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# GREENING THE BALANCED SCORECARD

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## Abstract

Environmental management issues have received an increased amount of attention in recent years, as have various performance measurement systems (PMS), such as the balanced scorecards (BSC). However, implementation of these systems is challenging due to the differences found amongst the companies and users of PMS. This study investigates how the presence of different factors affected when a PMS was changed to incorporate environmental measures. Utilization of the change models of Cobb et al. (1995) and Kasurinen (2002) enables us to investigate different change factors, like advancing and opposing forces, momentum and the leaders of change. We found the two models appropriate for investigating environmental management accounting change, even though the change factors can be either dynamic or static. The study also proposes that company culture should be carefully taken into account when companies are changing their PMS. Technical changes to PMS are far easier to accomplish than are changes to a dominant culture. Finally, we suggest that utilizing the BSC for the purposes of environmental management is a worthwhile pursuit.

**Keywords:** advancing forces, barriers, change, environment, performance measurement systems (PMS)

# 1. Incorporating a greener aspect into scorecards

Environmental issues have received considerable attention in the past few years (e.g. Burrit, 2004; Hopwood, 2009; Hubbard, 2009; Masanet-Llodra, 2006; Schaltegger & Wagner, 2006). Several factors have motivated companies to investigate and improve environmental performance (Lämsiluoto & Järvenpää, 2008). Stakeholders such as customers and shareholders increasingly may require consideration of the environment (Callens & Wolters, 1998; Hopwood, 2009; Hubbard, 2009; Lämsiluoto & Järvenpää, 2008). Furthermore, legislation may force companies to consider environmental issues when they plan investment in new production plants for example. Improved environmental performance may also benefit companies by improving profitability, enabling economic growth or decreasing costs. (Porter & van der Linde, 1995; Azapagic, 2004; Laine, 2005).

Environmental management systems (EMS) are required in order to develop, implement, manage, coordinate and monitor environmental issues (Melnik et al., 2003). ISO 14000 (ISO, 2009) and the Global Reporting Initiative (GRI, 2009) are two popular frameworks that can be used for constructing EMS in practice. Environmental issues can also be integrated into an existing performance measurement system or systems (PMS) (Figge *et al.*, 2002). There are several different PMS available but the most popular PMS is the balanced scorecard (BSC), developed by Kaplan and Norton (2005). According to Malmi (2001), there are three different ways to utilize a BSC. First, it can be used to focus on management by objectives. Secondly, a BSC can be an information system. Finally, the BSC can be used to visualize the cause and effect relationship between different measures.

There can be several reasons for integrating environmental issues into an existing PMS. First, if companies are already using a BSC framework it can be easier to use the same familiar framework to implement environmental objectives and measures (e.g. Hubbard, 2009 see also

Chenhall & Euske, 2007; Wilkinson & Dale, 1999). The integration may also allow the reduction of costs (Wilkinson & Dale, 1999). Second, the organization's strategy should include components of environmental issues so that the BSC may be used for implementing the chosen strategy (e.g. Kaplan and Norton, 2005; Wilkinson & Dale, 1999). Environmental issues may become strategic because they have an influence on a company's image, profitability, competitiveness, markets and products, which will affect its future economic survival (Dias-Sardinha & Reijnders, 2005; Schaltegger & Wagner, 2006).

Companies often have to change their PMS if they want to pay more attention to environmental issues. Making changes to a PMS and ensuring the subsequent effective implementation of the revised system, are challenging tasks, despite the choice of several different PMS available (see for instance Chenhall, 2003; de Waal, 2007). For instance, de Waal (2007) found that almost 60% of PMS implementations do not meet expectations. One reason for these challenges is that the implementation of PMS cannot be identical in different companies. Companies differ in terms of decision-making culture, the environmental uncertainty under which they operate, norms, size, strategy, organizational structure and values (Burns & Scapens, 2000; Chenhall, 2003; Chenhall & Euske, 2007; Verbeeten & Boons, 2009). Therefore, a smaller company operating in a stable local market needs a different PMS than a larger company working in an uncertain environment and the global market. Users of PMS also vary in terms of their experience (Pihlanto, 2003) and information needs (Chenhall & Euske, 2007). Furthermore, the barriers to successful implementation and the forces advancing PMS change vary across organizations (Kasurinen, 2002; Lämsiluoto & Järvenpää, 2008). This means that PMS implementation is challenging because there is no single available PMS solution that is capable of delivering in all circumstances.

Despite the challenges involved in PMS implementation, there are some change models available to utilize (Burns & Scapens, 2000; Innes & Mitchell, 1990; Cobb *et al.*, 1995;

Kasurinen, 2002). However, these models have not been applied to investigate in practice how PMS are changed to reflect environmental issues. Furthermore, Hopwood (2009) explicitly recommends that an organization “seeks to explore the role and functioning of accounting in the environmental and sustainability spheres”. Therefore, this study investigates how a balanced scorecard was changed to incorporate environmental issues in a case company. The purpose of the study is to explore *what the change factors are for environmental management and for PMS change*. We also illustrate *how these two change processes interplay with each other*.

