the Gulfmex oil is only \$80/barrel. If divisions are allowed to negotiate over the price, they will probably settle on a price of around \$81/barrel and the firm as whole will make a profit of \$2/barrel<sup>6</sup>. This example illustrates how the negotiated transfer price might provide firms with more flexibility than markets. The firms can decide to ignore fixed (sunk) costs when a special opportunity arises.

Another advantage of negotiations is that they might reveal specific knowledge of each divisions. The divisions can learn from each other and set up a transfer price that creates value for both divisions and thus the firm as a whole. This is an informal version of the TSCC contract in the Virginia Mason case study. The disadvantages (and

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<sup>6</sup>Again, we are ignoring a lot of potential arbitrage opportunities here. See the previous footnote.

hence the transaction costs) of negotiations are quite straightforward. First of all, the opportunity cost of negotiations is the time that the heads of the divisions spend on negotiations instead of managing the operations of their division. Second, negotiations can lead to conflict between the divisions and reduce the cooperation between divisions.

## 5.7 Questions

These questions gives an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

1. You should be able to do the variance analysis as performed in the lecture notes and in the Charley's Steak House case study. You can also have a look at the problem for self-study at p.284 in Chapter 8 in [Horngren et al. \(2012\)](#) or the exercises in chapter 11 in [Langfield-Smith et al. 2008](#).
2. Imagine you are the Vice Chancellor of UWA and you have to divide the budget for administrative services and teaching to the different schools at UWA.
  - How would you develop the process for allocation the budget if you could start from scratch?
  - How would you use the budget to evaluate the financial performance of the different schools?
  - What would be important non-financial, objective information that would have to be incorporated in the budget?
  - Would you take into account subjective, specific information when setting up the budget?
  - Are you treating the different schools as cost centres, profit centres, or investment centres with respect to their teaching activities.

# Chapter 6

## Cost accounting

This chapter delves into different aspects of modern cost accounting systems. The first section introduces activity based costing and provides an insight into how and when more detailed cost accounting systems provide useful insights. The second section focuses on the cost of unused capacity and its treatment in activity based costing systems. Strategic investments such as machines or highly skilled employees are often not used at full capacity and activity based costing is well equipped to quantify the cost of unused capacity. However, sometimes firms build up additional capacity mainly for strategic reasons such as fighting off competitors. The second section explains how similar calculations as for unused capacity can quantify the cost of that strategy. The third section explains how a buyer and seller can use activity based costing methods to improve cooperation and improve on market transactions. The fourth section goes into more detail of the relation between competitive market prices and the need for detailed cost accounting systems. The last section makes the connection between cost accounting and budgeting.

### 6.1 Activity based costing

The goal of every cost accounting system is to allocate costs to different cost objects, which can be everything that an organisation wants to know the cost of. For instance, car manufacturers are interested in the unit cost of producing one car<sup>1</sup> but they will also be interested in all the costs that are assigned to one car type<sup>2</sup>. If a firm has both

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<sup>1</sup>as in the car I have, a Hyundai Getz

<sup>2</sup>all Hyundai Getz produced

businesses and individuals as customers, it will be interested whether one class of customers causes higher costs than the other. Similarly, the firm may be interested in the costs absorbed by a department or the costs caused by one of its suppliers.

All cost accounting systems distinguish between direct and indirect costs. A *direct cost* is a cost that can be immediately assigned to a cost object. For instance, the cost of a tutor can be immediately assigned to a unit. On the other hand, I am paid a salary to teach and do research. My salary can not immediately be assigned to this unit because my salary pays for more than one unit. We will have to find a way to quantify how much of my salary should be assigned to the unit. For instance, I could make a guess of how much of my time is spend on the unit<sup>3</sup>. Whether a cost is direct or indirect depends on the cost object that the cost accountant is interested in. For instance, if we want to determine the cost of a single workshop, the cost of the tutor is now an indirect cost.

Activity Based Costing aims to make the allocation of indirect costs more methodological by focusing on what the firm is actually doing. The first step of an activity based costing analysis should be to perform an activity analysis. A firm can interview employees, observe them, and analyse internal data to find out the main activities in the firm. A proto-typical example for a manufacturing firm is given in Figure 5.1 below which makes a distinction between five main activities that are supported by four other activities.

For a lecturer, the important activities may be lecture preparation, workshop design, lecturing, exam and assignment marking, and general administration. A cost accountant wants to allocate the salary of the lecturer to these activities according to a *resource driver*. The most straightforward way is to use the hours the lecturer spends on these different activities. Finally, the cost accountant wants to allocate the different activities to the different units that lecturers are teaching. We can use activity drivers to assign the costs of different activities to the different units. For instance, the cost of administration will depend on the number of students. The cost of lecturing will depend on the contact hours. The cost of preparation may depend on whether the unit is an undergraduate or postgraduate unit. In general, better knowledge of the production process and the activities will make it easier to develop a good cost accounting system. As mentioned before, specific knowledge will help a cost accountant in designing a better management accounting system.

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<sup>3</sup>such as writing these lecture notes

