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Insights into the Integration of MCS and Sustainability

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Abstract

This thesis focuses on the integration of management control system (MCS) and sustainability in companies. Some literatures showed a disconnection between the efficiency of sustainability as a success strategy and management control systems. To research this, we aim at answer two questions. What are the challenges that the companies were faced with when they tried to integrate MCS and sustainability? Are there any achievable methods to help companies to better deal with the challenges identified in the first question? Our research foundation is the MCS package framework by Malmi & Brown.

For this purpose, we conducted a multistage literature study about empirical research to identify what challenges that companies were faced with under each control system in the package framework, like cybernetic control system. Next, we tried to find achievable methods to help companies better face the challenges. In the end, we found out 16 typical challenges that companies were faced with and worked out achievable methods for 15 of them.

Our main contributions are twofold. One is that the challenges we have identified can provide a certain company with an insight into the process of integration of MCS and sustainability, especially for a company which newly decides to become sustainable. The other is that the achievable methods that we have come up with can help companies better face the challenges at practical level.

Keywords: Sustainability, Integration, Management Control System, Empirical research

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1 Introduction

This chapter provides readers with an overview of the thesis. It consists of four sections. The first part of background of the thesis project presents the importance of sustainability and the development of the integration of management control system and sustainability. In the next section, general problems and challenges of the implementation of sustainability within the framework of control system are identified and explained. Then the aim and research questions of our thesis are presented, and the outline of the thesis follows.

1.1 Background

Nowadays, the concept of sustainable development has attracted more and more attention of the world (Eccles et al., 2012) and sustainability is regarded as the business paradigm for the 21st century (Garcia et al., 2016). In 1987, sustainable development was defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Later, Elkington (1994) proposed up the framework of triple bottom line (TBL) which directs companies' assessment of their performance through economic, environmental and social aspects. Thus, the trend requires more corporations to focus on improving their competitiveness in economic, environmental and social dimensions at the same time (Taghavi et al., 2014).

According to Eccles et al. (2012), a previous survey compared companies which had been adopting relevant environmental and social policies with those which had not and showed that more companies were focusing on sustainability issues and seeking sustainability-oriented strategies necessary to be competitive into consideration. Furthermore, another study found that companies with high sustainability performed much better than their counterparts over a period of 18 years in stock market and the dimensions of accounting criteria, for instance, return on asset (Eccles et al., 2012).

Even though sustainability from a political viewpoint has many non-business related reasons for its importance, businesses have learned that sustainability can help companies get positive business results. The importance of business-related sustainability mainly lies on following reasons.

Firstly, businesses have much to gain by following the societal trend. It has become evident that shareholders and customers are interested in sustainability due to environmental reasons. An example of how a bad environmental reputation

affects brand value is the accidental oil spill of oil company British Petroleum (BP), which has consequently lost more than 32 million dollars per day due to decreased brand value (International Finance Corporation, 2012).

Another crucial business-related reason for sustainability is cost savings. By cutting down on for example the use of electricity and seeking cleaner production etc., a company can save a lot of money while also gaining greater reputation in the market. An example is Russian chemical producer Kuybyhev Azot (KuAz). By finding ways to reduce the use of electricity and have cleaner production, the company managed to save 9 million dollars in electricity bills per year. This also affected its greenhouse gas emissions, which were reduced by of over 115,000 tons per year, a definite bonus on brand value as well (International Finance Corporation, 2012). According to a 2012 questionnaire by McKinsey, 63% of questioned companies were taking action on reducing energy use in operations and 61% were actively reducing its waste from operations (ed. Bonini, 2012).

According to the same questionnaire by McKinsey, another major reason why sustainability is important is regulatory constraints or opportunities thereof. With countries and politicians more aware of the importance of a sustainable future, regulations are put into action to either punish or reward companies depending on their sustainability progress. An example is part of European Union legislation, whereof the waste producer must pay for the costs of waste management (European Commission, 2008). This is known as the polluter pays principle. Naturally, reducing waste can help reduce the cost.

The challenge of future demographics is the fourth important reason why sustainability, in this case social sustainability, currently attracts more and more attention. Becoming a sustainable company can help corporations survive through prospective risks like considerably lower numbers of labor resources. This is especially evident in the construction sector in European countries, where the amount of available younger workers is little compared to workers of older generations who will eventually retire (Taghavi et al., 2014).

As briefly mentioned above, more and more forces push companies to focus on sustainability, make companies aware of the importance of sustainability and foster people to create more sustainable companies. This is evident in European Union legislation, national legislation and so forth, and it is also evident beyond questionnaires that it has an effect on company abidance. In Sweden, sanction charges have been found necessary to push companies to compliance with its Environmental Code. It was found that before sanction charges were introduced, compliance with the Code was low (ed. Lindh, 2018).

The European Union has put forward a goal to become sustainable by 2030. This means that its member states will be monitored and coordinated toward its sustainability goals, also affecting any companies residing in its member states. In addition, EU is seeking to put external pressure on the rest of the world, to help them "catch up" (European Commission, 2019).

As some organizations' leaders have become more aware of a wider range of sustainability relevant challenges (Unerman & Chapman, 2014), more organizations and managers currently try to implement sustainable objectives by integrating management control systems (MCS) and sustainability development. What's more, the integration of sustainability in general into MCS are addressed in MCS research (Guenther et al., 2016). From a theoretical perspective, it seems reasonable that companies align their behaviors with principles of sustainable development by integrating sustainability with their MCS. In fact, some empirical research (Vitale et al., 2019; Keeble et al., 2003; Pederse & Neergaard, 2008; Cramer, 2005; Lueg et al., 2015) showed that the case companies have done similar things and part of them have performed relatively better than before. However, to date, in the field of management control system (MCS), research is somewhat heterogeneous and fragmented (Guenther et al., 2016) while integration of sustainability and MCS is view as an emerging theme by Berry et al. (2009). There are still some doubts of the concept of sustainability and problems hidden the process of integration of MCS and sustainability. With the awareness of the importance of sustainability, companies are still faced with a long way towards sustainable future.

1.2   Problems

Although sustainability has become more important than ever before, some people doubt that it is only a beautiful concept and as pointed out by Maas et al. (2016), in the literature regarding sustainability much has been written about "why" companies are involved in sustainability issues but few focused on questions about "how". Questions of "how" here mentioned are practical, for instance, how companies can translate their sustainable goals into actions through suitable assessment, improving management control systems and reporting (Maas et al., 2016).

Furthermore, there are some negative findings of the integration of MCS and sustainability. As pointed out by Peter et al. (2016), there seems a disconnect between the efficiency of sustainability as a success strategy from the perspective of management and the degree to which companies insert sustainability into their business strategy map and plans. Similarly, Gond et al. (2012) emphasized the gap between theory and application of the integration of MCS and sustainability as well. They pointed out that little is known about the process of how MCS contribute to a deeper integration of sustainable goals in the organization.

Behind the disconnection discussed above, companies are faced with some specific challenges in the progress of the implementation of sustainability.

From an international perspective, Peter et al. (2016) identified a challenge from different cultural attitudes towards sustainability which have an effect on the

integration of MCS and sustainability objectives. For example, Swedish managers tend to regard sustainability as the right thing to do, while managers from the United States prefer to view it more from a perspective of risk management or cost reduction (Peter et al., 2016).

Furthermore, the empirical study conducted by Peter et al. (2016) shows that within the interface of sustainability and MCS, the company was faced with a problem of unclear goals or KPIs settlement. KPIs settlement is a typical challenge faced by companies. Meanwhile, they found that the methods for measuring the costs and benefits for sustainability initiatives were only starting to develop (Peter et al., 2016).

With respect to measurement, Arjalies & Mundy (2013) found difficulties in measuring return on CSR investments in many companies and they think it may be one reason for the absence of dedicated CSR budgets in some companies.

According to the Ivey Business Journal (2011), companies do not know how to best motivate employees to undertake sustainability initiatives. This motivation could be extrinsic rewards, for example monetary incentives, or by finding ways for the employees to receive intrinsic rewards. 33% of respondents in the McKinsey questionnaire excluding companies that are leading in terms of sustainability, view a lack of incentives that are tied to performance on sustainability issues is a problem. This number is 21% with companies that are sustainability leaders (ed. Bonini 2012).

Another challenge was identified in the same article in the Ivey Business Journal (2011), sustainability managers want to know exactly how returns on sustainability investments can be measured and seen, however, sustainability-related investments usually require longer time to pay off and are considered as long-term investments.

To sum up, with the background that corporate sustainability has captured the attention from the world in the last decades (Eccles et al. (2012), there is still a gap between conceptualization and application, thus resulting in various specific challenges faced by companies.

1.3   Aim and objectives

The objective of this thesis is to have a better understanding of the integration of MCS and sustainability. Meanwhile, we can gain a deeper understanding of relevant concepts of MCS, sustainability and the integration of both. On the basis of the trend of sustainable development and existing challenges we discussed above, through the research, we want to find out what challenges that companies are faced with and if we could find some achievable methods to help firms to better face them.

With the purpose clarified above, the first step of our research is to identify challenges at practical level as much as possible. As we presented above, the case companies (Peter et al., 2016; Arjalies & Mundy, 2013) were faced with different kinds of challenges when they tried to embed sustainable issues into their existing management control system. And the challenges usually existed in each typical dimension of the control system, like measurement and incentives. Then we are trying to deal with the challenges and conclude some achievable methods for them. Thus, our thesis will contribute to help companies manage the integration of MCS and sustainability better than they did before.

Hence, we are trying to answer the two questions below in our research:

- What are the challenges faced by the companies when they tried to integrate MCS and sustainability?
- Are there any achievable methods to help companies to better deal with the challenges identified in the last question?

In order to look into the two empirical questions, firstly we need to choose a kind of framework of MCS which will be the foundation of our following analysis. Then within the framework and based on a large number of empirical researches, we are going to analyze challenges which the case companies were faced with.

1.4   Outline of the Thesis

The thesis is structured as follows. In the Chapter 2, the details of methodology that we have adopted are explained. In the following Chapter 3, theoretical concepts and frameworks which are the most relevant to the topic in this thesis are reviewed. Then, the Chapter 4 provides readers with the process of our identifying challenges from previous empirical studies for our first research question. Also, our analysis, discussion and relevant findings for the second research question are shown in the same Chapter. In the Chapter 5, what we have got for our two research questions are concluded in the table to provide readers with a holistic and clear view of our research. The thesis ends with the Chapter 6 which shows our main contributions, the implications, limitations and suggestions for further research.

2   Methodology

This chapter provides readers with the details of methodology that we have adopted. It begins with the whole process of how we design our research which could be viewed as an exploratory process. In the following part, we explain how we select cases to do our research and three main methods that we adopt to collect data for the following analysis part. Then how we present the data is illustrated in the part of data presentation. The last part reveals the limitations of our research.

2.1   Research design

Although the design of our research is quite straightforward, our whole research process is exploratory. As pointed by Berry et al. (2009), integration of sustainability and MCS is view as a quite emerging theme.

To answer the two empirical questions above, we need the support of theories and frameworks. First of all, we review the concepts and frameworks of MCS and sustainability. As mentioned above, to date, in the field of MCS, research is somewhat heterogeneous and fragmented (Guenther et al., 2016). In the process of reviewing, we found that in different frameworks of MCS, similar challenges with sustainable issues could be defined very different. And in various empirical research, there are many companies from different countries and industries. Then we realized that the difference between MCS frameworks will result in making our research more complicated without bringing value creation. Thus, to better understand how companies were faced with the challenges, we chose the MCS package by Malmi & Brown (2008). The strength of the package is significant for it offers a very broad understanding of MCS and make it possible to encompass different control approaches such as cybernetic and cultural controls (Guenther et al., 2016).

Furthermore, we go on with reviewing the existing concepts of embedding sustainable issues in MCS, for example, management control for sustainability. In the process of reviewing literature, we identify several typical theorization and frameworks regarding MCS, sustainability and the integration of both. The details will be illustrated in the literature review part.

Later, we move on to the next step, reviewing empirical research. We review a large number of empirical cases and conclude challenges that the case companies were faced with in practical. Until this step, our first research question can be answered.