## **2. Different models for investigating the change process**

There is evidence that wider organizational, environmental and social changes can force firms to change PMS (Cobb *et al.*, 1995; Hopwood, 1987, 2009; Innes & Mitchell, 1990; Verbeeten & Boons, 2009). For instance, Hopwood (1987 see also Verbeeten & Boons, 2009) illustrated how PMS changes were affected by interrelated changes in markets, production policies, organizational structures, and information systems. The increased attention on environmental issues can also drive changes to PMS (Hubbard, 2009). This study utilizes three change models that particularly focus on PMS change (Innes & Mitchell, 1990; Cobb *et al.*, 1995; Kasurinen, 2002). The paper goes on to describe these models briefly below.

Innes and Mitchell (1990) suggest that the major factors found that relate to PMS change may be classified as *motivators*, *catalysts* and *facilitators*. Motivators relate to change in a general sense, and according to Innes and Mitchell (1990), competition, organizational structure, and technology generally motivate change. Furthermore, catalysts such as poor profitability or a decreasing market share are factors directly associated with the change. Facilitators are necessary conditions in the change but not sufficient in themselves to force it. Innes and

Mitchell (1990) present accounting staff resources and computer facilities as examples of facilitators.

Cobb *et al.* (1995) further developed the PMS change model of Innes and Mitchell (1990). Moreover, Cobb *et al.* (1995 see also Chenhall & Euske, 2007) present the most essential features of the complex PMS change processes. They illustrate that PMS changes are affected not only by change motivators, catalysts, and facilitators, but also by different *momentums* for change, *leaders* (change agents), and *barriers* to change. According to Cobb *et al.* (1995), the barriers hinder, delay and even prevent the PMS change. Staff attitude or ability , may for instance, be a barrier to PMS change.

Kasurinen (2002) revises the model of Cobb *et al.* (1995) by organizing the barriers into three subcategories; *confusers*, *frustrators* and *delayers*. According to Kasurinen (2002), confusers are factors that increase the degree of uncertainty, for instance relating to the future role of the PMS in the organization. Frustrators are factors that suppress the PMS change attempt. Kasurinen (2002) found that existing reporting systems and organizational culture were frustrators in his balanced scorecard implementation case. Delayers, in the field of PMS change, relate to technology. For instance the lack of strategy or missing information systems may delay the BSC implementation (Kasurinen, 2002). Figure 1 illustrates the modified PMS change model of Innes and Mitchell (1990), Cobb *et al.* (1995) and Kasurinen (2002).

[INSERT FIGURE 1 ABOUT HERE]

### 3. Empirical data

#### ***3.1 Data gathering and the case company***

The empirical data collection started with a preliminary interview of the technical director and quality manager of an international Finnish company. These two representatives were selected for the preliminary interviews because they were the contact persons named on the company's web pages. They were also responsible for running the environmental management policy.

The major source of empirical data is ten semi-structured interviews. We interviewed several directors whose organizational responsibilities varied from unit management, through business area management, to a board level functional responsibility at a group and main subsidiary level. All interviews, except the preliminary interview, were recorded and transcribed. We usually spent from one to two hours in the company and the duration of each interview varied from forty to ninety minutes. The result was over eight hours of recorded and transcribed interviews. We did not record the informal discussions before and after the official interviews. Therefore, the recorded interviews are very well focused on the topics of the paper and exclude any unnecessary material.

We utilized several modes of triangulation to increase the trustworthiness of our study (Ahrens and Chapman, 2006). First, we had access to several different types of data —annual reports, publically-available documents (such as the company web pages, the environmental report, the description of the management system), e-mails and interviews. Second, our interviewees had both horizontally and vertically differing positions. Third, both researchers participated in all interviews. Fourth, we allowed as much time for interviewing and observing in the case company as was possible.

The case site of this study is the largest subsidiary of a major Finnish foodstuffs company. We shall call the subsidiary Finnish Food Ltd (FFL) and the parent company – the Finnish



Food Group Plc (FFG). The turnover of FFL is over EUR 700 million and has been increasing for the last years. The FFG is becoming increasingly international, being particularly well represented in the Baltic Sea area, and it owns several well known brands. FFL is responsible for the group's domestic operations and some major production plants in Finland. Customers include retailers, catering enterprises, industry and the export trade. According to the annual and environmental reports, environmental performance has improved in recent years when the environmental performance against six environmental measures is compared to turnover. Only the results on the usage of packaging material has weakened (i.e. usage has increased) compared to turnover. According to the Director of Quality and product safety and the CEO of FFL, customers have recently been requiring smaller packages, and this change has increased the demand of packaging material, which has in turn weakened the measure. Therefore, one reason for the weakening of this measure is a result of a change in customers' preferences.

### ***3.2 Management systems in the case subsidiary***

According to FFL's management system, the firm "recognizes its environmental responsibility. It has an environmental programme aiming at controlling the use of natural resources and preventing environmental damage. It is committed to the principle of sustainable improvement." FFL also has a *Total Quality Management (TQM) system* which is based on the ISO 9001 standard. The TQM was certified before implementing the EMS. FFL's *environmental management system* is based on the ISO 14001<sup>1</sup> standard, which was achieved in 1995. The quality manager and the technical director were responsible for

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<sup>1</sup> ISO 14 000 is an environmental standards package which consists of several different specific environmental standards. ISO 14 001 specifies the requirements for an environmental management system (ISO, 2009)

constructing the EMS. The staff questioned considered that the certified EMS would be useful for attracting customers. Some customers even stipulated the presence of these kinds of activities and the certification.