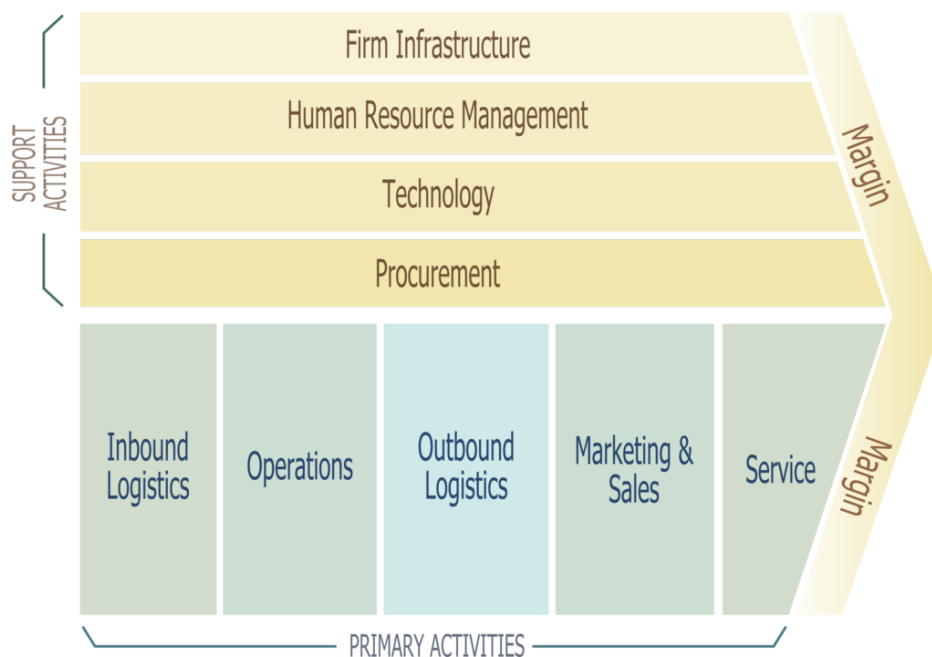


Figure 6.1: Michael Porter's Value Chain, 1985 by Dinesh Pratap Singh

An additional advantage of activity based costing is that it can make more costs variable by means of a cost hierarchy. The Easy Business case shows that strictly speaking not a lot of costs are truly variable, i.e. they go up with additional output. Those traditional variable costs are called *unit level* cost in the cost hierarchy. Some costs are variable at another level. For instance *batch level* costs are not associated with a unit of production but with a production run or an order. Machine set-up costs in between production runs and administration and handling costs of customer orders are examples of batch level costs. R&D costs and marketing costs are examples of *product level* costs which are associated with a specific product line. Other costs can be at the supplier, or customer, or facility level.

The advantages of activity based costing will depend on the situation of the firm. If the firm has highly effective technology (e.g. scanning of different parts, electronic tracking of employees), to track all costs, it is able to directly assign costs to cost objects and it does not need ABC. In other words, only if the *indirect costs are sufficiently large* will ABC be advantageous to the firm. When there are only a few resources, activities, or cost objects, ABC may be of limited value. ABC will be of most value when a firm offers a large diversity in products or services, these services consume different activities at a different rate, and the activities draw differently from the resources. If there is not much difference in the use of activities and resources, it will not make a large difference in cost calculations when we make a distinction between activities. In other words, when the



*cost objects are homogeneous*, the distinctions that ABC makes are of little value. For instance, if a lecturer puts the same amount of preparation work in a postgraduate unit as in an undergraduate unit, we do not need to take that distinction into account.

The transaction costs of ABC are relatively straightforward. Setting up an ABC system is much more time consuming because the firm needs to perform an activity analysis. The IT requirements for a realistic system with over a hundred activities and thousands of cost objects are much larger than for a traditional and more simple system. Lastly, updating a complex ABC system is much harder. The firm has to incorporate new activities and new products or customers which is much harder than for a more simple cost accounting system. With a complex ABC system, the addition of a new type of customer could mean that all cost allocation of all activities need to be adapted for this new customer. With a realistic ABC system, the number of activities can easily be over 1000. As a result, if technological progress helps firms to manage the complexity and the updates of an ABC system, than technology can lead to more firms adopting ABC.

## 6.2 Capacity, strategic investments, and activity based costing

In the **Lehigh Steel case**, one important issue is how to treat the capacity restrictions on the continuous rolling machine. The corollary of limited capacity of one machine is that other machines have excess capacity, i.e. they could run for longer than they are actually used. The rest of this section assumes that the other machines have the same capacity of machine hours as the continuous rolling machine (i.e. 8.26 million minutes) in the case. This assumption is not necessarily valid. However the insights remain the same as long as we assume that the other machines at Lehigh Steel have excess capacity.

In the cost calculations so far, the capacity of the activity has been given. The case gave the number of hours a machine can run, the number of orders a firm can fulfill or the number of invoices a firm can write. However, which number to use for the capacity is not straightforward in more realistic cases. The typical choices are the capacity in normal circumstances, the maximum possible production in normal circumstances, or the theoretical possible production capacity. These different possibilities are respectively called the *normal capacity*, *practical capacity*, and *theoretical capacity*. In most cases, the practical capacity should be used for cost accounting calculations. The main reason for this choice is that we want to allocate costs to the unused capacity, i.e. machine time that was available but not used for production. The cost of unused capacity should

give us an idea whether it is worthwhile to either scale down the production capacity or whether we should keep the current capacity. If we use the normal capacity in our calculations, under normal circumstances there will be no cost of unused capacity. In other words, normal capacity assumes that the firm in normal circumstances is working in full capacity. Theoretical capacity on the other hand overestimates how much the firm realistically can produce.

Exhibit 6 in the Lehigh Steel case shows that the finishing machine is used for 4.06 million minutes which is also the value for the normal capacity. Following the earlier assumptions, the theoretical capacity in this example is 8.26 million minutes equal to the maximum capacity of the continuous rolling machine. However, Lehigh Steel is probably using additional resources to make sure that the rolling machine's operations are never interrupted. The finishing machine however may have some interruptions or may need to wait for the intermediate products coming from the rolling machine. One typical estimate for the practical capacity in a normal year is 85% of the theoretical capacity (= 7.02 million minutes)<sup>4</sup>. The practical capacity represents the maximum number of machine minutes accounting for a reasonable expected maintenance time. Table 5.1 shows the calculation of the activity driver rates with normal capacity and practical capacity. The normal capacity activity driver is the one that is used in the case study. Nevertheless, the practical capacity is often a better indicator of capacity in Activity Based Costing calculations because it allows to calculate the cost of unused capacity. Normal capacity assumes that the firm is using all machines and employees at full capacity in the current circumstances, i.e. the machine could not be used more.

Capacity	Activity Driver Rate
Normal Capacity	$\frac{1.28+0.78+0.87}{4.06} = 0.72$
Practical Capacity	$\frac{1.28+0.78+0.87}{7.02} = 0.42$

Table 6.1: Capacity of finishing machining

Table 6.1 shows the cost per minute of finishing for the sample products under the two different capacity regimes. One advantage of the practical capacity is that the costs of one product are not affected by production changes for the other products. If Lehigh Steel decides to change its product mix so that it needs less finishing minutes, the finishing driver rate and the cost of finishing for the sample products will increase. Since nothing has changed in the production process of the sample products, one would expect no changes in their production cost.

The other advantage of the practical capacity approach is that it is possible to calculate the cost of the unused capacity. In the example of the finishing machine there are

<sup>4</sup>More intimate knowledge of the production process can help in refining the estimate

	Finishing	Condition	Roller	Chipper	Round	Machine
		Round	Wire	Knife	Bar	Coil
Machine time (min)		0.06	0.02	0.07	0.08	0.05
Normal (cent)		4.32	1.44	5.04	5.76	3.60
Practical (cent)		2.52	0.84	2.94	3.36	2.10

Table 6.2: Cost of Finishing for Sample Products

$2.96 = 7.02 - 4.06$  million minutes of unused finishing capacity. The excess capacity costs Lehigh Steel  $2.96 \times 0.42 = 1.24$  million dollar.