Then our next step is to try to find methods to help companies deal with the challenges. In this step, our analysis is based on former literature and different data we gathered. The process of data collection will be illustrated in the following part. Ultimately, we come up with some achievable methods, in our opinion, which could help companies to react to the certain challenges. Then our second research question can be answered.

However, it is worth mentioning that in the whole process of our research, we try to insist on holding an objective view to conduct our research.

2.2 Data collection

In our research, we use three methods to collecting data. Firstly, a multistage literature study is conducted to select the cases that we are going to review. The process of selection will be illustrated below. And for the analysis part, we adopt two other methods of interview and questionnaire to gather primary data.

2.2.1 Selection of cases

Due to time limitation, we did not conduct a systematic literature review of empirical research. Instead, we finished a multistage literature review on the basis of earlier literature reviews (Guenther et al., 2016; Lueg & Radlach, 2016; Aziz et al., 2015; Berry et al., 2009; Bebbington, 2000). To retrieve empirical research of integration of MCS and sustainability, we initially searched LUBsearch by using different keywords like literature review, integration, management control system, sustainability, empirical research and sustainable business etc. After checking search outcomes, we found three relevant articles and we got two more relevant literature from reference list of the three articles (Appendix 1). By checking these papers step-by-step, we collected 66 research articles regarding the topic of our thesis and checked them. We scanned all the texts and discarded 15 research which does not meet the requirement that it must be empirical. In the end, we collected 51 empirical research which are quite related to our purpose (Appendix 2).

2.2.2 Interview

Interviews are quite contributive to our analysis part. Because we found that in the interview process we could discuss relevant issues well focused on the topic of our thesis. To gain a holistic view, we interviewed people with three different kinds of professions.

Firstly, we considered practitioners with experience in the area of implementation sustainability issues. In this regard, we found four interviewees in total since it is a little bit hard to get access to more people involved in this area. The information of the first two person is presented in the table below.

Code	Name	Position	Company
A	Yang	Manager in measurement department	Blogis Holding LTD
B	Susanne Andersen	Senior manager, Corporate Responsibility	Arla Foods AMBA

Interviewee A (Yang) is a manager in measurement department from China who has relevant working experience more than 10 years. Interviewee B (Susanne Andersen) is a senior manager on corporate responsibility in Arla Foods AMBA. She was asked how intrinsic and extrinsic rewards for employees are used as tools to reach sustainability goals. The answers were used in chapter 4 of rewards and compensation & sustainability.

Secondly, we tried to contact scholars who have conducted empirical research before in order to discuss challenges identified in their study with them directly. One of the authors in one empirical research focusing on management control for sustainability accepted our interview invitation. In reality, we discussed further beyond their own research.

Code	Name	Position	Research area
C	Peter Beusch	Senior lecturer	Management control for sustainability: the development of a fully integrated strategy

Thirdly, in terms of sustainability, we valued voice from nongovernmental organizations (NGO) who play an important role in the development of sustainability. We found a suitable interviewee who worked in NGO before and now is a student in Lund University studying sustainability.

Code	Name	Position	Research area
D	Guyu Dai	Student (a worker in NGO before)	Sustainability

As for different interviewees, we prepared different interview questions according to their area and experience. And we adopted different forms of interview including face-to-face interview, phone call and emails due to realistic reasons. We listed detailed information of interview in the appendix 3.

2.2.3 Questionnaire

Questionnaire is only used for the analysis part of key performance indicators (KPIs) settlement. It is used to identify the start point for a company to develop KPIs for sustainable development. The questionnaire only comprises one multiple question (Appendix 4) and was sent to ten scholars who are experts in this area.

2.3 Data presentation

Following the structure of the package framework by Malmi & Brown (2008), we look into our two research questions under each control system in the framework. And we present what we have found from data collection mentioned above in the chapter 4.

In chapter 4, under each control system, we identify typical challenges from empirical research and present them in a table. Meanwhile, we define each challenge with a specific theme both to make it easier for readers to understand and for us to expand our discussion in the following part. The classifications of the challenges are mainly based on the specific content of them. In the following part of findings, we show what we have found from data collection. And direct quotes are used to illustrate interviewees' opinions correctly.

2.4 Limitations

We conduct a qualitative research with the purpose of looking into the integration of MCS and sustainability. We try to follow the principle of being objective, review cases as much as possible and listen to different voices from various organizations. But in the process of our research, there are still some limitations of three aspects presented below.

First, in our qualitative research, the subjectivity of researchers and interviewees could be the potential risk for the outcomes in the end.

Second, the cases that we have selected and reviewed cannot represent all the situations where companies will meet challenges of the integration of MCS and sustainability. We have tried to review cases as much as possible. But due to the time limitation and limited cases we have found, it is impossible for us to review cases that cover all potential challenges. Meanwhile, the empirical cases that we have reviewed focus on companies from different countries and industries. The characteristics of certain countries and industries could have impacts on challenges faced by the companies as well.

3 Literature Review

This chapter presents main theories and frameworks that the thesis focuses on and referred to. The three sections have a clear logic and emphasize the core aspects in the integration of MCS and sustainability.

3.1 Management Control System

Management control has been viewed historically as an important part of the strategy process (Simons, 1994). Until now, a large number of conceptualizations and frameworks of MCS have been proposed up (Anthony, 1965; Merchant & Otley, 2007; Malmi & Brown, 2008; Ouchi, 1979). A management control system, broadly speaking, is designed to help an organization adapt to the environment in which it is set and to deliver the key results desired by stakeholder groups, most frequently concentrating upon shareholders in commercial enterprises (Merchant & Otley, 2007). In various literatures, what MCS is and what constitute MCS are discussed and defined from a variety of perspectives, for example, managers or employees.

In earlier discussion, Anthony (1965) separated the strategic planning process and the management control process. He defined management control mainly from the perspective of managers which is the process by which manager assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. Simons (1987a) also defined management control systems from the same perspective as Anthony did. In Simons' opinion, MCS could be regarded as the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities.

Later, Merchant and Van der Stede (2007) defined management control from the perspective of directing employees' behavior. They pointed out that management controls are necessary to guard against the possibilities that people will do something that the organization does not want them to do or fail to do something they should do (Merchant & Van der Stede, 2007).

Other than two typical perspectives mentioned above, in the development process of MCS, some authors started to think of it as a package which had existed for a long period. One typical reason to explain it is that MCS do not operate in isolation (Malmi & Brown, 2008). In this regard, Malmi & Brown (2008) extended existing definitions like what Anthony (1965) defined before and suggested the use of the concept of management controls or MCS rather than organizational controls or

organizational control system to include controls that are not only directed at employees. They interpreted that management controls include all the devices and systems managers use to ensure the behaviors and decisions of their employees that are consistent with the organization's objectives and strategies but exclude decision-support systems. As Guenther et al. (2016) emphasized, the strength of this framework is that it offers a very broad understanding of MCS and make it possible to encompass different control approaches such as cybernetic and cultural controls. Also, the package framework by Malmi & Brown (2008) can help to diminish the threat of model under-specification (Lueg & Radlach, 2016). Consequently, they are the reasons why we chose this framework as the foundation of our research.

In the MCS package by Malmi & Brown (2008), there are five types of controls which are planning, cybernetic, reward and compensation, administrative and cultural controls. Planning control system consists of action planning and long range planning (Malmi & Brown, 2008). Action planning includes goals and actions for immediate future and long-range planning comprises goals and actions for longer period. Cybernetic controls include budgets and measurements which are financial, non-financial or hybrid. It has five significant characteristics, the fifth of which is to help the company modify the system's behavior or underlying activities (Malmi & Brown, 2008). Reward and compensation controls focus on motivation and increasing the performance of individuals and groups within the organization (Bonner & Sprinkle, 2002). Administrative control is used for directing employee behavior (Malmi & Brown, 2008) and consists of governance structures within the firm (Abernethy & Chua, 1996), organization structure and policies and procedure. Cultural controls contain three aspects which are value-based controls (Simons, 1995), clan controls (Ouchi, 1979) and symbol-based controls (Schein, 1997). The cultural control system is set in order to be shared by employees in the certain company and in turn influence their thoughts and actions (Malmi & Brown, 2008).

In the following part, research focusing on each component in the package with sustainability will be conducted with the purpose of identifying challenges faced by companies. It is worth mentioning that the strength of this MCS package sometimes would be a disadvantage because of some overlaps between certain control systems. For instance, planning controls comprise the standards to be achieved with respect to the goals and the behavior expected, while cybernetic controls include standards of performance. The clash makes us feel confused sometimes when we try to classify the challenges. What's more, rewards are often linked to cybernetic controls, but it is a separate section in the package framework (Malmi & Brown, 2008).

3.2 Sustainability Development

In terms of the concept of sustainability development, there are various similar terms used, for example Corporate Sustainability (Dyllick & Hockerts, 2002), Sustainable Business and Corporate Social Responsibility (CSR), where the latter by some is considered different due to its focus on philosophical ideas such as morality, ethics and norms (Ashrafi et al., 2018).

According to Dyllick & Hockerts (2002), Corporate Sustainability is defined as meeting the needs of a firm's direct and indirect stakeholders, such as shareholders, employees, clients and pressure groups by focusing on improving corporate social, environmental, and financial performance in a balanced way (Elkington, 1997; Holton et al., 2010). The three dimensions which are economic, environmental and social mentioned here were summarized by Elkington (1994) in the framework called the triple bottom line (TBL). Bansal (2005) thinks on the one hand, the three dimensions are interdependent and on the other hand they can reinforce each other.

An adoption of TBL framework by the University of Michigan (2002) describes each of the focus areas as follows.

The social area covers the standard of living, education, community and equal opportunity. The financial performance area covers cost-savings, economic growth and research and development. It focuses on the bottom line and the flow of money. The last dimension, environmental area, covers the use of natural resources, environmental management and pollution prevention. Specific examples could be energy consumption and fossil fuel consumption.

In addition to any positive effects on societal and environmental issues, it has been shown to also have a positive effect on business-related elements such as risk-management and reduced costs (Azapagic, 2003).

The implementation of corporate sustainability has not been trivial however. Holton et al. (2010) found that the British concrete industry faces various problems when implementing sustainability. Of these problems are the rising energy costs due to expansion of the firm, and then the need to reduce carbon footprints. This kind of problems facing any traditional company seeking to apply corporate sustainability have led to two different views, the "traditionalist" view, which is that any of the problems facing companies as nothing more than financial burdens that only reduces competitiveness, and the "revisionist" view which is that improving environmental and social performance could lead to a range of business benefits. (Holton et al., 2010)

Dunphy et al. (2003) published a table of the phases in development of corporate sustainability in 2003 in an attempt to keep hopes high that even companies that are far from sustainable will eventually become sustainable. While they are not

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solutions to the unique problems that face companies when implementing corporate sustainability, it shows a roadmap on the implementation that works universally.

The table states that the first (1) phase of implementation is rejection. In this phase, the company takes no responsibility of its human resources or its natural resources. This can be considered the worst case scenario. The next phase (2) explains the organization as non-responsive to problems with its human resources and natural resources, with financial and technological factors dominating. In the third (3) phase the company does undertake some compliance, but mainly as an exercise of risk-reduction, as a solution to damaging negative publicity or at risk of prosecution. The fourth (4) phase, the organization seek compliance where cost-reduction can be achieved. In the fifth (5) phase the organization considers proactive environmental strategies as a competitive advantage. In this phase, economy is still the driver. In the sixth (6) and final phase, the organization becomes an active promoter of ecological sustainability and its practices toward a sustainable environment are done not only because it benefits the organization, but also because it is considered the right thing to do. It has become a norm.

An empirical study (Holton et al., 2010) of four companies in the UK's precast concrete industry found that the focus in all four companies had been on improving their environmental performance, and not their social performance. This was found to be mainly due to environmental legislations facing the precast concrete-sector. It proves the power politicians have on the matter of sustainability. All four companies were, according to the study, in 5. Phase in the development of sustainability. It gives an idea to how hard it is for companies to actually change towards sustainability, and it shows that even companies that are far in the change still might need a push from government legislation. However, the study also showed that each company had found business benefits with the change, supporting the previous mentioned "revisionist" view.