“Joining the mainstream was the reason in many ways. Fear, that if we’re not part of this thing, we’ll miss something mysterious, which we do not understand. If we miss this, the arch-enemy is then a year ahead of us. [...] Of course quality managers have been involved in it and marketed it [...] It has meant following the spirit of our time. There’s a fear that if you are an outsider, you’ve lost something and fear that it might become a barrier or condition for trade, or an opportunity to achieve better profits, if you have implemented this kind of system.” (Quality Manager)

“we would like to be... a good local corporate citizen. It (sustainability) starts from the values of a firm” (CEO of FFG)<sup>2</sup> “Originally, the beginning [of considering environmental certificate] was more related to external pressure” (Director, IT and Controlling)

FFL needed to construct *environmental objectives* because the firm wanted a certified EMS. The achievement of environmental objectives and measures is externally reported with an annual report and an environmental report. The annual report contains a section concerning company environmental issues and performance. The quality manager and technical director were responsible for designating the environmental objectives. They chose six environmental measures: energy consumption, heat recovery, waste, water, wastewater, and amount of packaging materials. The measurement of these measures were considered technically speaking well running and reliable activity. The achievement of the target levels of the

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<sup>2</sup> Only the CEO of FFG explicitly referred to the concept of “good corporate citizen”. However, the Director of Quality and product safety said for instance that “[an environmental certificate] is capable of confirming that operations are proper”. According to the Technical director, “our company needs to be reflected as a sustainable development company”. The director of IT said that “we must be as small an environmental burden as possible”. In addition, a unit manager proposed that “[we have to follow sustainability principles] if we want to do business also in the future... the continuation of our operations is fundamentally important”. Therefore, different interviewees showed awareness of the importance of being a good corporate citizen as was explicitly stated by the CEO of FFG.

environmental measures is however, challenging. According to the annual report, the target levels have become more and more demanding in recent years. All the selected environmental measures had a strong link to profitability, although the reports do not spell out the links explicitly, and nor do they utilize causal maps to illustrate the connections between environmental and financial performance or measures (cf. Schaltegger & Wagner, 2006). Therefore, for instance, decreased energy consumption improves both the environmental indicator and profitability as the result of lower energy costs. Almost all those interviewed emphasized the financially driven and profitability culture within FFL.

“The company is extremely euro-driven. All development and operational actions relate to money, money making or money saving succeed. [...] Here, we do not speak about money, but we do speak about indicators. All the indicators are linked to money and we know the cost savings or increases what the indicators illustrate. We have had the courage to invest in environmental issues because the investments have saved us euros.”  
(Director of Quality and product safety)

FFL did not decide to incorporate the environmental measures into its bonus and reward systems. The CEO of FFL reports that the executive board of FFL evaluate environmental performance every three or four months. They were interested in the effect on environmental measures when some changes were implemented, for instance following the renegotiation of the firm's water supply agreements. They also evaluated environmental performance and measures with the environmental certification authority. According to a unit manager, environmental performance was evaluated in his business unit twice a year. These evaluations of environmental performance involve various members of staff, such as the business unit manager, the quality manager, the technical director and supervisors from the unit.

FFL decided to implement a *BSC* in 2004, organizing a steering group responsible for its construction. The group consisted of the quality manager, technical director and director of

information technology (IT). FFL had several reasons for implementing a PMS. First, the company wanted to centralize its fragmented information systems (see Chenhall & Euske, 2007; Malmi, 2001). Second, the company defined its processes and measured process efficiency, indicating that it is process-oriented (see Table 1). Third, management believed that targets help to direct employees' behavior towards the desired goals. Moreover, some directors were dissatisfied with the then reporting systems, because they produced information too late, that was in an aggregate form, that was focused primarily on financial measures and that included only historical information.

FFL integrated environmental measures into the process perspective. The steering group did not decide to construct an independent environmental balanced scorecard or a fifth separate perspective for environmental issues (Figge *et al.*, 2002; Hubbard, 2009). The steering group considered that the best perspective for environmental measures was the process perspective.

“Somehow it was felt to be the most natural perspective out of these four perspectives. The processes need energy and produce wastewater. It is not so much to do with the learning and growth, neither is it the customer's issue.” (Controller)

(BSC) is good in the sense that you can include environmental measures in it as departmental measures. [...] We have defined a large number of targets with (BSC). (Technical Director)

## **4. What have we learned?**

### ***4.1 The stages of change of management systems***

The changes to the EMS and PMS at FFL were made in several stages. The environmental target setting was a long process; the decision to have an EMS was made in the mid 1990s and the BSC-based environmental target setting finally took place in 2006. The change process focused on the implementation of environmental management in general in the mid-1990s, environmental measures in particular were introduced around the year 2000, and the implementation of the BSC, which took account of the environmental measures recorded since 2004, came last. The process is illustrated in Figure 2 and Table 1.