There are different ways to interpret this cost depending on the strategy of the firm. The unused capacity might be superfluous and represent an avoidable cost. In that case, the firm will want to reduce the capacity and its associated costs. Machines can be sold, or, less drastically, not replaced when they are not longer functioning. Employees can be fired or replaced to activities that are value-adding. However, not all excess capacity is an indication of inefficiency. Firms might have good reasons to have more capacity than they are currently using. Overcapacity may give a firm more flexibility in ramping up production when demand increases or in changing its product mix when customer preferences change. Excess capacity in seasonal downturns also helps a firm to cope with periods of high seasonal demand. Another reason to build up excess capacity is to threaten potential entrants to the market you are selling into. A manufacturing firms can build overcapacity so that they can increase production when competitors would enter the market. The excess capacity credibly signals to potential competitors that the incumbent firm is capable of unleashing a price war. Possible entrants will think twice about competing with the firm. They know that the firm can easily flood the market and drive the price down. The overcapacity helps firms to set a price higher than the competitive price.

The advantage of the practical capacity approach to costing is that it allows the accountant to quantify the cost of not using the capacity. This cost can be compared to the benefit of meeting demand and preventing customers from entering the market which allows the firm to make a cost-benefit analysis of the excess capacity. The choice to invest in excess capacity or not also came up in the discussion of Easy business. An important consideration for a small business is to limit fixed costs (=capacity). If customer demand is disappointing, the firm will still have to pay the fixed costs. Recent research shows the opposite is true in more mature firms (Banker and Byzalov, 2014). For those firms the bigger risk is not to have capacity that needs to be paid for but to disappoint customers when demand is surging. Mature firms can find credit to bridge periods of disappointing demand but they cannot recover sales once they had to turn away customers.

## 6.3 Supply chain and management accounting

The **earlier section on markets explained** how firms like Apple compete with a supply chain of different firms such as for instance Samsung, Google, and Telstra. One advantage of integrated firms is that they have control over all activities in the supply chain which enables them to coordinate these activities better. The firms in a supply chain are of course not helpless and they can also improve coordination across firm boundaries to improve the performance of the supply chain as a whole. In fact, collaboration between firms is not limited to collaboration across a supply chain. For instance, competitors in the airline industry collaborate in three different alliances (Oneworld, Skyteam, and Star Alliance). These collaborations can give rise to complicated forms of competition. Airlines within one alliance are both collaborating and competing with each other while the alliances are competing with each other.

This section focuses on the role of budgets and cost accounting tools to coordinate these collaborations between firms. Most of this section deals with collaboration across the supply chain but the insights are applicable for other collaborations as well.

### 6.3.1 Supplier selection

One important role for cost accounting in the supply chain is helping firms to select the most cost efficient suppliers. Manufacturing firms source most of the components for their final product from suppliers. One estimate is that for a typical manufacturing firm 50% of their operating costs are directly influenced by their suppliers (Degraeve and Roodhooft, 2001). When firms evaluate the cost of suppliers, firms do not only want to focus on the sticker price for the products. They want to include the cost of ordering and administration, the quality of the products, transportation costs, and many more<sup>5</sup>.

This approach is sometimes referred to as the total cost of ownership approach. Activity based costing is particularly well suited to quantify the total cost of ownership. The **section on activity based costing** indicates that not only products can be cost objects but also customers and more important for this section suppliers. The activity based costing application with suppliers as cost objects implements the idea of total cost of ownership. The advantage of this approach is that it allows firms to quantify the benefits of a lower price and the cost of lower quality (Degraeve and Roodhooft, 1999). One example of a cost of quality is that it leads to more waste or faulty products in the

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<sup>5</sup>If you have ever ordered a product online, you know that shipping costs to Perth and administration costs for credit cards can vary widely from one website to another

production process. Activity based costing can take into account the activity "rework of faulty products" and assign the cost of rework to a specific supplier. Activity based costing will not only allow firms to evaluate their suppliers but also to give their suppliers feedback on which activities (administration, delivery, product control, ...) need improvement to become a more attractive supplier.

### 6.3.2 Bullwhip effect and budget coordination

Another often cited problem in the supply chain is that of the bullwhip effect which refers to the tendency of small changes in final customer demand to bring about huge swings in the production schedule of manufacturing firms. When customer demand increases slightly, retailers will demand more products from wholesalers. Often they will order more than the increase in customer demand in order to build up more inventory as a buffer for further increases in customer demand. When wholesalers receive those orders from retailers, they will also increase their orders with the manufacturers and add an additional buffer to their inventory. In summary, the small increase in customer demand leads to a much larger change in the production schedule of the manufacturer. These abrupt changes lead to production difficulties, stock-outs, and high inventory levels. Note that a fully integrated manufacturer that sells immediately to the final customers does not face this problem because they can coordinate the safety margins across the whole supply chain.

Firms in a supply chain mitigate the bullwhip effect by sharing sales information across all firms in the supply chain. [Horngren et al. \(2012\)](#) describes how Proctor & Gamble organised information sharing between retailers, wholesalers, and its manufacturing plants for the Pampers brand products. The information sharing helped to decrease stock-outs at the retailers, while also decreasing inventory levels, and rushed orders. In effect, Proctor & Gamble did the planning and budgeting no longer just inside the firm but together with the retailers and wholesalers. This example shows again how budgets can be used to bring together information from different sources, in this case from different firms.

### 6.3.3 Innovation uncertainty and cost accounting

The last instance where accounting tools can help to improve supply chain performance is product improvements across firm boundaries. Although markets are powerful motivators for efficiency improvements, they are not always as powerful to motivate suppliers to improve the quality or functionality of their product. The problem is that for

some improvements the supplier will have to bear an initial cost (e.g. better production technology) while the benefit will fall on the buyer of the product (e.g. higher demand from customers). Only if the buyer is willing to pay a higher price, will the supplier be rewarded for the innovation. However, when buyers have difficulty in assessing the benefit, they will be reluctant to increase the price. In summary, before supplier consider improving the product, they are uncertain whether they will be rewarded in the form of a higher price and they are uncertain about the cost of producing the improvement. The risk of this proposition might deter suppliers from investing in product improvements. If all suppliers have similar beliefs about the investment in innovation, competitive pressure will not lead to the desired product innovation.