As most organizations are controlled by leaders, they undoubtedly play an important role in the development of sustainability. Ofori and Toor (2008) believe leaders to be the very key to success in reaching sustainability. However, leaders have also been found to slow the embracing of sustainability due to lack of understanding of the issues and/or being clueless on how to develop the required strategies to move forward (Doppelt, 2003).

In practical, sustainability is viewed by leaders as a beneficial item for their stakeholders. In the study conducted by Opoku & Fortune (2011), leaders are aware of the benefits of a sustainable business, such as gaining a competitive advantage and having a good business case. One leader noted that sustainability is good for business, the client and the environment. Another sustainability driver is to attract and retain good graduates into the company, while another said that what drives this company to pursue sustainability is to be a leader in the built environment, gain competitive advantage and be more efficient (Opoku & Fortune, 2011).

3.3 The Integration of MCS and Sustainability

In the past, most of companies mainly focused on the economic and financial goals and objectives when measuring their performance. However, empirical studies have shown that good environmental performance does not conflict with companies' financial goals and the same holds for other issues of sustainability, such as social issues (Guenther et al., 2016). As some organizations' leaders have become more aware of a wider range of sustainability relevant challenges (Unerman & Chapman, 2014), more organizations and managers currently try to implement sustainable objectives by integrating MCS and sustainability development.

The integration of environmental and economic activities leads to the exploitation of common grounds and avoids, at least to a certain extent, the need to prioritize one type of activity over another when resource limitations would call for such choices (Porter & Van der Linde, 1995).

In earlier literature, Berry et al. (2009) pointed out that relatively little attention had been paid to control and sustainability and they regarded it as an emerging theme. However, some theorizing studies have been conducted to look into the integration of sustainability within MCS (Gond et al., 2012; Simons, 1995). In the literature on theorizing the integration of strategy and sustainability, Gond et al. (2012) emphasize two uses of MCS for strategy-making on the basis of Simons (1995) levers of control (LOC) framework. The two uses include diagnostic use and interactive use. In the Simons (1978b, 1990, 1991a, 1991b, 1992) earlier studies, he proposed concepts of four types of management control systems which are belief systems, boundary systems, diagnostic control systems and interactive control systems. Belief and boundary systems worked as formal systems while diagnostic and interactive systems worked as formal feedback systems. The reason why Gond et al. (2012) focused on two levels of controls from the LOC framework of Simons (1995) is that they think these two can identify configurations of control systems and then theorize on an organization's capacity to integrate sustainability into strategy. Other than choosing control levels, in order to clarify the processes whereby MCS and sustainability control system (SCS), Gond et al. (2012) also defined three dimensions of integration which encompass technical, organizational and cognitive dimensions.

On the basis of these two controls uses and the definitions of three dimensions of integration, Gond et al. (2012) proposed eight organizational configurations relating to integration of MCS and SCS and to their specific uses. Accordingly, they defined technical integration as the necessity of considering each practice of sustainability control in management control systems. Organizational integration is defined as to the organizational dimensions that may or may not be comprised in MCS and SCS and point to actors' practices in relation to both diagnostic and interactive control systems (Gond et al., 2012). Meanwhile, they insisted that a

complete overlap of both management and sustainability control systems should also be reflected in shared cognitions among the managers working on mainstream strategy or control and sustainability. In terms of compensation, Arjalies and Mundy (2013) claimed that appropriate compensation schemes are similarly essential if managers are to be encouraged to undertake CSR activities that enhance performance, particularly where these may conflict with the attainment of financial goals.

Other than an overall view above, in the process of integrating MCS and sustainability, there are many specific themes attracting researchers' attention. For instance, compensation and measurement. In terms of compensation, Arjalies & Mundy (2013) claimed that appropriate compensation schemes are similarly essential if managers are to be encouraged to undertake CSR activities that enhance performance, particularly where these may conflict with the attainment of financial goals. In the part of their findings, Arjalies & Mundy (2013) pointed out that measurement of CSR activities is an element of great importance for all the companies that were involved in their study, not least because it can help to increase the visibility of their CSR behavior to their main stakeholders. Meanwhile, several respondents in the research noted the difficulties involved in measuring the financial benefits of CSR (Arjalies & Mundy, 2013).

However, the MCS generally described are traditionally developed focusing on the economic goals of organizations and improving economic performance (Gond et al., 2012). Although the importance of specific themes is pointed out, at a practical level, there are always some challenges, problems or conflicts when organizations try to translate sustainable objectives into their management control systems or strategy. Such challenges will be discussed and analyzed in the following part.

4 Analysis and Discussion

This chapter provides readers with details of our analysis, including challenges that we have identified and the findings in our research. The structure of this chapter is based on the package framework by Malmi & Brown (2008). In other words, we analyze and discuss our two research questions under each control system component in the package framework. Challenges identified are classified under specific themes according to the content to make it easier for readers to follow. Under each control system, following the challenges identifies, there are our analysis and discussion about how to help companies face the challenges by different means such as interview.

4.1 Planning control & Sustainability

4.1.1 Challenges

By reviewing empirical cases, we try to look deep into the relationship of planning controls and sustainability and identify what challenges that companies were faced with. We found out that companies are faced with common challenges within the process of key performance indicators (KPI) settlement.

As we explained above, in some theoretical research (Lueg & Radlach, 2016), the development of KPIs is regarded as a part of cybernetic control. In our opinion, as mentioned above, there is an overlap between planning controls and cybernetic controls. Furthermore, KPIs function as important bridge between goals and operations, we will discuss from broad perspective (long-term goals) to narrow one (KPIs). And short-term goals are included in the discussion as well. Objectively, goals regarding sustainability are usually set in a long period and thus requires a long-term planning, especially in the environment dimension. Thus, it could be much more difficult for corporations to set goals in social and environmental dimension than financial aspect, in line with three dimensions in TBL approach.

To make goals feasible, companies usually set KPIs in accordance with their long-term or short-term goals. However, in reality, the development of KPIs for integration including sustainability within organizations is not easy (Keeble et al., 2003). From some empirical study, we found that they were faced with some typical questions in most cases.

In the empirical study conducted by Adams & Frost (2008), they examined the process of developing KPIs for measuring sustainability performance through interviewing four British companies and three Australian companies. From their case companies, they found out two main challenges: (1) the adaptation of KPIs to other geographical regions with different cultures and values; (2) difficulty in quantifying performance, especially regarding social issues that are of great importance to their stakeholders (Adams & Frost, 2008). In terms of the first challenge, overseas businesses often meet such things. For instance, some kinds of KPIs they set are totally not inappropriate or irrelevant in some regions or areas (Adams & Frost, 2008). As to the second one, a similar problem was noticed in the study of Peter et al. (2016) that their case company was faced with a problem of unclear goals or KPIs settlement within the interface of sustainability and MCS. Also, in the research focusing on 19 companies in Dutch industry, they pointed out that it was not clear for a company which indicators could give them a representative picture of social issues (Cramer, 2005).

Furthermore, we identified other challenges of TBL framework. Firstly, between environmental and social dimensions, cases show that more companies perceived the impacts of their behavior on environment. But there are still some concerns regarding the environmental dimension.

In the study of Pondeville et al. (2013), they stressed the challenge from uncertain environment which may function as brakes on the development of planning controls. For instance, some unforeseen challenges in the business market, like changes in policies or new threatens from competitors, may make the company fail to follow their sustainability plans and goals. As to social responsibility, Durden (2008) conducted a case study and revealed a potential risk because the case company did not match stakeholders with particular social responsibility goals. Thus, if social responsibility goals had been developed was unclear. The same challenge was identified in the case organization studied by Durden (2008), they pointed out that the company did not link particular stakeholder groups with defined social responsibility, which resulted in increasing uncertainty. As pointed by Keeble et al. (2003), it is very essential for an organization or company to have thorough involvement of people who will be accountable for specific accountability.

Other than challenges recognized above, there is some similarity in the concerns regarding KPIs selection in the cases mentioned above. It is the balance of three dimensions in TBL. The situation where the development of social and economic indicators trailed behind environmental KPIs is much common in reality (Adams & Frost, 2008). Within the three dimensions, it was mentioned that if a company keep social and environmental issues as separate things, then in difficult times, they are something that can be cut easily (Peter et al., 2016). We concluded challenges discussed above in the table below.

Case	Theme	Main Challenge
Cramer (2005)	KPIs Settlement	The development of KPIs
Adams & Frost (2008)	KPIs Settlement	The adaptation of KPIs to other geographical regions Difficulty in quantifying performance
Pondeville et al. (2013)	TBL(Environmental dimension)	Uncertain environment
Durden (2008)	TBL(Social responsibility)	Match stakeholders with particular specific socially responsible goals
Adams & Frost (2008)	TBL(Balance)	Social and economic indicators trailed behind environmental KPIs

Six challenges identified above are part of the answers for our first research question. Then to answer the second research question, our next step is to work out with achievable methods for companies to react to such challenges. We classified the challenges above in two categories: KPIs settlement and TBL. Interview and reviewing previous literature are main methods we have adopted to research them and our findings are presented in the following part.

4.1.2   Findings regarding TBL

Among the three dimensions in TBL, the challenges identified above mainly focus on environmental and social issues. A former worker in NGO (interviewee D) and a manager (interviewee A) working in the measurement department shared their opinions with us.

With respect to the issue of uncertain environment, our interviewee A stated his opinion on it.

"The uncertainty in the environment is objective……For companies, referring to their competitors or industry-leading companies could be a helpful way to deal with the uncertainty in the external market."

In his opinion, he recognized such kind of uncertainty as objectively existing. In other words, there is no useful ways for companies to eliminate the uncertainty. However, uncertainty in the environment may have a negative effect on the

process of long range planning and action planning. However, we believe that taking what other companies do into consideration is essential. And the main prerequisite is that those companies are seeking sustainable goals as well. By doing this, it at least can help companies identify unforeseen changes in the environment not too late. Sometimes, managers who have good feelings in business could find some similarities hidden behind other companies' behavior and thus anticipate a trend in the near future in the market.

The next challenge is regarding social responsibility. In each specific company, every stakeholder has their personal concerns which should be considered by the company properly (Cramer, 2005). However, from case studies, not linking particular stakeholder groups with certain social responsibility may result in raising uncertainty that if relevant goals have been developed is unclear. We think establishing a system for linking stakeholders and responsibility could help to solve the problem. And in accordance with the system, there should be someone to track the linkage between particular stakeholders and certain goals for social responsibility. Thus, it could be possible for companies to confirm whether social responsibility goals have been developed well.

The last challenge is regarding the balance of three dimensions in TBL framework. Actually, to find a balanced way to improve social, economic and environmental performance is the basic goal of corporation sustainability (Elkington, 1997; Holton et al., 2010). However, it is proven that it is not easy to reach the basic goal for companies. In this regard, interviewee C shared his opinion with us:

"To this topic, maybe I would almost say not to balance. I would say that balance is like an outcome but the verb balancing presents the process of the activity ... I would like to say the balance is much impossible to gain from the perspective of triple bottom line…Management and employees need to find ways how to do it good enough. So do the best they can but we cannot win, win, and win all the time."

It is noted that seeking the balance of three dimensions in the TBL framework could not be viewed as a static outcome. In contrast, the balance of TBL is dynamic. For the companies which viewed it as a challenge, it would be better for them to change the perspective. The balance of the three dimensions in TBL framework means a company best distribute their resources at a particular time. And it is obvious that what a company should do is to do their best. Interviewee C added:

"Somehow you have to rank at certain times and in another time, you may have to make a different ranking."