The parent company, FFG, knew that improved environmental performance would also decrease costs as, for example, lower energy consumption decreases energy costs. The study emphasized the importance of understanding the causality between environmental measures and costs in the implementation of the environmental objectives (Figge *et al.*, 2002; Johnson, 1998). This kind of profit-driven and measurement-oriented thinking was common to the directors and managers. The company was also applying the management by objectives (MBO) philosophy, which emphasized the importance of profits and measurement. Maintaining the profit-driven culture (see van Marrewijk & Werre, 2003) was a primary reason for considering the environmental issues. The company also had a degree of cultural mix between the traditional profit driven culture and an increasing willingness to be a good corporate citizen (Choi & Gray, 2008; Hopwood, 2009). This was observable not just in the interviews, but also in the practice of selecting environmental measures. All the environmental measures were selected on the basis how they would affect costs. In addition to the profit-driven culture, the Total Quality Management (TQM) system also served to justify the changes to the PMS (see also Vaivio, 1999). TQM changed organizational conditions, making them more favorable for implementing non-financial measures such as environmental measures and a new PMS (see Figure 2 and Table 1).

The BSC was more an information system and a tool for setting targets than a system for visualizing explicit causalities between measures (Malmi, 2001 see also Schaltegger & Wagner, 2006). The BSC provided a structured and well-known reporting approach for the implementation of the environmental measures. Moreover, the BSC centralized the fragmented reporting systems into one single system. It was important to incorporate environmental measures into the BSC. If environmental measures had not been incorporated into the BSC, their role would probably have been reduced to merely being an unofficial part

of the organizational target setting. Therefore, the BSC enabled the environmental measures as part of the everyday managerial measures in the scheduled reporting.

The company was able to embark on a process of organizational environmental improvement after highlighting the causal linkage between the improvement of environmental issues and cost savings. The BSC enabled management to legitimize environmental measures as one of the firm's acceptable and achievable measures (cf. Hopwood, 2009). The BSC also enabled the change of environmental issues into environmental achievable measures and concrete action.

Figure 2 illustrates the change process that led to the incorporation of environmental measures into the process perspective of the BSC. The internal context (i.e. a profit-driven culture) created pressures to measure the organizational performance. The organization wanted to improve its PMS in general because it had been using several different and inadequate systems for evaluating performance. On the other hand, external forces (i.e. customers) motivated the company to be a good corporate citizen and to acquire an environmental certificate (Choi & Gray, 2008; Hopwood, 2009). An EMS is a prerequisite of an environmental certificate and thus an EMS was constructed. Furthermore, environmental objectives were required in constructing the EMS. The profit-driven company culture was a key factor that affected the selection of environmental measures. Finally, Figure 2 illustrates how the EMS implementation preceded BSC implementation. [INSERT FIGURE 2 ABOUT HERE]

## **4.2 Change factors of management systems**

We further analyze the change processes by utilizing the models of Cobb *et al.* (1995), Innes and Mitchell (1990) and Kasurinen (2002). We discuss three different processes of change; change in PMS, environmental management and environmental measures as can be seen in

Table 1. Each of these three processes have their own change factors, where competition in general was one motivator for environmental management. Another was that the company feared being left out of something important, and the need to follow fashion. A special catalyst for the environmental management was the need to achieve the ISO14 001 certification. ISO 14 001 was considered important in order to attract customers and improve customer orientation. The applied total quality management philosophy facilitated the process of environmental management.

According to Table 1, the favorable momentum for change was found in the statement: “We have to get the environmental certificate” (see Cobb *et al.*, 1995; Kasurinen, 2002). Later on, this momentum changed to become: “We have to be a good corporate citizen” (see Choi & Gray, 2008; Hopwood, 2009). Those responsible for constructing the EMS (i.e. the quality manager and the technical director) also realized the need to include environmental objectives and measures in the environmental management system. The external reporting and management by objectives culture motivated staff to implement EMS and environmental measures too (Hopwood, 2009). The special catalyst for the environmental objectives was the EMS that again required those environmental measures.

The financially driven culture was a barrier for the environmental management in the beginning of the process, as can be seen in Table 1. The firm’s management did not consider that environmental management could increase sales. The feeling at the beginning of the process was that environmental management was only likely to increase costs. However, the company realized later that well-chosen environmental improvements could actually lead not to an increase in costs, but decrease the costs and increase the profitability. This ‘innovative linkage’ between environmental issues and costs changed the financially driven culture from being a barrier to implementation to being a facilitator of the EMS.

Table 1 also illustrates that the BSC implementation had some advancing forces behind it. First, the culture of management by objectives (MBO) was a general motivator for the implementation of the BSC system. The case company was operating in a rather low-profit margin industry, which forced the company to focus its operations on certain pre-defined issues. This focus on operations was rather easy to do for the case company, because it was financially driven, as well as having a strong MBO culture. This means that the MBO culture motivated the construction of both specific environmental measures, the target levels as well as the BSC (see Table 1). Second, ideas about process orientation lead to an increasing interest in the implementation of the BSC (see Table 1). The focus on process orientation arose in practice when the company wanted to define its processes during a development project. Third, the company had some issues with their existing PMS, which provided information too late and in too aggregate a form for managerial purposes. These issues with the existing PMS were the catalysts for the BSC implementation. Fourth, quality management, the new BSC software selected and the new controllers recruited (who had a new skill set) were the facilitators of BSC implementation.