Activity based costing can improve this standstill by quantifying the costs and benefits of a product improvement and decreasing the uncertainty that buyers and suppliers face. Specifically, when suppliers have a better estimate of the potential cost of innovation, they can negotiate with the buyers for a higher price that covers the cost of better production technology. Another advantage of activity based costing is that it allows buyers to offer a gain sharing contract where suppliers receive a share of the benefits that they create by improving the product. A more advanced application of cost sharing is open-book accounting where buyers and suppliers use shared IT-systems to share relevant cost information. This allows both firms to identify how changes in their activities influence the other and it helps them to identify cost savings or product improvements that improve the supply chain as a whole.

## 6.4 Market prices and cost accounting

The **Lehigh Steel** case showed that activity based costing can reveal a lot of information about the profitability of different products. One solution for unprofitable products is to increase the price of the products. The Lehigh Steel case provides some arguments why this might not be possible. Most firms in the steel industry are price-takers and they cannot change the price of their products without being hit by a large decrease in demand. In other words, market forces put a limit on how much a firm can change its price.

In a competitive market, the price set by competitors is thus very informative for a firm. They know that they cannot set a different price than competitors. As a result, they do not need a detailed cost pricing system to determine the price of their products. They can just follow competitors<sup>6</sup>. More broadly speaking, the market price is general

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<sup>6</sup>In some economic models this could lead to the paradox where no firm invests in cost tracking sys-

knowledge available to firms which means they do not have to develop costly cost accounting systems to make pricing decisions. This means that setting the right price will often not be the first motivation to develop a better cost accounting system for a firm in a competitive market.

There are however good reasons for companies to develop a good cost accounting system. First, there are situations without competition and no good working market. Firms may have a monopoly and can set the price. For instance, if firms launch a new product that is not yet in the market, there is not a competitive price and firms need to set their own price.

Second, cost accounting information is not only used to set a price but also to reduce costs. With better cost estimates, firms can identify non-value adding activities or activities that are conducted inefficiently. They can decide to eliminate or improve these activities based on the cost information. Firms can also decide that some products are no longer viable in the market. For instance, Lehigh Steel might decide that chipper knives are too expensive to produce and drop the product.

Third, most firms have more than one product in their product range. One simplified example is Microsoft that has two important software products; the Windows operating system and the Office application. Office is best integrated in the Windows operating system and Microsoft might sell more Office subscriptions when more people have a Windows operating system. This means that Microsoft has an incentive to ask a lower price than the market price for the operating system because they know that more people will buy it and more people will buy the Office subscription. This also means that Microsoft might be able to set a higher price than the market price for the Office subscription. The higher price and/or higher sales for the Office subscription subsidize the lower price for the operating system. To optimize this strategy, Microsoft needs a sophisticated costing system. Certainly, the cost of after sales service and support will be important drivers of the cost of an additional sold product. Interestingly, Microsoft seems to move away from this strategy. They are no longer trying to integrate the operating system with the Office subscription but their online, cloud infrastructure with the Office subscription. If you go to the Office365 website, you can see Microsoft is actually selling the Office subscription and the cloud services together as one product. Microsoft's new strategy is still one of creating value through combining different products but the products have changed.

The ability to set a better price will not always be the main driver for the adoption of systems because they all trust the market price. As a result, no firm in the firm is actually sure whether the market price is a good price. I am not aware of any empirical evidence for this claim but it is a fun thought experiment which has its roots in efficient market research ([Grossman and Stiglitz, 1980](#))

an improved cost accounting system. If you advise a firm to change its cost accounting system for better price setting, you have to be able to explain why the firm cannot just follow the market price. Another important driver for cost accounting improvements will often be the ability to find potential cost savings. If you advise a firm to change its cost accounting system in order to find inefficiencies, you have to be able to explain why the firm can not detect these inefficiencies in the old system. On the exam, it will never be enough to just say that a firm will be more profitable if they introduce an ABC system.

## 6.5 Questions

These questions gives an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

1. You should be able to do the cost calculations for the Lehigh Steel case on your own. The exam will not require you to all the calculations of Lehigh Steel because that would take too much time. However, I could ask to do the calculations for one product for instance.
2. Explain in your own words why a company does not always need a cost accounting system to determine what the price should be for their products.
3. Explain how in the case of Virginia Mason and Owens & Minor, the cost accounting system helps the hospital and its distributor to outperform the market. What are the transaction costs of using this cost accounting system?



# Chapter 7

## Balanced scorecard

The last chapter of these notes deals with the balanced scorecard, a measurement system that aims to capture the strategy of a firm in a comprehensive *and* parsimonious way. The textbook of [Horngren et al. \(2012\)](#) deals with the balanced scorecard in chapter 19 but the notes are heavily influenced by an overview paper by Robert Kaplan one of the originators of the balanced scorecard ([Kaplan, 2009](#)). This chapter will follow the evolution of measurement systems into the balanced scorecard and into strategy maps. This journey shows the evolution of performance measurement of human capital and its an excellent example of trial-and-error development of performance measurement.

### 7.1 Before the Balanced Scorecard

The movement towards measuring human capital started with the realisation in U.S. manufacturing firms that they were being overtaken by Japanese competitors. The Japanese firms focused more on quality while the U.S. firms' strategy was determined by stock market reactions to quarterly financial reports. U.S. firms realized they needed to focus more on the long term and on intangible assets. This moved away the firm's attention from short-term financial profit to its reputation with customers, knowledge about its customers and loyalty of customers create a strategic advantage for the firm. Similarly, the knowledge and skills of employees are important and the organisational structure of the firm drive a firm's competitiveness. These three fundamentals (customers, employees and organisational structure) determine the firm's knowledge, its capacity to innovate and ultimately it's capacity to create a competitive advantage over other firms.

The importance of human capital for the strategy of a firm has been stressed from the outset **in these notes** because human capital is difficult to copy for competitors. **Some of the case studies** have illustrated the importance of human capital. For instance, the role of the R&E division in Whirlpool shows the importance of creating new products. The metallurgists in Lehigh Steel are an example of the importance of employees' capabilities. Finally, the relation between Virginia Mason and Owens & Minor shows the role of trust and reputation in developing interfirm relations.

In a first attempt to measure human capital, U.S. firms tried to value their intangible assets and report the valuation in their financial reports. This approach enables them to fulfill their duties to the stock market while also focusing on the drivers of a successful strategy. However this approach of translating intangible assets in monetary terms proved to be fraught with difficulties. First of all, to create a competitive advantage, which is difficult to copy by competitors, it does not suffice to have better skilled employees or loyal customers or the right organisational structure but all aspects should be in place. Competitive advantages are the result of a bundle of different intangible assets (see **also the Apple versus Android approach**). This bundling makes it difficult to value separate intangible assets but it also makes it difficult to interpret the valuation. An example of a bundle of human capital is the Virginia Mason - Owens & Minor collaboration, which is supported by mutual trust *and* the specific knowledge in setting up cost pricing systems.