4.1.3   Findings regarding KPIs settlement

The importance of KPIs has been proven and emphasized, but how could companies identify good and clear KPIs for their development? In terms of this challenge, interviewee A said:

"The main reason why KPIs are unclear is that developers did not follow main characteristics of their operations in the certain company……what's more, unclear KPIs also represent that the process from business strategy to plans and budgets is not clear. KPIs must support the medium term and long term goals in the company. And I think there are two basic requirements of KPIs settlement. One is that they could be translated into practice. The other is that they could be quantified and they can fit management tools like strategy map and BSC. "

In-line with his opinion and what we have found in empirical cases, we think it is essential to identify core drivers of KPIs settlement before we start to think how to face it. In the process of reviewing empirical research and studies, we checked different process of KPIs development in different companies which are from different industries (Keeble et al., 2003; Holton et al., 2010; Adams & Frost, 2008; Vitale et al., 2019; Eccles et al., 2012). We found out that there were some similar core drivers of KPIs settlement in different companies which may be helpful for those companies that want to become sustainable or are faced with some typical challenges in this area. In this regard, we concluded six core drivers of KPIs settlement as follows.

International recognized standards In the planning control system, we believe that international recognized standards could be regard as a significantly important factor. When we discuss an issue with A, a former practitioner in NGO, she stated that

 "When a company decides to consider sustainability-related strategies and become sustainable, generally they will get confused about abstract sustainable goals at the first step."

International standards, in our opinion, could guide those companies to think sustainable issues with real situations. What's more, according to Keeble et al. (2003), international recognized standards play an important role in making companies aware of appropriate KPIs. There are many different kinds of standards all over the world. For instance, ISO 9000, ISO 14031, the Global Reporting Initiative (GRI) and the Global Compact etc. In some extreme cases, there are some companies developing approach to managing for sustainability just due to the pressure from standards or legislation from governments or NGOs, for example, environmental regulations (Holton et al., 2010).

The corporation's commitment in its statement Nowadays, due to some purpose like gaining more positive business brand in the market, leaders or managers may make a commitment of taking social or environmental responsibility. However, in reality, there are few companies which are born with a broad-based commitment regarding sustainability issues (Eccles et al., 2012). So, given that

the leadership in the company intend to create a more sustainable company, there are usually some commitments made by them. The commitments will drive the process of setting goals and KPIs since corporations need to keep their behavior in accordance with the commitments. Actually, the process of making commitments and the process of KPIs settlement can reinforce each other in practical. The commitments made by leadership can enable the company to integrate sustainability into its core business functions (Eccles et al., 2012) and thus foster goals and KPIs settlement.

Reporting needs To date, the movement towards integrating sustainability issues in reporting has been proven by the publication of more comprehensive corporate sustainability reports supported by guidelines (Adams & Frost, 2008). Nowadays, both scholars and practitioners have agreed that corporations cannot convey a holistic overview of their real value via traditional ways of disclosing (Vitale et al., 2019). In-line with this, taking requirements of new type reporting into consideration will help a lot. On the one hand, some companies choose to become sustainable mainly because of reporting requirements in the business environment. For example, some companies release integrated reporting each year and thus take requirements from the International Integrated Reporting Council (IIRC). It is reasonable that those companies consider reporting needs when they set goals and KPIs. On the other hand, reporting could be a good form to show the outcome of the efforts made by companies in the area of sustainability. Thus, considering needs of reporting can help companies to show outcomes to stakeholders and the public better in the report.

Stakeholders' suggestions and expectations Stakeholders' demands play an important role in the process of deciding KPIs. Eccles et al. (2012) introduced a case that some companies ignored stakeholders' expectations and later met a crisis. Then they began to realize the importance and benefit of considering key stakeholders' concerns and expectations (Eccles et al., 2012). Furthermore, Keeble et al. (2003) also emphasized building dialogue with key stakeholders in their KPIs settlement experience. They viewed the process of identifying stakeholders' demands as critical aspects of indicators settlement (Keeble et al., 2003). And Vitale et al. (2019) valued stakeholder pressure as motivation for a company to develop approaches for sustainability. Key stakeholders mentioned here consist of both internal and external stakeholders. As to external stakeholders, they usually require health effects of product use and ethics of product manufacturing (Keeble et al., 2003), like customers and suppliers. And for internal stakeholders, they focus more on preventative measures such as inspection frequencies (Keeble et al., 2003). It is worth mention that balancing demands and expectations from both external and internal stakeholders is important for a company in the process of KPIs settlement.

Department goals When top management in the company is setting goals and KPIs, they cannot ignore departments' demands. Leadership usually adopt a much board overview when developing KPIs and prefer the goals and KPIs are the best for the whole company. However, sometimes there will be clash between
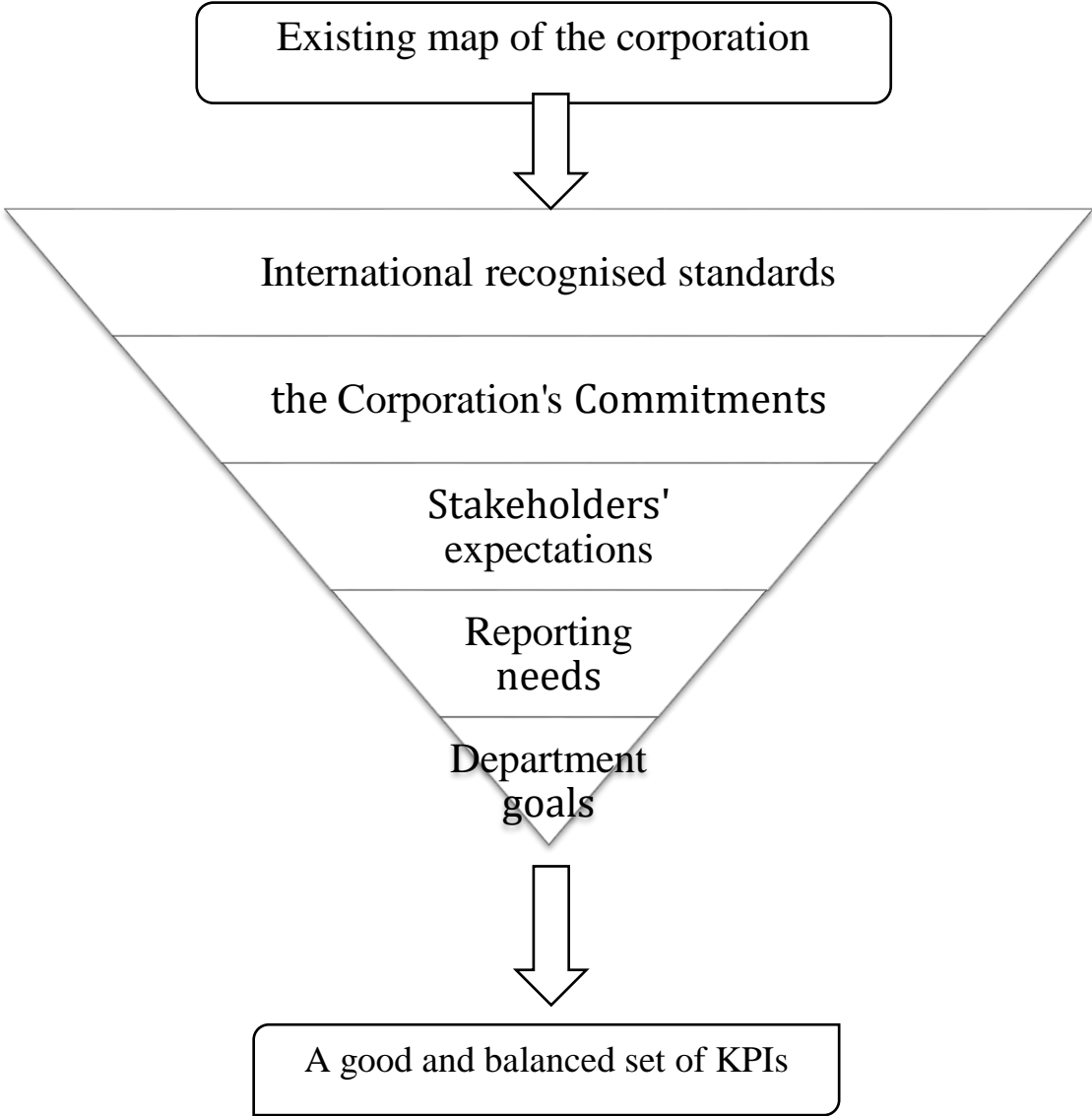
leadership and departments. In the survey conducted by Arjaliès & Mundy (2013), they found that in a very top-down company, it did not function well in the situation where once the strategy was decided, departments were expected to follow it. In terms of what we have discussed, the corporation's commitments represent a top-down approach while considering external stakeholders' demands and reporting needs means that an outside-in approach is adopted by the company. Meanwhile, a bottom-up perspective should be considered as well since personnel in each department know their demands and goals best.

Existing strategy map of the company The integration of MCS and sustainable objectives does not like replacing existing tools and strategies with new one. Riccaboni & Leone (2010) viewed the integration as a successful way to assimilate sustainability goals and principles into internal strategies. Thus, existing strategy map of the company should be a key factor when the company develop their goals and KPIs. What's more, from the outcome of our questionnaire, existing strategy map of the company should be viewed as the first driver that should be taken into consideration when a company decides to transform themselves into a sustainable one.

The six core drivers of KPIs settlement identified above, in our opinion, are what a company should take into consideration when they start the transformation of sustainability development. To make the connection between six drivers clearer, we establish a model like a filter (Figure 1). Although the filter model seems quite straightforward, the process of implementation is supposed to be very complex.

By using the model, the company could input their existing strategy map, and what they already have will be examined and combined with different standards, commitments, expectations and needs. On the basis of the opinion of interviewee A and what we have analyzed, we think the start point of the development of KPIs should be the existing map of the corporation. Since the integration of MCS and sustainability is different from replacing the old strategy with a new one. And deep understanding of the existing map of the corporation is the foundation of incorporating sustainable issues. The following steps are considering relevant core drivers one by one. The first one that should be taken into consideration, in our opinion, is the international recognized standards. Because when starting to create a more sustainable company, practitioners are usually confused about specific goals. Consequently, standards which are recognized internationally can guide the companies towards the road of sustainable development. After considering objective and external standards, the company should take internal factors into accounts as well. Referring to corporations' commitments could prevent corporations from betraying what they have promised. Thus, with the guideline of commitments, companies could start to divide their goals into more specific KPIs by referring to stakeholders' expectations and requirements and the reporting needs. Finally, in addition to out-inside and top-down methods used, bottom-up approach could be adopted for making KPIs more achievable and reasonable. Namely leadership could listen to departments' goals and personnel's

demands. Thus, they could make KPIs fit measurement tools and to be quantified and translated into action better.

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┌─────────────────────────────────────────┐
│      Existing map of the corporation     │
└─────────────────────────────────────────┘
                    ⬇

      International recognised standards

         the Corporation's Commitments

              Stakeholders'
              expectations

               Reporting
                 needs

             Department
               goals
                    ⬇
┌─────────────────────────────────────────┐
│      A good and balanced set of KPIs      │
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(Figure 1 Model for KPIs Settlement)

What's more, it is worth mentioning that it is better for a company not focus too much on KPIs settlement in a short period and try to find a perfect set of KPIs. Despite the fact that KPIs have great influence on guiding the corporate's performance, we should admit that KPIs settlement is a dynamic process and is affected by many changing factors. As pointed out by Keeble et al. (2003), no perfect and ideal set of indicators exists for any organization and if a company make their process of setting KPIs too long, they may lose momentum in the end.

Meanwhile, finishing a set of indicators, in our opinion, should not be viewed as an end to the company. After setting a good and balanced set of KPIs, we think that the company should go on with reviewing the process, tracking the functions of them and gathering information from different levels in the organization. Thus,

they can improve the set of KPIs and revise the set when there are some new problems or new demands from stakeholders or any specific department. Other than this, there is one more reason why companies should adjust and change the set of KPIs periodically. It is because of changes from core drivers discussed above of KPIs settlement. For instance, changes in markets or product lines and changes from stakeholders' demands. However, the frequency of adjusting and changing KPIs should be controlled since changing it too often may result in making employees confused about what they should do.

As to the challenge from the need for adaptation for different geographical regions and cultures, interviewee D viewed it as a common challenge for overseas business:

"Of course, companies will meet such problems when they expand their business to other regions or countries. Facing those challenges directly and trying to adjust their original goals to adapt themselves to a new region or market is the only helpful way, I think."