The change of PMS also had its hindering forces, the delayers and confusers (see Kasurinen, 2002) as can be observed in Table 1. The former CEO did not value the BSC—meaning that PMS change did not have top management support at the beginning. Furthermore, the case company did not have enough resources and knowledge to hand to implement a BSC without recruiting new controllers. The lack of management support and resources were delayers in the BSC project.

In addition to the delayers, the PMS change also saw some major *confusers* (see Kasurinen, 2002). The role of the BSC as a PMS was uncertain during the year 2006. In addition to the BSC, the financially-focused old PMS (monthly management accounting report based on costs and production volumes) was still used in some units which caused further confusion



(see Chenhall & Euske, 2007) within FFL. However, this confusion was resolved after the CEO of FFL decided to adopt the BSC as the official group reporting system in 2007. The large number of indicators featured in the new BSC system was also a *confuser*. At the group level, the CEO used his own indicators for making decisions, but a large number of other indicators were reported on at lower levels of the organization.

According to Table 1, two leaders featured prominently in all three change processes. The quality manager and technical director were involved in the EMS, environmental target setting and PMS projects. Therefore, these projects were able to utilize the knowledge gained during the process of TQM certification. The new director of IT, along with some business line managers, had the third leading role in the PMS change project.

We found that the change factors were not static and could change during the changing to different management systems. We found that culture can be a barrier to change initially but may later become an advancing force. Therefore, the models of Cobb et al. (1995) and Kasurinen (2002) can be developed because the change factors can be both static and dynamic in nature. We found also that BSC change is connected with other changes, such as those connected to environmental management. They may share the same facilitators such as quality management and a requirement for an improved PMS. We also found that isolating change factors for three change processes (PMS, environmental management, environmental measures) was challenging and even arbitrary, because these processes interact closely with each other. For instance, the BSC was a facilitator of change for the environmental management and measures, despite the fact that the BSC was constructed several years after the launch of the environmental management issues process. Table 1 illustrates the change factors identified in the three different change processes—the change in the EMS, environmental measures, and PMS.

[INSERT TABLE 1 ABOUT HERE]

## 5. What should we do next?

### 5.1 *Some final thoughts on theory*

The first theoretical contribution relates to the interplay between company culture and management systems. This study found that the company culture and management systems interact with each other when different control systems are being implemented. This interaction means that culture affects the implementation of a management system, while the management system implementation simultaneously affects the culture (Hatch 1993). The cultural context may have a crucial effect on the implementation of a management system. Without the cultural fit, the implementation may be an extremely difficult process. However, once implemented, the system starts to present and highlight particular items (measures) and thus to promote and reproduce their symbolic value in organization. This kind of interplay between culture and management systems is not one that is emphasized in the earlier change models such as Kasurinen (2002) and Cobb et al. (1995). Therefore, it might be useful to incorporate aspects of culture such as values, norms, rules and routines (see for instance Burns & Scapens, 2000) more explicitly into the change models of Kasurinen (2002) and Cobb et al. (1995).

This study also contributes to the applied change models because it finds that even the change factors (advancing and hindering forces, momentum and leaders) may change while an organization is implementing or changing its PMS. We found for instance that a finance-driven culture was a hindering force for environmental management at the beginning of the change process. This financially driven culture became an advancing force when the company had selected its environmental measures and made the connection between improved financial and environmental performance. We also found that one management system (e.g. a BSC) can

be a facilitator for another (e.g. environmental measures) even if implemented much later. It can boost or accelerate the change as part of the process when it is introduced. Therefore, the change factors can be both dynamic and static during the PMS change process. This indicates that the PMS change is an even more challenging issue that can be assumed from studying the change models of Cobb et al. (1995) and Kasurinen (2002). These challenges might shed some light on the recent findings of de Waal (2007) that a majority of PMS implementations does not meet the expectations of management.

This study also contributes to the studies of management system integration (e.g. Figge et al., 2002; Hubbard, 2009). We found that the integration of EMS and PMS is not merely a technical issue of how to incorporate environmental measures into PMS or how to draw causalities between environmental and financial measures (cf. Figge et al. 2002; Malmi, 2001; Schaltegger & Wagner, 2006). According to this study, the greatest challenges are how the momentum supports the change, how advancing forces overcome hindering forces and how change agents lead the change process (see Cobb et al., 1995; Kasurinen, 2002). Therefore, the explicit consideration of change factors is even more important and challenging than deciding the technical issues when an organization is planning to integrate different management systems.

Finally, we found that a PMS (such as a BSC) can be beneficial even when not used for implementing strategy, but rather as a strategic control system—which is an extension of the ideas of Kaplan and Norton (2005). This means that the BSC as an information system (Malmi, 2001) may strengthen some parts of the organizational culture (e.g. measurement, MBO or a finance-driven culture, as in our case) and present or highlight the importance of some specific issue (e.g. the environmental issue) for employees in a company. Therefore, BSC and other PMS can prove beneficial for instance by strengthening the culture, centralizing a fragmented information system or legitimizing and changing values. All these

benefits were observable in this case company, despite the BSC not being utilized to implement strategy as is proposed by Kaplan and Norton (2005).