Second, the effect of intangible assets is not necessarily direct. Better skilled employees will not always immediately improve profit. First operations will run smoother which might lead to better and cheaper products. These products might attract more customers which eventually might lead to higher sales and higher profits. Along this path are a number of uncertainties that in the aggregate create a lot of uncertainty about the value of the skilled employees. Whirlpool R&E faced similar problems because the value of developing new knowledge is not easily related to financial performance which made it difficult to compare different R&E projects.

## 7.2 Introduction of non-financial measures

A new approach was necessary. Some firms decided to measure operational performance, product quality and customer performance in non-financial terms. Examples of these measures are cycle time, waste, faulty products or responsiveness to customer demands. These non-financial measures allowed to better measure the performance of the firm in the domain of customers and internal processes. However, the non-financial measures are difficult to compare with each others because they are measured in differ-

ent units. If a manufacturing firm decreases cycle time at the cost of lower quality, it is difficult to decide whether that is a good evolution or a bad evolution. In the end, the firm wants to know what the financial consequences of these changes are. If we know the financial consequences, we can make a trade off between changes in the processes. Moreover, firms also want to monitor whether improvements in the business processes such as lower cycle times are costly to implement and whether these costs are lower than the expected benefits.

This is where the first incarnation of the balanced scorecard comes in as a tool to monitor both the knowledge of the firm, its processes, its performance with customers and its financial performance. The biggest innovation of the balanced scorecard is that a limited set of measures should reflect the strategy of the firm. The initial purpose of the first incarnation of the balanced scorecard is to passively monitor the success of the firm's strategy. The balanced scorecard informs top management about deviations from the planned strategic path so that they can intervene when necessary.

### 7.3 Introduction of causal links and strategy maps

The second incarnation of the balanced scorecard emerged with the introduction of strategy maps. These maps illustrate the causal links between the measures in the balanced scorecard and as such they are a visual representation of the firm's long-term strategy. A causal link indicates that an improvement in one measure (e.g. customer satisfaction) is expected to lead to improvements in another measure (e.g. profitability). The causal link highlights an underlying relation between two measures. The crucial part in the development of strategy maps is the articulation of the firm's strategy. Because strategy maps and the balanced scorecard are a quantitative representation of the strategy it requires more precision in thinking about the strategy than most firms were used to. Firms reported little difficulties in developing the measures however the links between the measures proved to be more a work of art.

The result of strategy maps is that firms no longer use the balanced scorecard just for monitoring the strategy but also for the development and day to day implementation and communication of the strategy. Firms are no longer constrained to compare cost and benefits variances but they can follow-up their performance of the firm in different domains with operational and customer based measures. Because the balanced score-



Figure 7.1: A generic strategy map by Mrgrs123

card is a concise but quantified representation of the strategy, the balanced scorecard is used to discover and improve the activities that are crucial for the strategy.

## 7.4 The future of the balanced scorecard and criticism

### 7.4.1 Risk

There is still room for improvement in the balanced scorecard. At the moment it is not obvious how to introduce risk measures and risk management in the balanced scorecard. Certainly for financial firms risk management is becoming more and more important. However, most current measures of risk such as standard deviations of recent stock prices are at best considered to be proxies for the real thing. Some commentators argued that misinterpretation of volatility measures in Value at Risk calculations contributed to the financial crisis (Tett, 2009). Others have argued that standard deviations and volatility are more than misleading when talking about risk.

Stock prices will always be far more volatile than cash-equivalent holdings. Over the long term, however, currency-denominated instruments are riskier investments [...] That lesson has not customarily been taught

in business schools, where volatility is almost universally used as a proxy for risk. Though this pedagogic assumption makes for easy teaching, it is dead wrong: Volatility is far from synonymous with risk.

—

Warren Buffet

The balanced scorecard has the advantage that it does not need to include risk outcome measures to manage risk. For instance, banks can include regulators as a customer or stakeholder in their balanced scorecard. They can include "regulator satisfaction" as a subjective measure which is linked to a number of process measure of compliance with regulation.

#### 7.4.2 Causal links

A lot of criticism on the balanced scorecard has been directed at the concept of causal links between measures. For instance, the link between two measures might be non-linear. If a firm is perceived as very negative by customers, any improvement in customer satisfaction will probably lead to better financial performance. However, if the firm's customers are already satisfied, the effect of any further improvement on profit might be very limited. Furthermore, some improvements might take time before they lead to better financial performance because human capital sometimes has an indirect effect on financial performance. For instance, hiring more capable employees might initially have a negative effect on profit because of their higher salary and only lead to higher profit when the employees come up with improvements to the production process (Norreklit, 2000). These more complicated relations are harder to model and to visualise.

One possible solution to these kinds of problems is the introduction of new data management and data analysis methods for big data sets. The continuous improvement in IT technology and the use of web-services have led to an explosion of potential interesting data on production and communication between employees to better estimate how the different activities in a firm are linked to each other. For instance, firms have databases on e-mail exchanges between employees which might help them to quantify the level of communication between different departments. Big retailers such as Woolworths and Coles have a vast amounts of consumer purchases based on loyalty cards. They can exploit this information to get a better idea which type of customers are affected by changes in the layout of shops and the product assortment (see also [zdnet.com](http://zdnet.com) for more examples).

### 7.4.3 Bottom-up strategies and incentives

A recurring critique on these type of performance measurement systems is that they assume that the firm, and its management, can to a large extent plan its strategy upfront. If deviations from the intended strategy are observed, managers need to give directions to the other employees how to improve their activities. Others argue that a firm's strategy is determined by the economic circumstances and the actions of competitors and how well the firm reacts to changes in these circumstances.

The employees sometimes know better what to do or they can implement the changes faster. Therefore a grand strategic plan and a balanced scorecard is superfluous (Norreklit et al., 2009). The right way to manage the firm is to develop an incentive plan that forces employees to maximize firm value so that they optimally change their behavior in response to a changing environment and competitor's decisions. In reality firms combine a strategic plan and measurement system with the appropriate incentives. The emphasis on these two systems will depend partly on how much a firm relies on a top-down or a bottom-up strategy

## 7.5 Questions

These questions gives an indication of what you should be able to do after going over this chapter. These questions are indicative of the exam questions with the big difference that the exam will deal with two or three specific, new case studies.

1. Explain how a balanced scorecard can be a formal system that captures specific knowledge in objective, easy to communicate general knowledge. Use the **Fulton County case** as an example.
2. Which companies could benefit most from a Balanced Scorecard, large established companies or small, young companies? Explain your answer.