When entering into a new business market, a company is supposed to meet challenges from new regulations and different culture. Thus, it is essential for a company to consider local regulations and culture and adjust their original KPIs. If there is some clash between original KPIs and local regulations or culture, it is better for the company to lower their expectations or give up a part of profits from the new market.

4.2 Cybernetic control & Sustainability

4.2.1 Challenges

Generally, when a company tries to align their operations with sustainability development, they usually need to adjust their means of measuring performance (Keeble et al., 2003). Within the process, they may be faced with a difficulty resulting from the complicated organizational structure especially with different business streams (Keeble et al., 2003).

To become a sustainable company, the company should transfer their attention from financial performance to sustainable performance. In this regard, during the process of reviewing cases, it is much common to see that companies were faced with challenges to measure and monitor social and environmental responsibility (Durden, 2008; Pérez et al., 2007; Holton et al., 2010; Bartolomeo et al., 2000).

In some cases, environmental management accounting was set only isolated and conducted like experimental projects (Bartolomeo et al., 2000). More specifically, a study showed that companies felt it difficult since there was no embedded technology necessary to measure emissions accurately (Adams & Frost, 2008).

And the findings in another case study showed that there was a strong preference for financial measures within the MCS and there were no social responsibility measures involved in the MCS (Durden, 2008). The exclusion was due to the uncertainty about who were stakeholders and the relationship between them and the organization (Durden, 2008). What's more, Durden (2008) pointed out that the uncertainty also came from the absence of established template to guide social responsibility measurement.

With respect to measurement, the balance scorecard as a quite dominant useful tool was adopted by companies in most cases (Malmi & Brown, 2008). However, there were still some concerns regarding it. For instance, respondents in the case study conducted by Adams & Frost (2008) concerned that there would be a clash brought up by the change and the existing corporate culture. Meanwhile, some concerned that the formalization of performance measurement would fail to deal with the fluctuation and diversity (Adams & Frost, 2008).

Peter et al. (2016) revealed another kind of typical concern from managers in their case study that criteria in financial dimension to assess business performance are developed better than those regarding sustainability issues. Since financial dimension is more tangible than environmental and social dimensions (Vitale et al., 2019).

The period of measurement is another typical issue concerned by people. Some managers worried that certain sustainability indicators are not measured and reported as frequently as those in the financial dimension (Peter et al., 2016). The concern was specified in the case company MECH, especially in the area of the employee well-being (Peter et al., 2016).

In general, we identified four typical challenges within the cybernetic control system and all of them are related to the issues of measurement. The challenges are concluded in the table below.

Case	Theme	Main Challenge
Durden (2008) **Pérez et al. (2007)** **Holton et al. (2010)** **Bartolomeo et al. (2000)**	Measurement	Measuring social and environmental performance
Peter et al. (2016) **Vitale et al. (2019)**	Measurement	Criteria in financial dimension are clearer than sustainable issues

Peter et al. (2016)	Measurement	Sustainable indicators not assessed as frequently as financial indicators
Adams & Frost (2008)	Measurement	Formalistic problem of using measurement tools

4.2.2 Findings regarding measurement

On the one hand, in some cases, companies were faced with difficulty in measuring performance regarding sustainability. On the other hand, measurement tools were doubted for that they may be formalized or suppress alternative and more value-based approaches for sustainability issues (Adams & Frost, 2008; Pedersen & Neergaard, 2008). However, Adams & Frost (2008) also emphasized the importance of measurement tools since most of companies in their sample had performed well by using performance measurement techniques as a tool to encourage decision-making. We found out that it is still worth mentioning that tools are important for measurement, especially for measuring challenges. It is possible to deal with such doubts and challenges in the process of using measurement tools.

In the process of integrating sustainability issues into management area, more and more researchers and practitioners have developed and proposed up new tools for it, for example, environment accounting, green budgets and sustainable balance card (Crutzen, 2011). Since when a company measures sustainability performance, they cannot just focus financial data by using traditional methods for measurement. The sustainability performance is the aggregate of economic, environmental and social outcomes (Dias-Sardinha et al., 2007). When we were reviewing empirical cases, we found out that BSC is often viewed as the best practice by companies in sustainable performance management (Crutzen, 2011; Malmi & Brown, 2008). To find possible methods to help companies face the challenges, firstly we discuss measurement tools we have found from empirical research to lay the foundation of our analysis. The five tools include four common ones like BSC and a special one which was established by the company on the basis of internal and external needs. The four common tools are BSC, sustainability accounting, flexible budget and sustainability reporting. Here, the word common is meaning that such tools can be used in different companies unlike that special tools cannot be introduced to other firms.

Balanced ScoreCard In terms of sustainability issues, in some literatures (Dias-Sardinha et al., 2007), the BSC is improved as the sustainability balanced scorecard (SBSC). Generally speaking, the BSC is used to depict contributions of successful achievement towards sustainable strategy (Kaplan & Norton, 1996). In the traditional template of BSC, there are four perspectives usually included in the

card which are finance, customer, internal process and innovation and learning (Kaplan & Norton, 1992). In the SBSC, Dias-Sardinha et al. (2007) replaced finance with TBL value creation, used stakeholder views instead of customers and reserved processes and learning and innovation. The perspective of TBL value creation consists of six specific categories, including leadership, compliance, environment, social and economic issues (Dias-Sardinha et al., 2007).

Sustainability accounting Crutzen (2011) viewed sustainability accounting as a tool for generating information for control and decision-making in relationship with issues of sustainability. By conducting empirical study in certain companies, Taplin et al. (2006) established a framework of five steps to help further the company's goals of sustainability. They highlighted calculating the shadow environmental accounts to avoid environmental impacts (Taplin et al., 2006).

Flexible budgets In the case company studied by Bartley et al. (2012), flexible budgets were used to finish physical measures of sustainability issues, for example, carbon emissions and water consumption. Flexible budgets are set by the case company in response to sustainable variables and the errors from materials which the company discovered before in its measurement for sustainability (Bartley et al., 2012).

Sustainability reporting The reporting comprises two kinds of reports which are internal and external reporting. Both of them are common methods adopted by companies to ensure that the correct information is made available with high quality, to calculate KPIs and to assess the achievement of goals (Crutzen, 2011). As emphasized by Burritt (2010), sustainability reporting is supposed to ensure the collection of judicious data on the environmental, social and economic performance of the companies.

Other than the four common tools, some companies had their own tools to overcome the difficulty in measurement of sustainability performance. Through researching companies which developed their own metrics for sustainability measurement, Eccles et al. (2012) drew a conclusion about an important characteristic of sustainable company that they are pressing forward and actively addressing sustainable relevant issues creatively. We identified one specific tool developed by companies below and tried to conclude some common characteristics of them.

In this case, company Grundfos A/S, in the study conducted by Pedersen & Neergaard (2008), established their own excellence model for sustainable performance measurement (Figure 2). Based on their research, Pedersen & Neergaard (2008) drew a conclusion that the company has a comprehensive system to measure social and environmental progress and received external recognition. The model showed that how the company integrated social and environmental concerns in all core business functions. The case company identified nine elements in the measurement model, and the weight of each core

factor has been considered. The model provides managers with insights as holistic as possible into the whole process of measurement.
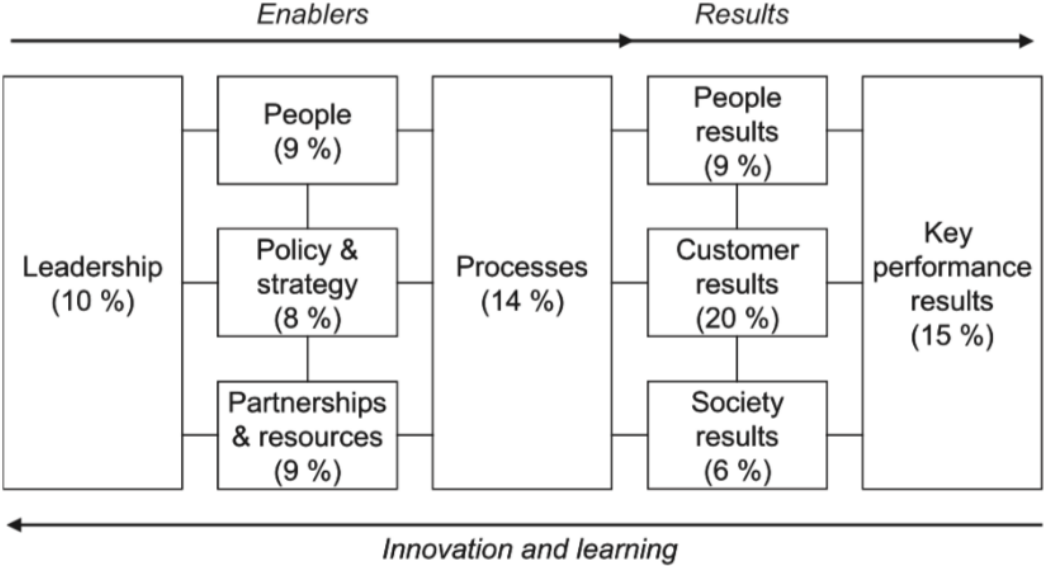
(Figure 2, the EFQM Excellence Model)

Source: Pedersen & Neergaard (2008)

Such four relatively common kinds and the special tools lay the foundation of our analysis of how to face the challenge in measurement. The five kinds of tools provide us with insight into how companies measure sustainability performance, especially the last one. One feature that the five tools have in common is to consider issues as much as possible which are related to social, environmental and economic dimensions. The importance of using tools for sustainability measurement has been proven above. In order to help companies to face the challenge, then the challenge becomes how companies could manage it by using a tool.

Generally, the first concern is to choose a common tool or establish a special one for the certain company or use both of them. It is worth mentioning that what has been discussed above does not mean that every company can adopt only one tool in a particular period. We consider the possibility of adopting different methods to gain synergies.

When making the choice, companies can take functions and features of each tool into consideration on the basis of their sustainable visions, goals, KPIs and demands. For a certain company, a holistic consideration is the foundation of establishing suitable criteria to measure social and environmental performance.

Then further to the next challenge, sustainability indicators are not assessed as frequently as financial indicators. Interviewee C stressed the potential risk in this regard:

"Sustainability goals may disappear if they are not all the time put into action…Managers need to show interest in sustainability measures in order to underline this is the topic that is key in the assessment, not only financial things."

With the respect to deal with the challenge, he added:

"In terms of infrequency, you have to increase it … Sustainability goals achievement usually take a long time. But it does not mean that assessing within a short time is not possible. I would like to say that you can follow some trend or improve performance measurement that you have better control of them. "

The opinions from interviewee C provide us with a different view to looking into the challenge. At first, we mainly focused on the reality that it usually takes a long time to achieve sustainable goals and feel it impossible to deal with it. However, dividing long-term sustainable goals seems not impossible. To measure what companies should do and have done in a short period could be helpful.

The last challenge is regarding formalistic problem of using measurement tools. We viewed it as a negative side effect. The function of each tool is viewed as limited, as pointed out by interviewee A:

"There is no ideal tool which can cover all demands from the company. Even for BSC, the four perspectives in it can cover most of the issues in the company. Not all of them. By using a kind of tool, a company can control their performance on the whole. But there must be some dark corners."

To face the challenge of potential risk in formalization, we suggest that the company should admit the drawback of using a tool at first. Then several actions could be taken to prevent such risks from happening. For instance, companies could ask for feedback irregularly from employees who are related to the relevant measurement.

It is worth mentioning that although we followed the concept of MCS package and analyzed challenges in each management control system respectively, the underlying relationship behind them should not be ignored. More specifically, the two typical approaches that we have discussed yet, namely KPIs settlement and measurement, can reinforce each other in practical. The outcomes of measurement could help companies to identify and prioritize areas for improvement and thus foster improvement targets to be set (Holton et al., 2010). In turn, a better set of KPIs could help companies to improve their tools for measurement, in order to gain better performance in the end. To some extent, companies' confusion towards measurement is much related to their unclear goals and KPIs. We believe that the combination of the filter model for KPIs settlement and the flow chart for

measurement can help companies gain a further step on the road towards sustainability.