## **5.2 Recommendations when changing PMS**

Our first recommendation relates to the way company culture affects PMS implementation. The existing culture of a company is a very important consideration when companies are planning to implement a new PMS. We found that a strong historical culture can be very resistant to change (Chenhall & Euske, 2007). Therefore, companies should try to change PMS to correspond with the dominant organizational culture. However, a PMS is also able to change the dominant culture. We found in this study that environmental issues were taken more seriously after the connection between environmental performance and financial profitability had been made. The culture also started to change when a new PMS incorporating environmental measures was implemented. Admittedly the change was limited and slow, and meant first of all a compromise between the dominant financial orientation and some new seeds of a more sustainable culture, and the concept of being a good corporate citizen. Therefore, the first recommendation is that *in addition to technical PMS change, companies need to consider cultural issues and their effects on PMS implementation* before implementing new management systems.

Our second recommendation relates to the change models used. The change models of Innes and Mitchell (1990), Cobb et al. (1995) and Kasurinen (2002) are utilizable in practice when companies are planning to change their management systems. These models enable us to investigate explicitly the advancing and opposing forces, the momentum and leaders of change. Investigation of these change factors enables us to evaluate the probability of a new PMS being successful. However, we found that these change factors are not static, as might be implied from the models of Innes and Mitchell (1990), Cobb *et al.* (1995) and Kasurinen

(2002). We found that these change factors can be dynamic and change during the implementation of longitudinal management systems (Chenhall & Euske, 2007; Lämsiluoto & Järvenpää, 2008). Therefore, the second recommendation is that *companies can benefit by using the change models of Innes and Mitchell (1990), Cobb et al. (1995) and Kasurinen (2002) before implementing or changing management systems*. Our third recommendation is that *as the change factors can also change during the implementation, the change factors have to be carefully analyzed even during implementation*.

Our last recommendation relates to the capabilities of BSC to manage environmental issues. We propose that the BSC can be successfully used for managing environmental issues. Our case company integrated environmental measures into the process perspective of its BSC (Figge et al., 2002; Hubbard, 2009; Kaplan & Norton, 2005). The integration brought benefits; it allowed the utilization of only one management system; the integration revealed and highlighted the importance of environmental issues to all employees; and finally, the integration strengthened the link between environmental issues and the profit-driven culture. Therefore, the final recommendations of the study are; *the integration of environmental issues into the dominant PMS has several benefits and a BSC is also a capable and useful tool for environmental management purposes*.

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## References

- Ahrens, T. & Chapman, C. (2006). Doing qualitative field research in management accounting: Positioning data to contributing the theory. *Accounting, Organizations and Society*, 31(8), 819-841.
- Azapagic, A. (2004). Developing a framework for sustainable development indicators for the mining and minerals industry. *Journal of Cleaner Production*, 12(6), 639-662.
- Burns, J. & Scapens, R.W. (2000). Conceptualizing management accounting change: An institutional framework. *Management Accounting Research*, 11(1), 3-25.
- Burrit, R. L. (2004). Environmental management accounting: Roadblocks on the way to the green and pleasant land. *Business Strategy and the Environment*, 13(1), 13-32.
- Callens I. & Wolters L. (1998) Factors of unsustainability; identification, links and hierarchy, *Business Strategy and the Environment*, 7(1), 32-42.
- Chenhall, R.H. (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, 28(2/3), 127-168.
- Chenhall, R.H. & Euske, K.J. (2007). The role of management control systems in planned organizational change: An analysis of two organizations. *Accounting, Organizations and Society*, 32(7/8), 601-637.
- Choi, D.Y. & Gray, E.R. (2008). Socially responsible entrepreneurs: What do they do to create and build their companies?. *Business Horizons*, 51(4), 341-352.

Cobb, I., Helliard, C. & Innes, J. (1995). Management Accounting Change in a Bank. *Management Accounting Research*, 6(2), 155-175.

de Waal, A. A. (2007). Successful performance management? Apply the strategic performance management development cycle!. *Measuring Business Excellence*, 11(2), 4-11.

Dias-Sardinha, I. & Reijnders, L. (2005). Evaluating environmental and social performance of large Portuguese companies: a balanced scorecard approach, *Business Strategy and the Environment*, 14 (2), 73-91.

Figge, F., Hahn, T., Schaltegger, S. & Wagner, M. (2002). The Sustainability Balanced Scorecard - linking sustainability management to business strategy. *Business Strategy and the Environment*. 11(5), 269-284.

GRI (2009). *Global reporting initiative*, <http://www.globalreporting.org/Home> (November, 12, 2009)

Gray, R.H (2006). Social, environmental and sustainability reporting and organisational value creation? Whose value? Whose creation?. *Accounting, Auditing and Accountability Journal*, 19(6), 793-819.

Hatch, M. (1993). The Dynamics of Organizational Culture. *Academy of Management Review*, Vol 18, No 4, 657-693.

Hopwood, A. G. (1987). The archeology of accounting systems, *Accounting, Organizations and Society*, 12(3), 207-234.

Hopwood, A.G. (2009). Accounting and the environment. *Accounting, Organizations and Society*, 34(3/4), 433-439

Hubbard, G. (2009). Measuring organizational performance: beyond the triple bottom line. *Business Strategy and the Environment*, 18(3), 177-191.

Innes, J. & Mitchell, F. (1990). The process of change in management accounting: some field study evidence. *Management Accounting Research*, 1(1), pp. 3-19.