# Bibliography

- Banker, R. D. and Byzalov, D. (2014). Asymmetric Cost Behavior. *Journal of Management Accounting Research*, 26(2):43–79.
- Bloom, N. and Reenen, J. V. (2010). Why do management practices differ across firms and countries? *The Journal of Economic Perspectives*, 24(1):203–224.
- Davila, A. and Ditillo, A. (2011). Convergent Creativity and Management Control Systems: Managing Stylistic Innovation in Fashion Companies.
- Degraeve, Z. and Roodhooft, F. (1999). Effectively Selecting Suppliers Using Total Cost of Ownership. *The Journal of Supply Chain Management*, 35(February):5–10.
- Degraeve, Z. and Roodhooft, F. (2001). A Smarter Way to Recycle. *Harvard business review*, pages 22–23.
- Gneezy, U. and Rustichini, A. (2000). A Fine Is a Price. *The Journal of Legal Studies*, 29:1.
- Grossman, S. J. and Stiglitz, J. E. (1980). On the impossibility of informationally efficient markets. *The American Economic Review*, 70(3):393–408.
- Hansen, S. and Van der Stede, W. (2004). Multiple facets of budgeting: an exploratory analysis. *Management accounting research*, 15:415–439.
- Hartmann, F. G. (2000). The appropriateness of RAPM: toward the further development of theory. *Accounting, Organizations and Society*, 25(4-5):451–482.
- Helper, S. and Henderson, R. (2014). Management Practices, Relational Contracts, and the Decline of General Motors. *Journal of Economic Perspectives*, 28(1):49–72.
- Hope, J. and Fraser, R. (2003). Beyond budgeting. *Harvard Business School Press, Boston*.

- Horngrén, C. T., Datar, S. M., and Rajan, M. V. (2012). *Cost Accounting: A Managerial Emphasis*. Pearson Prentice Hall, Upper Saddle River, New Jersey, 14th edition.
- Horowitz, B. (2014). How to Ruin Your Company with One Bad Process.
- Jensen, M. and Meckling, W. (1995). Specific and general knowledge and organizational structure. *SSRN Electronic Journal*, pages 251–274.
- Kaplan, R. (2009). Conceptual foundations of the balanced scorecard. In Chapman, C. S., Hopwood, A. G., and Shields, M. D., editors, *Handbooks of Management Accounting Research*, pages 1253–1269. Elsevier Ltd.
- Labro, E. and Vanhoucke, M. (2007). A simulation analysis of interactions among errors in costing systems. *Accounting Review*, 82:939–962.
- Langfield-Smith, K., Thorne, H., and Hilton, R. W. (2008). *Management accounting: Information for creating and managing value*. McGraw-Hill Higher Education.
- Libby, T. and Lindsay, R. M. (2010). Beyond budgeting or budgeting reconsidered? A survey of North-American budgeting practice. *Management Accounting Research*, 21(1):56–75.
- Norreklit, H. (2000). The balance on the balanced scorecard a critical analysis of some of its assumptions. *Management Accounting Research*, 11(1):65–88.
- Norreklit, H., Jacobsen, M., and Mitchell, F. (2009). Pitfalls in using the Balanced Scorecard. *The Journal of Corporate Accounting & Finance*, 20(March/April):59–66.
- Tett, G. (2009). *Fool's Gold: How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe*. Simon & Schuster.
- Williamson, O. E. (1979). Transaction-Cost Economics: The Governance of Contractual Relations. *The Journal of Law and Economics*, 22(2):233.
- Williamson, O. E. (2002). The theory of the firm as governance structure: from choice to contract. *The Journal of Economic Perspectives*, 16(3):171–195.
- Wouters, M., Anderson, J. C., Narus, J. a., and Wynstra, F. (2009). Improving sourcing decisions in NPD projects: Monetary quantification of points of difference. *Journal of Operations Management*, 27(1):64–77.
- Wouters, M. and Wilderom, C. (2008). Developing performance-measurement systems as enabling formalization: A longitudinal field study of a logistics department. *Accounting, Organizations and Society*, 33(4-5):488–516.



# Chapter 8

## Case Study Questions

The links in this section go to the Harvard Business Case website. However, you cannot directly download the cases from the website without paying. A free link is available on [LMS](#).

### 8.1 Case 1: Easy Business: [Harvard Business Case link](#)

#### 8.1.1 Competitive advantage

1. What is the human capital or specific knowledge that give either Cindy or her competitors a competitive advantage?
2. What are the investments and costs that Cindy considers that may give her a competitive advantage?
3. Who are the different economic agents (i.e. the business, the buyers, the sellers, the customers, ...) in the recruiting market and which services do they provide or buy?
4. What would be a good strategy for Cindy?

### 8.1.2 Cost Analysis

1. Perform a cost analysis of Cindy's start-up. Take into account the difference between fixed and variable costs (see p. 5).
2. Based on the cost analysis, what would be a good strategy for Cindy?

### 8.1.3 Hints (Competitive Advantage)

1. If you do not know what human capital or specific knowledge is look for the examples and definitions in the lecture notes. If you are not sure, you should also look up what I mean by a competitive advantage.
2. I interpret investments and costs very broadly. Basically, anything that could cost Cindy money, directly or indirectly. Again, think about what a competitive advantage means.
3. Think about the money flows. Who is paying money to whom for which services?
4. I have a very specific definition of strategy in this unit. Use this definition. Look it up because it may be different from how you think about strategy now or how you have seen strategy defined in other units.

### 8.1.4 Hints (Cost Analysis)

1. I want you to categorise the costs in fixed and variable costs and sum them. The case study tells you explicitly what the definition is of fixed and variable costs. An advanced step is to split up the fixed costs in two categories (I am not telling which categories).
2. Use the costs analysis from question 1 to decide what a good strategy is. I have a very specific definition of strategy in this unit. Use this definition. Look it up because it may be different from how you think about strategy now or how you have seen strategy defined in other units.

## 8.2 Case 2: Charley's Steak House

[Harvard Business Case - Part 1](#), [Harvard Business Case - Part 2](#), [Harvard Business Case - Part 3](#)

### 8.2.1 Variance Analysis

1. Based on the actual data for 2008 in case B exhibit 2, prepare the flexible budget for 2008. That means that you have to adapt the planned budget using the actual gross sales and total customer count.
2. Use the flexible budget to explain the differences between the actual performance and the budgeted plan. What has gone well in unit No. 2 and what has not?
3. Section C shows that Pearson received a bonus of \$5 000. Do you think that Pearson deserved this bonus, should he have received more or less? Should Turner change how he determines the size of the bonus?