4.3 Reward and Compensation & Sustainability

4.3.1 Challenges

According to Malmi & Brown (2008), reward and compensation systems aim to motivate individuals or groups to attain organizational goals. To further explain, Merchant & Van Der Stede (2007) stated that the rewards given must be valuable for the recipient, as well and understandable and clear. The importance of pushing employees and managers towards accepting and taking part in reaching sustainability goals is crucial. In a study conducted by Cordeiro & Sarkis (2008), it was found that social and environmental actions require explicit incentives to managers of companies. This is due to the uncertainty and risk they take when applying these types of sustainable initiatives, with their effect usually only measurable on a long-term basis. What's more, reward and compensation are important for the company to put new initiatives in action that affect the employees, such as eco-initiatives.

Eco-initiatives are possibilities for employees to come up with new innovative ideas that help reach the company's sustainability goals. An example of an eco-initiative is the actions taken by employees at GE Plastics Europe's Bergen Op Zoom facilities in the Netherlands, where they managed to develop innovative waste reduction and recycling programs (Ramus, 2002). It is important however that the employees already have or will get a wish to be part of and finish such a project. This wish can be stimulated or even created by incentives such as rewards for completing an eco-initiative.

According to previous study by Zaabi et al. (2013), the major issues companies face among employees when implementing sustainability is a lack of motivation and overall unwillingness.

Furthermore, it was found by Aldy et al. (1998) that the private sector companies generally lack sustainability incentives for their employees. However, a reward which is too big could be a problem in the company as well. In the case study by Mackenzie (2007), it was found that even though incentives are in place, the opportunity for bigger rewards may cause the whole business, or a manager to pursue this instead. In the case, the division director of a big British bank chose to work against the Corporate Social Responsibility (CSR) policy to pursue higher gains, even though it meant breaking said policy.

Meanwhile, a lack of incentives may result in employees' unwillingness towards sustainable issues. However, both lack of motivation and overall unwillingness can be explained by the lack of a personal reason for employees to pursue them.

The challenge is concluded in the table below and will be discussed in the following part.

Case	Theme	Main Challenge
Shaikha Al Zaabi et al. (2013) **Aldy et al. (1998)**	Motivation	Having suitable incentives for employees Dealing with employees' unwillingness toward sustainability

4.3.2   Findings regarding motivation

The challenge of having suitable incentives for employees becomes much more evident in our research in the company Arla Foods where a less developed incentive system existed before. Here, the word suitable means that the incentive is proper for the company's development and employees' engagement. The incentive or reward is not too much and not too less.

From our interviewee B, sustainability has been a part of their business for many years, with a recently launched sustainability strategy. She also stated that communication or encouragement always has an effect towards reaching sustainability goals, and any other goals for that matter. Especially the sense of purpose among employees is considered important. In terms of motivation, interviewee B kept mentioning the feeling of "contribution to a bigger purpose", and this is exactly the kind of driver for intrinsic rewards that can be very effective.

Other than the case company Arla Foods, we looked into another case company Hennes & Mauritz (H&M). To encourage its workers, H&M makes sure that its sustainability goals shine through at all levels – from top to bottom. This is done by giving awareness and creating activities that the employees can take part in. An example is the Garment Collecting Competition, where employees at H&M stores in the UK and Ireland are encouraged to collect as many unwanted garments as they possibly can. The winning team will get a free trip to a recycling plant, where they can learn how clothes are recycled, and why it is important for the environment (Hennes & Mauritz, 2017).

From the case company Arla Foods, it is apparent that intrinsic rewards play an important role in their reward and compensation system. The case company H&M tells us that there are some different ways to work with rewards and compensation. Concerning the problems with exploiting incentives, the solution might lie in adjusting and planning them thoroughly, not just when they are implemented, but

also continuously. This way, it is made sure that incentives are always relevant to the market situation, thus lowering the chance of misuse.

What's more, it was noted that agency theory is worth research in this area (Eisenhardt, 1989; Jensen & Meckling, 1976), which states that managers and the organization itself usually have different goals. The manager is self-interested and might take actions that are self-beneficial. It is also usually beneficial for the lower-level managers to deliver results on the short-term. To counter this, the organization can deliver incentives to managers that push them toward the sustainable long-term organization's goals, by rewarding them for doing so. This situation is a little different with higher-level managers such as company CEO's, where long-term goals might be less of a problem due to its effect on the company stock. Lower-level managers might be more inclined to focus on the short-term benefits, thus needing more incentives related to sustainability progress (Merriman et al., 2012).

With respect to the challenge from employees' unwillingness, other than having a good incentive system, another way the company could gain enthusiasm among employees to reach its sustainability goals is to already consider the mindset of future employees before hiring them. If the company can hire new employees that already show enthusiasm toward building a sustainable company, there is already a basis for intrinsic rewards among the employees. This could also be reached among other employees through education about the importance of sustainability, the basis for it and its necessity. While there is a chance that some employees just do not care, it could reach some that just didn't have the knowledge about it before. From interviewee B, in the Arla Foods, they kept mentioning the feeling of "contribution to a bigger purpose", and this is exactly the kind of driver for intrinsic rewards that can be very effective.

4.4   Cultural Control & Sustainability

4.4.1   Challenges

Not only included in the MCS package by Malmi & Brown, cultural control can also be found in OoC framework of Merchant & Van der Stede (2011) and in the clan structure of Ouchi (1979). The importance of cultural control cannot be ignored. In the empirical study focusing on seven western European firms, it was noted that personnel's awareness of the importance concerning the advantages of sustainability is a core driver to motivate them to reach sustainable goals (Crutzen, 2011).

The significant effect of cultural control was also discussed in the case study conducted by Peter et al. (2016), they found a challenge at cognitive integration level related to differing cultural attitudes towards sustainability. For instance,

managers from Sweden prefer to regard sustainability as the right thing to do while managers from the United States may consider sustainable issues from the perspective of risk management and cost reduction (Peter et al., 2016). It is also could the viewed as a typical challenge inside companies which have a large range of overseas business, in accordance with what we have discussed in planning control part. What's more, in the case study, Peter et al. (2016) also found a situation at cognitive level where people felt that it is easy to make the integration come true by doing it with other people who value it. It proved that having same perception of sustainability can foster the implementation of the integration of MCS and sustainability.

The importance of cognitive integration is also emphasized in other cases. In the study focusing on P&G, to make change in MCS to meet sustainability-oriented strategy, the company's first phase was to introduce sustainability principles, for example, setting up a new department focusing on sustainability (Riccaboni & Leone, 2010). Riccaboni & Leone (2010) conducted a thorough case study in the company P&G, focusing on their successful implementation of a suitable strategy through management control system. The company valued communication through the organization much including not only external formal claims but also to their employees through leadership commitment (Riccaboni & Leone, 2010).

Moreover, the impact of cognitive integration not only exists inside the company. Companies which are aimed at becoming a sustainable company can have a positive effect on their suppliers as well (Pérez et al., 2007). The manager stated that at first their suppliers were met with some problems but later they became more involved in environmental relevant issues and their management for environment was improved too (Pérez et al., 2007). However, such situation will exist easily when the company's negotiation power exceeds the power of their suppliers. In the case study conducted by Lueg et al. (2015), people from the company stated that they could have influence on some of their suppliers which the company use at least 50% of their capacities and even sometimes 100%. But it is much impossible for the company to make their smaller suppliers and their sub-contractors to follow their lead to sustainability issues (Lueg et al., 2015).

Other than problems with external suppliers and customers, to build and convey culture of sustainability within the organization, organizers usually define sustainability with their own meaning and spread it through the process of sensemaking (Vander Heijden et al., 2010). Within the process, a substantial challenge following sustainability culture spreading was noticed by Peter et al. (2016) which was regarding knowledge gap between personnel and experts. It would occur in the situation where personnel care about sustainability issues but most of the knowledge is still be held by the experts (Peter et al., 2016). More specifically, even sometimes personnel are aware of the culture and aim of sustainability in the company, but there may be lack of knowledge existing. The lack may make those personnel fail to translate their sustainable concerns into actions.

In general, in terms of cultural controls, companies may be faced with challenges externally with their supplies regarding sustainable issues. Internally, they may meet a knowledge gap between personnel and experts in the company. We concluded the two challenges discussed above in the table below.

Case	Theme	Main Challenge
Lueg et al. (2015)	Cognizance	Persuading suppliers to follow sustainable issues
Peter et al.(2016)	Cognizance	Knowledge gap

4.4.2 Findings regarding cognizance

As pointed out by Lueg & Radlach (2016), to gain effective integration of MCS and sustainability, the first step, for the company, is to define sustainability and help their employees make sense of the concept of sustainability. It reflects the importance of employees' perception of sustainability. However, in the value chain in a certain company, suppliers also play an important role in the company's process of seeking sustainability. As pointed out by Van der Werff (2018), sustainability is achieved in the supply chain with suppliers' support.

To persuade suppliers to follow the company's sustainable strategy could be viewed as a challenge for the company according to the empirical research discussed above. To deal with the challenge, we firstly look into the process of management. The whole process is divided into three steps, including supplier selection, supplier development and supplier evaluation (Reuter et al., 2010). After a company decides to become a sustainable one, they need to add some criteria of sustainability in the process of selecting suppliers. Meanwhile, they need to persuade their existing suppliers to follow their sustainable strategy and goals. Caniëls (2013) found out that sustainability relevant knowledge and expertise are positively related to suppliers' participation in sustainability initiatives.

On the basis of what have been discussed above, we think it is necessary for companies to have regular proper communications with their existing suppliers to persuade them to participate in seeking sustainable goals. In the communication, sustainability knowledge could be conveyed and relevant topics could be discussed. Additionally, feedback from the suppliers are of significant importance for the company.

With respect to the other challenge of knowledge gap, actually, at first we hesitated to identify it as a challenge under cultural control system or administrative control system within the MCS package by Malmi & Brown (2008). Our interviewee C helps us with the confusion:

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"The way that Malmi & Brown illustrate management with different boxes in the package appears to give the impression that this is one system with lots of packages. It is more like that cultural control ends at administrative control…Indeed, they can be the same. But it depends on the way how people deal with it. Compared with cultural control, administrative control is more formalized. Certainly, the difference is between what you formalized and what you not. But they are combined somehow."

On the basis of his opinion, we had a deeper understanding of this issue and will discuss it from two perspectives. From the perspective which the management is not formalized, we think it is essential that top management offer their employees with more learning chances. Those personnel who are intended to follow the company's sustainable goals but lack expert knowledge must have a strong internal driving force to learn relevant knowledge. Thus, learning opportunities offered by the company could improve employee engagement. Meanwhile, from the perspective which is formalized, regular appraisal could be conducted by top management to assess employees' progress towards sustainable development. More analysis from this view will be discussed in the administrative control part.

4.5 Administrative Control & Sustainability

4.5.1 Challenges

Accordingly, the area of administrative control system covers three categories: organization design and structure, governance structures, procedures and policies (Malmi & Brown). By reviewing previous cases, we found two typical challenges that companies were faced with at the administrative level.

The first one is regarding the structural level. It was reported in an empirical case study by Aldama et al. (2009) that companies both in the developing and developed world experience challenges of changing the structure of their company to effectively imbed Corporate Social Responsibility (CSR). Aldama et al. (2009) were asked a wide array of questions from companies in Chile about the CSR function in their companies. From these questions, it became clear to them that the major challenge lies in the last step: the final integration of the CSR function. Many companies in both the developed and developing world are unsure how to effectively integrate it into their company. It is common that in the new organizational structure, the CSR manager is simply placed in for example the PR department, with no real influence and connection to the other departments. The CSR manager could then be considered a C-level executive with little power.

For example, in the U.K., CR corporate practitioners are usually in charge of environmental management/climate change, reporting, community involvement, marketing and stakeholder dialogue (Aldama et al., 2009).

Without any connection to the higher departments, there is a high risk that the CSR manager ends without real authority over the company, thus not enabled to create CSR value for society or the firm (Aldama et al., 2009).