ISO (2009). (International organization for standardization) ISO essentials, [http://www.iso.org/iso/iso\\_catalogue/management\\_standards/iso\\_9000\\_iso\\_14000/iso\\_14000\\_essentials.htm](http://www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/iso_14000_essentials.htm), (November 18, 2009)

Johnson, D.S. (1998). Identification and selection of environmental performance indicators: application of the balanced scorecard approach. *Corporate Environmental Strategy*, 5(4), 34-41.

Kaplan, R.S. & Norton, D.R. (2005). The Balanced Scorecard: Measures That Drive Performance (cover story). *Harvard Business Review*, 83(7/8), 172-180.

Kasurinen, T. (2002). Exploring management accounting change: the case of balanced scorecard implementation. *Management Accounting Research*, 13(3), 323-343.

Laine, M. (2005). Meanings of the term sustainable development in Finnish corporate disclosures. *Accounting Forum*, 29(4), 395–413.

Lämsiluoto, A. & Järvenpää, M. (2008). Environmental and performance management forces: Integrating “greenness” into balanced scorecard. *Qualitative Research in Accounting & Management*, 5(3), 184-206.

Malmi, T. (2001). Balanced scorecards in Finnish companies: A research note. *Management Accounting Research*, 12(2), 207-220.

Masanet-Llodra, M.J. (2006). Environmental Management Accounting: A Case Study Research on Innovative Strategy. *Journal of Business Ethics*. 68(4), 393-408.



Melnyk, S.A, Sroufe, R.P. & Calantone, R. (2003). Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management*, 21(3), 329-351.

Pihlanto, P. (2003). The role of the individual actor in different accounting research perspectives. The holistic individual image as a tool for analysis. *Scandinavian Journal of Management*, 19(2), 153-172.

Porter, M.E. & van der Linde, C. (1995). Green and competitive: Ending the stalemate. *Harvard Business Review*, 73(5), 120-129.

Schaltegger, S. & Wagner, M. (2006). Integrative management of sustainability performance, measurement and reporting. *International Journal of Accounting, Auditing and Performance Evaluation*, 3(1), 1-19.

Vaivio, J. (1999). Exploring a ‘non-financial’ management accounting change. *Management Accounting Research*, 10(2), 409-437.

van Marrewijk, M. & Werre, M. (2003). Multiple levels of corporate sustainability. *Journal of Business Ethics*, 44(2/3), 107-119.

Verbeeten, F.H.M & Boons, A.N.A.M. (2009). Strategic priorities, performance measures and performance: an empirical analysis in Dutch firms. *European Management Journal*, 27(2), 113-128

Wilkinson, G. & Dale, B.G. (1999) Integrated management systems: an examination of the concept and theory, *The TQM Magazine*, 11(2), 95-104.

#### *Interviews in the case company*

<i>Nro</i>	<i>Interviewed</i>	<i>Interview day</i>	<i>Recorded (min)</i>
1	Business area director of parent company, member of executive board of parent company.	August 29, 2006	43

2	Business area director of parent company, member of executive board of parent company.	August 23, 2006.	39
3	Business unit manager.	August 22, 2006.	36
4	Chief Executive Officer (CEO) of group, member of board.	November 3, 2006.	34
5	Chief Executive Officer (CEO) of parent company, member of executive board of group, vice CEO of group.	December 8, 2006.	54
6	Controller of parent company.	August 22, 2006.	50
7	Director of information technology (IT), member of group executive board.	September 1, 2006	45
8	Director of quality and product safety, member of group executive board, business area director of parent company.	August 24, 2006.	38
9	Quality manager of parent company.	May 17, 2006; Aug. 29, 2006.	76
10	Technical director of parent company, member of executive board of parent company.	May 17, 2006; Sept. 25, 2006	63

	<i>Number of interviewed</i>	<i>Number of interviews</i>	<i>Recorded (n)</i>
<i>Total</i>	10	11	482

## FIGURES AND TABLES

Figure 1 PMS change model (revised Cobb et al.,1995; Innes & Mitchell, 1990; Kasurinen, 2002)