### 8.2.2 The Budget Implementation

1. At the end of 2006, Turner notices that the units that are no longer under his direct supervision perform below his expectations. Give a number of reasons why these units might be under-performing.
2. Of the reasons you mentioned in (1) which problems might be solved by the introduction of the operational budget? Explain for each reason why the budget can help. At least for some of the explanations, you will need to use the idea of specific knowledge .
3. Explain to which extent the bonus system for the unit managers at Charley's Steak House relies on objective, general information and to which extent it relies on subjective, specific knowledge.
4. Section C shows that Pearson received a bonus of \$5 000. Do you think that Pearson deserved this bonus? Should Turner change how he determines the size of the bonus?

### 8.2.3 Hints (Variance Analysis)

1. Recall that the flexible budget is the same as the original budget with one difference: you have to adjust the number of units sold. If the restaurant has sold more units than expected, other budget items should be adjusted. If the restaurant has sold less units than expected, other budget items should be adjusted. Be aware of the difference between fixed and variable costs.
2. Use the numbers in your calculations and link them to actual actions by the managers or actual behaviour by customers. Use the numbers to illustrate why an effect was important. Use the description of what happened in the case, to explain what went wrong or what went well.
3. Use the information and your conclusions for question 2 to decide whether the bonus is appropriate. Or there any other considerations for Turner than the budget performance of Pearson?

### 8.2.4 Hints (The Budget Implementation)

1. The difference is that the units are no longer directly managed by Turner. What are the main differences between the new managers and Turner.
2. Go over the problems you have identified in 1. For each one of those, can the budget solve this problem? Recall that the budget has more than one function. One of it's functions is the communication of specific knowledge.
3. If you are not sure, look up the definition and examples of objective, general knowledge and how it differs from subjective knowledge. You will find these in the lecture notes.
4. Now that you hopefully understand the budgeting process in the restaurant and it's purpose, give your opinion on the bonus. Use the specific information in the case and your understanding of the budgeting process together.

## 8.3 Case 3: Whirlpool Research and Engineering Division

[Harvard Business Case - Part 1](#), [Harvard Business Case - Part 2](#), [Harvard Business Case - Part 3](#)

### 8.3.1 The Role of the Budget

1. The budget process consists of two stages for the R&E Division at Whirlpool. For each stage, shortly explain which decisions are being made and what information and knowledge is being used to make that decision.
2. The second stage of the budgeting process creates competition. Explain (1) who is competing, (2) what they are competing for, (3) and who determines who wins the competition. Although it is not stated in the text, try to explain how the competition aligns the incentives of the different employees with the interests of the company.
3. The text indicates that there are problems and difficulties with the initial budgeting approach. Explain what these problems and difficulties are and what the advantages are of the initial budgeting approach.
4. Evaluate the budgeting process at Whirlpool's R&E division. Do you think the benefits of the current system outweigh the costs?

### 8.3.2 The Decision Analysis

1. What specific information and knowledge is incorporated in the allocation decision in Case B Exhibit II, Global Optimum.
2. What potential problems and difficulties with the budget approach are mentioned in the text? Which problems are solved with the decision analysis methodology described in Case B?
3. What specific knowledge is necessary and which (transaction) costs are incurred to perform the decision analysis in Case B?
4. Evaluate the decision analysis methodology for Whirlpool's R&E division. Has the decision analysis made a difference and is it worth the costs you mentioned in (c)?

### 8.3.3 Hints (The Role of the Budget)

1. The decision to talk about two stages is somewhat arbitrary. I want you to focus on two major decision (each with their own ) about how the budget should be

used in the R&E division. So, the starting point is the \$7 million dollar the division can allocate. They make two types of decisions with the \$7 million dollar.

2. I call this competition because there is a limited amount of money and not everyone can get all the funds they need. Competition can be one-sided (e.g. only between buyers) or two-sided (between buyers and between sellers). Once you get a handle on the competition you should think of the competition as two-sided, that is there two types of employees that are competing for the funds in the budget.
3. First identify the problems and difficulties. Once you know what the difficulties are try to explain how the competition in 2 and the two-step process in 1 mitigates some of these problems.
4. If you think there are problems, could they be solved? If you propose any solutions, think critically whether they would be creating any new problems.

#### 8.3.4 Hints (The Decision Analysis)

1. The entire idea of the decision analysis is to take specific knowledge put it into numbers and then let the computer come up with the optimal solution which is called the Global Optimum. Question 1 asks what the specific knowledge is that gets put into numbers. One way to structure your answer is to find one type of specific knowledge per meeting. The knowledge will be mainly operational knowledge about the business.
2. Case A mentions a number of problems with the approach before the decision analysis. Take those problems and think critically whether the decision analysis solves those problems. Do not immediately jump to a conclusion. The decision analysis does not solve every problem.
3. The knowledge is mainly technical knowledge about how to do a decision analysis. You should look up what transaction costs are if you do not remember that. There is a whole section in the lecture notes.
4. Think about how you would know if a new tool has made a difference for the budgeting process. How would you know that Whirlpool has taken the results of the decision analysis into account?

## 8.4 Case 4: Lehigh Steel [Harvard Business Case link](#)

### 8.4.1 Activity Based Costing

1. Calculate the costs per pound for the sample products in Exhibit 4 under the ABC approach. Compare the results with the standard cost results in Exhibit 5. Use examples from the case to explain why there are differences between the ABC results and the standard costs and which decisions Lehigh should take based on your calculations.
2. What is the strategy of Lehigh Steel? That means that you should describe the most important investments that give Lehigh Steel a comparative advantage.
3. Explain why Activity Based Costing is a particularly good fit for Lehigh Steel.
4. How would you incorporate the ABC approach in the calculation of theory of constraint costs? If you cannot find a way to do the actual calculations, describe in words what your approach would be.

### 8.4.2 Theory of Constraints

1. Calculate the costs for the sample products in Exhibit 4 under the Theory of Constraints approach. Compare the results with the standard cost results in Exhibit 5. Use the text to explain why there are differences between the Theory of Constraints results and the standard costs and which decisions Lehigh should take based on your calculations.
2. What is the strategy of Lehigh Steel? That means that you should describe the most important investments that give Lehigh Steel a comparative advantage.
3. Explain why the Theory of Constraints is a particularly good fit for Lehigh Steel.
4. Try to incorporate the Activity Based Costing approach in your calculations in (a). If you cannot find a way to do the actual calculations, describe in words what your approach would be.