In another case study by Petrini & Pozzebon (2009) on integrating sustainability into business practices in Chilean firms, this same challenge with influence was found. Even though the company had established a governance structure oriented on promoting the discussion of CSR issues, its influence on sustainability issues was little. This may have been because of other CSR-issues being prioritized (Petrini & Pozzebon, 2009).

After having a firm structural company, foundation set for sustainability is to teach employees how to deal with these changes.

In the empirical case study by Lauring & Thomsen (2009) focusing on Danish multinational medicinal company Novo Nordisk and its social responsibility (in this case equal gender opportunities), it was found that the lack of formalized procedures led to problems for both managers and employees when implementing CSR.

According to Haugh & Talwar (2010), companies that implement sustainable management solutions implicitly assume that managers and employees are aware of and implement these corporate sustainability policies and procedures. That could, as stated by the author, be a leap of faith, because employees might be unaware of sustainability issues beyond their immediate work responsibilities Haugh & Talwar (2010). In the empirical study by Lauring & Thomsen (2009), it was found that managers had problems when balancing professional qualifications and ethical considerations, because no formalized alignment procedures helped them. Also, it led to the neglect of equal opportunity discussions in the daily debate.

The two main challenges are concluded in the table below and will be discussed in the following part.

Case	Theme	Main Challenge
Aldama et al. (2009) **Petrini & Pozzebon (2009)**	The structural level	Lack of support from the top management within the organizational structure

Lauring & Thomsen (2009)	Conducting employees	Formalizing procedures of teaching employees about sustainability

4.5.2 Findings regarding the structural level

Aldama et al. (2009) found that a total of 69% of the companies had a special organizational unit responsible for managing and monitoring corporate responsibility (CR) while only 4% had no specific area and 27% provided no information. 65% of the companies did not provide information on where in the company hierarchy the CR teams are placed. Of the remaining 35%, 23% said their CR team was placed at "management" or "direction" level, and 12% placed it at sub-management level.

Aldama et al. (2009) suggested that a successful CSR strategy must include planning, strategic objectives, targets and deadlines. Strategies need to be discussed at the correct level, and for them to be fully operational they need transversal and proper authority. The responsibility must be put on someone with knowledge about the company's impact on society – both positive and negative, and with the appropriate level of understand the company's current and future risks. It also requires someone who is capable of influencing the company's strategic planning, and it means that the involvement of the board of directors is crucial.

In support of this, Mackenzie & Hodgson (2005) stated that the board of directors should be responsible for:

1. Setting values and standards
2. Thinking strategically about corporate responsibility
3. Being constructive about regulation
4. Aligning performance management
5. Creating a culture of integrity
6. Using internal control to secure responsibility.

In the empirical study done by Petrini & Pozzebon (2009) on the integration of sustainability into business practices, it was found that top management commitment is seen as not only an important factor, but as a starting point for integrating sustainability into business practices, because it allows for changes in the organizational structure.

A number of literatures done on the matter of influential factors for the structural implementation of sustainability accordingly found top management to be of

utmost importance to implement Sustainability in the company structure (Fineman, 1996; Higgins, 1995; Marrewijk, 2004).

From cases and literatures above, the importance of bringing the sustainability issues to the top of the company is seen, because it requires the correct knowledge and the appropriate level of power to make changes in the company foundation. According to both Aldama et al. (2009) and Petrini & Pozzebon (2009), it is crucial that CSR is controlled by someone with higher authority. Further, Petrini & Pozzebon (2009) stated that it may not be enough to create governing entities responsible for CSR, if they are not directly connected with the board of directors, because they will simply not have enough influence on the company. It may also be necessary to focus more directly on social and environmental issues instead of just leaving it as part of the bigger CSR group, because it might become of lesser priority compared to other CSR issues.

4.5.3 Findings regarding conducting employees

Since applying sustainability in a company is a major adaption challenge that in some cases completely redesigns the said business, it is important that employees are rightly educated and knowledgeable on sustainability issues to be able to work effectively after the change.

However, it was found that the handling of corporate messages and their interpretation was not always possible, due to the fact that employees had not heard about them. This challenge was found at Novo Nordisk by Lauring et al. (2009) when some employees were not as accepting as the company would have liked of the equal opportunity concept. One director of Novo Nordisk stated: "'. . . with differences one can think of other things than skin color". By this is meant that with proper information, some employees would have been more aware of the actual qualities given by the equal opportunity-program.

According to the case study by Haugh et al (2009), the multinational companies studied were found to use the following strategies to make sure its employees had the necessary knowledge. Below we will look at two things to consider when implementing CSR.

In the research by Haugh et al (2009), the case company valued two things at the practical level. One is to have communications with employees and the other is regarding employee training and workshops. In the company, communications and dialogues are conducted usually through corporate publications, annual reports, booklets, guides (Haugh et al., 2009). Every new employee, supplier and agent receives a booklet to get a better understanding of the company and its vision. With respect to training, the importance of teaching employees new information is pointed out by Armstrong et al. (2008). In Tata, all new employees are introduced to the Tata values from the beginning. For example, management

trainees at Tata Chemicals spend up to 8 weeks learning about sustainability as part of their induction program (Haugh et al., 2009).

Among the things that company administrations can do to help its employees gain knowledge on sustainability is the implementation of corporate policies that affect all actions taken by the company. In the list below, these policies are concerned with environmental issues, but could possibly be changed to issues related to for example social responsibility. The point is that written policies must reach the employees, and it may be necessary to construct a few of them.

Ramus (2002) asked environmentally pro-active firms which policies they had:

1. Written environmental policy
2. Specific targets for improving environmental performance
3. Publication of an environmental (sustainability) report
4. Environmental management system
5. Environmental purchasing history
6. Environmental Training and education
7. Employee responsibility for environmental performance
8. Life cycle analysis (assessment) policy
9. Management understands sustainable development
10. Fossil fuel use reduction policy
11. Toxic chemical use reduction policy
12. Policy of reducing use of unsustainable products
13. Same environmental standards at home and abroad

The above policies give targets for environmental performance, educates employees and managers through training and educational programs and makes sure these standards are upheld internationally (at home and abroad).

It becomes evident from the challenges seen at Novo Nordisk, that proper communication with employees and managers is necessary to make them fully understand both CSR and the reasoning behind. The possible solutions and the examples from Tata seek to clarify the company's opinions and leave little room for doubt among the employees. This is done with information given to the employees through educational activities or papers. And the process is monitored in an index to make sure it works effectively.

5 Results

This chapter consists of two parts, showing all of our findings in the last chapter. In the first part, all challenges that we have identified above under each control system in the management control package by Malmi & Brown (2008) are shown in the same table. It can be viewed as the answer for our first research question. And in the following part, the outcomes of our analyzing achievable methods for companies to face the challenges are presented. Likewise, they can be regarded as the answer to our second research question.

5.1 Challenges

On the basis of reviewing literature and our analysis, we identified 16 challenges from a number of empirical cases. Among five management control systems in the package framework by Malmi & Brown (2008), there are different challenges existing when companies try to integrate sustainability into their management control system.

The challenges are presented in the table (Table 1) below and could be viewed as the answer to our first research question. The process of identifying challenges helps us gain a deeper understanding of the integration of MCS and sustainability.

Meanwhile, with the challenges we have identified, the picture is much clearer for us about the specific situations where companies embedding sustainability into their management control systems.

In the table below, the challenges we have found are presented following the structure in the chapter 4. All details are presented in it. And it is clear to see what typical challenges that companies usually meet when they try to employ sustainability within their management control systems. The sources from which we have found the challenges are presented in the line called cases. And as we explained in the methodology part, we define each challenge with a specific theme to make it easier to understand.

Table 1: Challenges identified from empirical research

Type of control	Challenges	Cases	Theme

Planning	The development of KPIs	Cramer (2005)	KPIs Settlement
	The adaptation of KPIs to other geographical regions	Adams & Frost (2008)	
	Difficulty in quantifying performance	Adams & Frost (2008)	
	Uncertain environment	Pondeville et al. (2013)	TBL
	Match stakeholders with particular specific socially responsible goals	Durden (2008)	
	Social and economic indicators trailed behind environmental KPIs	Adams & Frost (2008)	
Cybernetic	Measuring social and environmental performance	Durden (2008) Pérez et al. (2007) Holton et al. (2010) Bartolomeo et al. (2000)	Measurement
	Criteria in financial dimension are clearer than sustainable issues	Peter et al. (2016) Vitale et al. (2019)	
	Sustainable indicators not assessed as frequently as financial indicators	Peter et al. (2016)	

	Formalistic problem of using measurement tools	Adams & Frost (2008)	
Reward & Compensation	Having suitable incentives for employees Dealing with employees' unwillingness toward sustainability	Shaikha Al Zaabi et al. (2013) Aldy et al. (1998)	Motivation
Cultural	Persuading suppliers to follow sustainable issues	Lueg et al. (2015)	Cognizance
	Knowledge gap	Peter et al.(2016)	
Administrative	Lack of support from the top management within the organizational structure	Aldama et al (2009) Petrini & Pozzebon (2009)	The structural level
	Formalizing procedures of teaching employees about sustainability	Lauring & Thomsen (2009)	Conducting employees

With respect to planning control system, we identified 6 typical challenges that it is common for companies to meet when they try to integrate sustainability into management control systems. Half of them is regarding KPIs settlement and the remaining part is much related to TBL framework. And in the cybernetic control system, we found 4 typical challenges, all of which are related to the issue of measurement. Next, in the reward and compensation part, it seems that companies usually have difficulty in motivating with respect to sustainable issues. In this regard, we found two typical challenges. In two other types of control system, we found two challenges, respectively. Two challenges in the cultural control dimension are related to cognizance. And in the administrative control, one challenge is regarding the structural level and the other is of conducting employees.

The 16 challenges concluded above can be viewed as the answer to our first research question. Also, we value that they could be considered by companies,

especially those companies which newly enter into the area of sustainable development.

5.2   Achievable Methods for Challenges

After finding 16 typical challenges above, we move on to analyze each of them in order to find achievable methods for challenges and answer our second research question. The outcomes of our analysis are presented in the table below (Table 2) on the basis of discussion of findings in the chapter 4. However, due to the limitation of our ability, we failed to answer yes to the second research question when it comes to the specific challenge of uncertain environment. In the table below, the letter Y represents yes which means that we think we have found an achievable method for helping companies to better face the certain challenge. Meanwhile, the letter N means that we failed to come up with a helpful way to deal with the certain challenge. However, at least we provide some suggestions for it.

In the planning control, we focus on the challenges regarding KPIs settlement and TBL framework. With respect to KPIs settlement, we come up with a model for it after researching core drivers of developing KPIs and provide a way to deal with the potential difficulty in the adaptation of KPIs to other geographical regions. As for three other challenges of TBL framework, we come up with methods for two of them and fail to deal with uncertain environment.

As for the cybernetic control, we come up with three specific methods in accordance with four typical challenges. We propose up the way to choose a suitable measurement tool in the certain company for the first two challenges. Then for the challenge of sustainable indicators not assessed as frequently as financial indicators, we discuss the possibility of increasing assessment frequency in the chapter 4. And it could be helpful for the certain company to increase the frequency. With regard to the challenge of formalistic problem of using measurement tools, we recommend that companies should ask for feedback from employees involved irregularly.

When it comes to reward and compensation, we focus on dealing with the challenge from motivation. We suggest two methods to help companies have suitable incentives for employees and give one suggestion for the challenge of dealing with employees' unwillingness towards sustainability.

In the dimension of cultural control, we offer two ways to help companies to persuade their suppliers to follow their sustainable issues. And thus the company could achieve sustainable goals with their suppliers' support.

With respect to the last system of administrative control, we try to help companies deal with two challenges which are lack of support from the top management and

conducting employees. Based on what we have discussed in the last chapter, we provide specific methods for the challenges.

The methods that we have come up with for the 15 challenges are presented in the table below and meanwhile, the suggestion for the challenge that we fail to deal with is also included below.