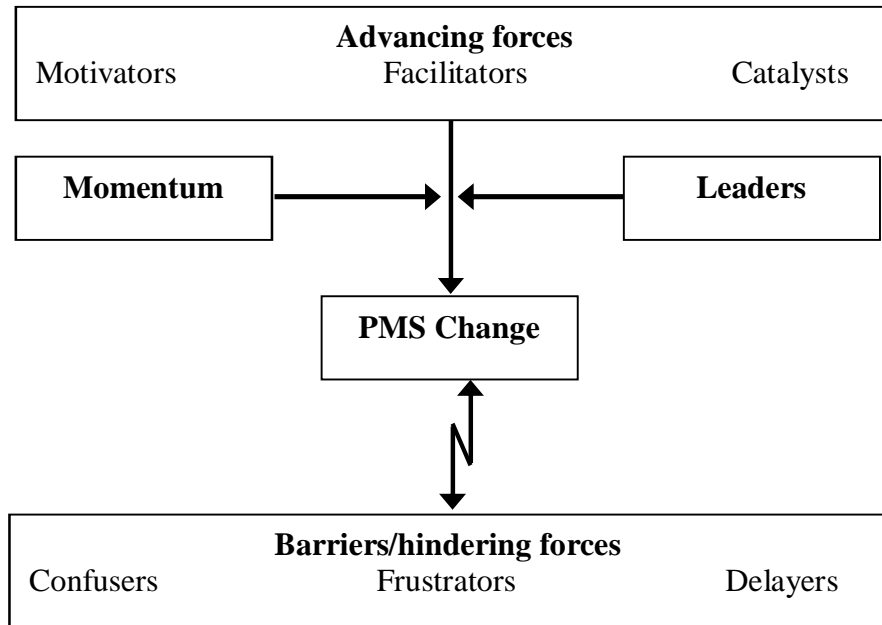


Figure 2 The reasons for PMS changes and BSC implementation

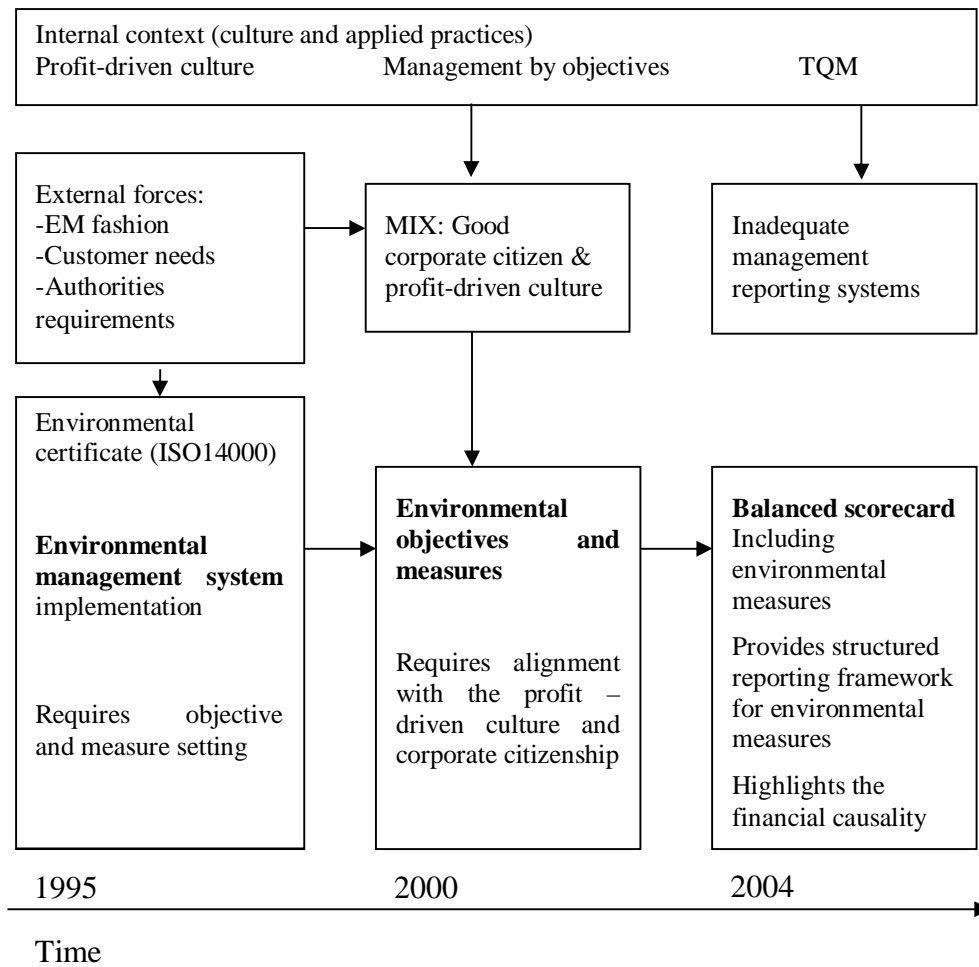


Table 1 The environmental performance measurement change factors

	<b>Environmental management (1995 -)</b>	<b>Environmental measures (2000-)</b>	<b>Balanced Scorecard (2004-)</b>
<i>Advancing forces</i>			
<b>Motivators</b>	Competition Fear of being left out of something important (following the competitors)	Management by objectives External reporting	Management by objectives
<b>Catalysts</b>	Customer orientation Need to have ISO14 001 certificate	Environmental system requires environmental objects and measures	Process orientation Challenges related to multiple information systems
<b>Facilitators</b>	Quality management New operational system Balanced scorecard (after 2004)	Connection to finance-driven culture (cost savings) Balanced scorecard (after 2004)	Quality management New operational system Computer software New controllers
<i>Hindering forces</i>			
<b>Barriers</b>	Finance-driven culture (In the beginning)	Several reporting medias	Old CEO does not value BSC (earlier) Lack of resources (earlier) Uncertainty about the BSC's future role Too many measures Role of existing reporting systems
<b>Momentum: “leading expectations regarding the environmental performance measurement”</b>	“We have to have environmental certification”	“We have to be a good corporate citizen” “There have to be environmental objects and measures in an environmental system”	“Environmental objects and targets should be aligned in the organization and be part of an organization-wide reporting system”
<b>Leaders</b>	Quality manager Technical director	Quality manager Technical director	Quality manager Technical director Director of IT and controlling