### 8.4.3 Hints (Activity Based Costing)

1. Activity Based Costing is a costing method that allocates costs to a cost object (a pound of a product) based on how much those objects need certain activities. So you need to follow these steps
  - Identify the activities
  - Identify how much it costs for one unit of those activities
  - Identify how much each cost object uses each activity
  - Based on this information calculate the cost of the cost object
2. The hint is in the question. Use information and examples from the case study to strengthen your answer.
3. The lecture notes tell you under which circumstances activity based costing is better than standard costing. Explain why the right conditions hold for Lehigh Steel specifically.
4. See the the hints for Theory of Constraint. The most important difference between the ToC and ABC is that ToC assumes that in the short run all but the material costs are fixed. In contrast, ABC assumes that in the long run all costs are variable. You will have to find some kind of middle ground for this question.

### 8.4.4 Hints (Theory of Constraint)

1. Theory of Constraint is described in the case study. It tells you that you need to do three things which are all described the case.
  - Identify the constraint in the production process.
  - Calculate the throughput for each product
  - Calculate the throughput per unit of the constraint
2. The hint is in the question. Use information and examples from the case study to strengthen your answer.
3. The case study text tells you under which circumstances the theory of constraint is better than standard costing. Explain why the right conditions hold for Lehigh Steel specifically.



4. See the the hints for Activity Based Costing. The most important difference between the ToC and ABC is that ToC assumes that in the short run all but the material costs are fixed. In contrast, ABC assumes that in the long run all costs are variable. You will have to find some kind of middle ground for this question.

## 8.5 Case 5: Virginia Mason and Owens & Minor [Harvard Business Case link](#)

### 8.5.1 Just-in-time Delivery

1. Virginia Mason expects just-in-time delivery of Owens & Minor. What are the advantages and the disadvantages of just-in-time delivery for the supply chain as a whole? Give examples from the case of the advantages and disadvantages.
2. How does the new total supply chain cost contract help Owens & Minor and Virginia Mason to streamline the just-in-time delivery? Use examples from the case to illustrate your answer.
3. What are the three most important examples of the role of human capital for the development of just-in-time delivery and total supply chain cost contracts.
4. How easy would it be for Owens & Minor to apply the same contract with other health providers?

### 8.5.2 Contracting

1. What are the advantages and disadvantages of the old cost-plus contract and the new total supply chain cost contract? Illustrate your answer with examples from the case.
2. What are the three most important transaction costs of the development and improvement of the total supply chain cost contract.
3. Give three improvements to the current supply chain that would make it easier for Virginia Mason to switch distributor and for Owens & Minor to apply the same contract with other health providers.
4. How easy would it be for Owens & Minor to apply the same contract with other health providers?

### 8.5.3 Hints (Just-in-time Delivery)

1. First you need to identify what just-in-time delivery is. Important, it is not the contract or any form of cost contracting. Second, the question asks you to identify advantages and disadvantages for the supply chain (i.e. VM and OM together). This means that you cannot identify issues that are an advantage for one company and an equal disadvantage for the other company. If just-in-time is just shifting costs from one company to another, it is not an advantage for the supply chain as a whole.
2. First identify what the supply chain contract is doing. Second, you should figure out which of the disadvantages of just-in-time (see 1) are solved by the supply chain contract.
3. Now you can talk about both just-in-time and the supply chain contract. If you forgot what human capital means, you should have a look back in the lecture notes.
4. You should reflect on your answers in the previous 4 questions to figure out what characteristics the health providers need to have so that Owens & Minor can use the same contract.

### 8.5.4 Hints (Contracting)

1. You should only talk about the two contracts. First, identify the main difference between the two contracts. Second, identify which products are cheaper under the cost-plus and which products are cheaper under the total supply chain cost contract.
2. I only want you to focus on the contract not on just-in-time. If you forgot what transaction costs are you should have a look back to the examples in the lecture notes.
3. In the case study, some people are already talking about changing the contract or changing the just-in-time operations. You can use some of those but you can also come up with your own. Try to make them as specific as possible and think about potential problems with the changes.
4. You should reflect on your answers in the previous 4 questions to figure out what characteristics the health providers need to have so that Owens & Minor can use the same contract.

## 8.6 Case 6: Converse Health System [Harvard Business Case link](#)

### 8.6.1 Question 1

1. Explain in your own words why the Converse Health System integrates hospitals but not most physician practices. You will have to extrapolate from the evidence in the case study and from section 3.2 in the lecture notes.
2. Explain in your own words why the interests of the Converse Health System and the hospitals were not aligned when the hospitals are treated as a profit centers. It is not enough to say that the hospitals are doing something that Converse does not want.
3. What do you think is a good budgeting process for the Converse Health System and the hospitals? Should the hospitals be profit centers or should Converse develop a performance budget (see p3.)? Use the exhibits 4-6 to calculate the transfer prices or the performance budget for the two case mix scenario's in exhibit 6.

### 8.6.2 Question 2

1. On p3. Mahler says: "We also knew that, once we had the kinks worked out, we would need to expand the new budgeting process to include the physician practices. But no one even wanted to go near that one." Why would it be more problematic for Converse to implement the new process with the physician practices than with the health providers?
2. Explain in your own words why the interests of the Converse Health System and the hospitals were not aligned when the hospitals are evaluated based on a performance budget in the new experiment. It is not enough to say that the hospitals are doing something that Converse does not want.
3. What do you think is a good budgeting process for the Converse Health System and the hospitals? Should the hospitals be profit centers or should Converse develop a performance budget (see p3.)? Use the exhibits 4-6 to calculate the transfer prices or the performance budget for the two case mix scenario's in exhibit 6.

### 8.6.3 Hints (Question 1)

1. Section 3.2 discusses the idea of an integrated firm like Apple. In this case, the physician practices are not integrated. Think about transaction costs of integrating the physicians. What incentive system, performance measurement system, cost accounting, budgeting, or other management system would the Converse have to create when they integrate the physician practices.
2. Explain what the hospitals are doing, why they are doing it and why Converse wants them to do something else.
3. There are two problems with the current budgeting approach. Identify those problems first. Do your calculations based on exhibit 6 solve these problems? (The number in exhibit 6 are made up and you cannot combine them with the real numbers in the other exhibits.).

### 8.6.4 Hints (Question 2)

1. The answer is more obvious than you would think. If you think your answer is too obvious you are probably correct.
2. Explain what the hospitals are doing, why they are doing it and why Converse wants them to do something else.
3. There are two problems with the current budgeting approach. Identify those problems first. Do your calculations based on exhibit 6 solve these problems? (The number in exhibit 6 are made up and you cannot combine them with the real numbers in the other exhibits.).