Table 2: Achievable methods for the Challenges

Type of Control	Theme	Challenge	Y/N	Method/Suggestion
Planning	KPIs Settlement	The development of KPIs	Y	➢ A model like filter including core factors for KPIs settlement
		Difficulty in quantifying performance	Y	
		The adaptation of KPIs to other geographical regions	Y	➢ Considering new regulations and different culture ➢ Adjusting KPIs ➢ Lowering expectations ➢ Giving up part of profits for more shares in the market
	TBL	Uncertain environment	N	➢ Taking what competitors or industry-leading companies are doing into consideration
		Match stakeholders with particular specific socially responsible goals	Y	➢ Establishing a system for linking particular stakeholders with certain social responsibility
		Social and economic indicators	Y	➢ Changing insights into the balance of TBL

		trailed behind environmental KPIs		➢ Changing the rank the importance of each part due to the reality ➢ Distributing resources best at a particular time
Cybernetic	Measurement	Measuring social and environmental performance	Y	➢ Choosing a common measurement tool or establishing a special one for the company
		Criteria in financial dimension are clearer than sustainable issues	Y	
		Sustainable indicators not assessed as frequently as financial indicators	Y	➢ Increasing assessment frequency
		Formalistic problem of using measurement tools	Y	➢ Asking for feedback irregularly from employees
Reward & Compensation	Motivation	Having suitable incentives for employees	Y	➢ Adjusting incentive methods thoroughly and continuously ➢ Adopting special ways for motivating due to the actual situation in the company

		Dealing with employees' unwillingness toward sustainability	Y	➢ Considering the mindset of future employees before hiring them
Cultural	Cognizance	Persuading suppliers to follow sustainable issues	Y	➢ Adding criteria of sustainability in selecting suppliers ➢ Having regular communications with existing suppliers
		Knowledge gap	Y	➢ Providing more learning chances for personnel
Administrative	The structural level	Lack of support from the top management within the organizational structure	Y	➢ Making CSR controlled by someone with higher authority than the top management
	Conducting employees	Formalizing procedures of teaching employees about sustainability	Y	➢ Setting proper communications between employees and managers

6   Conclusion

This chapter consists of four parts. The first two sections provide readers with general conclusions of what we have found in our research, from practical and theoretical perspectives respectively. The third section illustrates the limitations of our thesis and the last one presents some possible research directions for the future.

6.1   Practical Contributions

At practical level, the contributions of our study are twofold. One is that we have identified typical challenges that companies were faced with when they tried to embed sustainability into their management control system. We researched and identified challenges in each control system in the conceptual framework by Malmi & Brown (2008). These typical challenges can offer an insight into the process of integration of MCS and sustainability for a certain company. Furthermore, for a company which is on the road towards sustainability, they can consider these typical challenges to check if they have met similar ones or not. In our research, we found out that for companies to better face a challenge, the first step is always to identify and admit the particular challenge that they are faced with. And then, attention can be paid to the next step which is to find different methods for the challenges.

Following the structure in finding the challenges, we discuss them under each component in the framework by Malmi & Brown (2008) as well. We thoroughly discussed each challenge and found achievable methods for most of them. The methods concluded in the last chapter reflect our contributions at the practical level. For instance, the model for KPIs settlement. We proposed up this model for companies to develop a set of good and balanced KPIs. In accordance with our second research question, our intention is to help companies to deal with those challenges.

However, it is worth mentioning that as for challenges, it is impossible for companies to always deal with it perfectly. The methods and suggestions that we have presented in the result chapter cannot guarantee a bright future for companies which are seeking sustainable goals. Our basic intention is to help companies better face those challenges towards sustainable development.

6.2 Theoretical Implications

In our research, we mainly focus on two theoretical framework which are the management package by Malmi & Brown (2008) and the TBL framework by Elkington (1994). In the process of our research, we gain deeper understanding of both two frameworks and have some new findings as follows.

As for the package framework by Malmi & Brown (2008), our findings show a clearer standard of classification between cultural control and administrative control. Based on the opinions of our interviewee C, compared with administrative control, cultural control is less formalized. The degree of formalization of the control methods decides the type of them. This can offer a new perspective to people who think about overlaps between administrative control and cultural control.

Moreover, our findings provide a different perspective of understanding balance of three dimensions in the TBL framework. As we discussed in the chapter 4 of planning control system, on the basis of opinions of our interviewee C, we redefine the meaning of the balance of TBL. It should be viewed as a state of dynamic equilibrium instead of a permanent relationship between economic, social and environmental dimensions. More specifically, reaching the balance of three dimensions in TBL framework means that the certain company has best distributed their resources in a particular period. And then the company will change the distribution due to their new demands or external changes etc.

6.3 Limitations

Except the limitations that we have presented in the methodology chapter, in terms of our findings, there are also three other limitations of the thesis.

Firstly, we considered many general issues in certain companies from existing empirical research. In other words, we seldom took the characteristics of companies into consideration. For instance, the industry, the structure or the size of the company. In reality, those characteristics of companies have great effects on integrating MCS and sustainability. Companies should consider them when they try to embed sustainability into their management control system.

Secondly, we tried to hold a holistic view upon the package framework by Malmi & Brown (2008). So we analyzed and discussed challenges under each control system in the package. However, that finding challenges as much as possible had a negative effect on our discussion part. To some extent, some discussion in our research is lack of depth.

Lastly, although we have tried to find challenges from empirical research as much as possible, there must be some typical ones that we ignored. Also, some typical challenges in practical may have not been presented in research yet.

6.4 Suggestions for further research

Since our findings and discussions are mainly based on previous literatures, future work such as a case study is necessary. For instance, research could be conducted in a certain company to validate our proposed methods above and refine the model for KPIs settlement.

Furthermore, due to the fact that we mainly focused on general issues in our research, we recommend that further research could be conducted with some considerations of characteristics of companies, such as industry and the size of the company. More specifically, researchers could investigate the integration of MCS and sustainability in a specific industry like food or chemical industry, because in different industries, factors of sustainability differ.

Lastly, we suggest that research in the future can focus on the unsolved challenge of uncertain environment in our research. We failed to come up with a potential achievable method to help companies better face the challenge from uncertain environment towards sustainability. With more approaches and information available in the future, research may look deeper into this dimension.

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Appendix

Appendix 1

Year	Author	Title
2016	Guenther et al.	Environmental management control systems: a conceptualization and a review of the empirical evidence
2016	Lueg, R., & Radlach, R.	Managing sustainable development with management control systems: A literature review
2015	Aziz et al.	A Review on Green Integration into Management Control System
2009	Berry et al.	Emerging themes in management control: A review of recent literature
2000	Bebbington, J.	Sustainable development: a review of the international development, business and accounting literature

Appendix 2

No.	Author	Year	Title
1	Peter et al.	2016	Management Control for Sustainability: The Development of a Fully Integrated Strategy
2	Clarke & Roome	1999	Sustainable business: learning–action networks as organizational assets
3	Holton et al.	2010	Managing for sustainability: findings from four company case studies in the UK precast concrete industry
4	Knox & Maklan	2004	Corporate social responsibility:: Moving beyond investment towards measuring outcomes
5	Marshall & Brow	2003	The strategy of sustainability: A systems perspective on environmental initiatives
6	Morsing & Oswald	2009	Sustainable leadership: management control systems and organizational culture in Novo Nordisk A/S
7	Riccaboni & Leone	2010	Implementing strategies through management control systems: the case of sustainability

8	Cramer et al.	2006	Corporate social responsibility: making sense through thinking and acting
9	Van der Heijden et al.	2010	Making sense of Corporate Social Responsibility: Exploring organizational processes and strategies
10	Howard-Grenville & Hoffman	2003	The importance of cultural framing to the success of social initiatives in business
11	Lueg et al.	2015	The role of corporate sustainability in a low-cost business model–A case study in the Scandinavian fashion industry
12	Costas & Kärreman	2013	Conscience as control–managing employees through CSR
13	Arjaliès & Mundy	2013	The use of management control systems to manage CSR strategy: A levers of control perspective
14	Crutzen et al.	2013	Management control for sustainability: exploring patterns in large European firms
15	Fairfield et al.	2011	Influences on the organizational implementation of sustainability: an integrative model
16	Jabbour	2011	How green are HRM practices, organizational culture, learning and teamwork? A Brazilian study
17	Lee et al.	2013	Employee perception of CSR activities: Its antecedents and consequences
18	Graves et al.	2013	How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China
19	Pérez et al.	2007	Environmental management systems as an embedding mechanism: a research note
20	Durden	2008	Towards a socially responsible management control system
21	Henri & Journeault	2010	Eco-control: The influence of management control systems on environmental and economic performance
22	Maas & Reniers	2014	Development of a CSR model for practice: connecting five inherent areas of sustainable business
23	Urban & Govende	2012	Empirical evidence on environmental management practices

24	Banerjee	2002	Corporate environmentalism: The construct and its measurement
25	Wisner et al.	2006	Organizational antecedents and consequences of environmental performance
26	Pedersen & Neergaard	2008	From periphery to center: how CSR is integrated in mainstream performance management frameworks
27	Adam & Frost	2008	Integrating sustainability reporting into management practices
28	Eccles et al.	2012	How to become a sustainable company
29	Keeble et al.	2003	Using indicators to measure sustainability performance at a corporate and project level
30	Bartley et al.	2012	Flexible budgeting meets sustainability at Bacardi Limited: this article is based on a study funded by the IMA
31	Dias-Sardinha et al.	2002	From environmental performance evaluation to eco-efficiency and sustainability balanced scorecards
32	Taplin et al.	2006	Developing a sustainability accounting framework to inform strategic business decisions: a case study from the chemicals industry
33	Brown	1996	Barriers to women managers' advancement in education in Uganda
34	Crutzen	2011	Sustainability performance management in large firms: A qualitative research amongst seven Western European firms
35	Crutzen & Herzig	2013	A review of the empirical research in management control, strategy and sustainability
36	Haugh & Talwar	2010	How do corporations embed sustainability across the organization?
37	Aldama et al.	2009	Embedding corporate responsibility through effective organizational structures
38	Petrini & Pozzebon	2010	Integrating sustainability into business practices: learning from Brazilian firms

39	Lauring & Thomsen	2009	Collective ideals and practices in sustainable development: managing corporate identity
40	Cordeiro & Sarkis	2008	Does explicit contracting effectively link CEO compensation to environmental performance?
41	Ramus	2002	Encouraging innovative environmental actions: what companies and managers must do
42	Mackenzie	2007	Boards, incentives and corporate social responsibility: The case for a change of emphasis
43	Virtanen et al.	2013	Energy efficiency complexities: A technical and managerial investigation
44	Rodrigue et al.	2013	Stakeholders' influence on environmental strategy and performance indicators: A managerial perspective
45	Contrafatto & Burns	2013	Social and environmental accounting, organisational change and management accounting: A processual view
46	Caniëls et al.	2013	Participation of suppliers in greening supply chains: An empirical analysis of German automotive suppliers
47	Reuter et al.	2010	Sustainable global supplier management: The role of dynamic capabilities in achieving competitive advantage
48	Van der Werff	2018	Patterns in sustainable relationships between buyers and suppliers: evidence from the food and beverage industry
49	Vander Heijden et al.	2010	Making sense of Corporate Social Responsibility: Exploring organizational processes and strategies
50	Aldy et al.	1998	The role of technology in sustaining agriculture and the environment
51	Cordeiro & Sarkis	2008	Does explicit contracting effectively link CEO compensation to environmental performance?

Appendix 3

CODE	NAME	INTERVIEW FORM	EXPLANATION

A	Yang	E-mail	By words
B	Susanne Andersen	E-mail	By words
C	Peter Beusch	Telephone	Duration: 20 mins
D	Guyu Dai	Face to face interview	Duration: 30 mins

Appendix 4

According to your experience or previous empirical study, which driver of KPI settlement should be considered first for the integration of management control system and sustainability objective?

➢ Internationally recognized standards (ISO, GRI)
➢ Reporting needs
➢ Stakeholders' suggestions and expectations
➢ Department goals
➢ Existing strategy map of the company
➢ The corporate's commitment in its statement
➢ Other