The Business Values Scorecard within BAE Systems: The evolution of a performance measurement system

Mostafa Jazayeri[a,*], Robert W. Scapens[b,1]

[a]Department of Business and Management Studies, The Manchester Metropolitan University, MMU Cheshire at Crewe, CW1 5DU, UK
[b]University of Groningen, NL and Manchester Business School, UK

Abstract

This paper explores the evolution of a performance measurement system in BAE Systems, a UK aerospace company. In 1994, the company embarked on a culture change project, which focused the organisation on five key values: performance, people, customers, partnerships, and innovation and technology. Tracing the mechanisms used to implement these values through the culture change project, the study describes the introduction of the ''Business Values Scorecard'' (BVS), which provided a way of translating the five key values into a coherent set of performance measures. The paper contrasts the BVS in BAE Systems with the balanced scorecard (BSC) of Kaplan and Norton, emphasising the importance of ''coherence'', rather than cause-and-effect relationships. Furthermore, the BVS was not simply designed and then implemented; instead it evolved over an extended period of time. Finally, while it reflected the strategic vision of senior managers, the BVS was used as a tool to enable strategy to emerge from within the organisation, rather than as a mechanism for cascading down the hierarchy the strategy previously established by top-level managers. However, although the profitability of the company increased significantly over the period of the culture change project, many other things were also changing; consequently, it is not possible to isolate the effects on profits of introducing the BVS. Nevertheless, the belief within BAE Systems is that the BVS has made an important contribution to the recent success of the company.

Keywords: Business Values Scorecard; Corporate change program; Performance management; Evolution; Coherence

1. Introduction

The use of non-financial performance measures is not new. For example, General Electric (GE) in the US was using non-financial measures in the 1950s (Anthony et al., 1989) and French firms have, for many years, used the tableau de bord, which can be dated back to 1932 (Bourguignon et al., 2004). In addition, over the years, a number of theorists have pointed to the importance of non-financial measures (e.g. Hopwood, 1973; Anthony et al., 1984; Merchant, 1985; Schoenfeld, 1986; Eccles, 1991; Maciariello and Kirby, 1994). However,

*Corresponding author. Tel.: +44 161 247 5017.
E-mail address: m.jazayeri@mmu.ac.uk (M. Jazayeri).
[1]Robert W. Scapens also holds visiting appointments at the University of Birmingham, UK; the University of Dundee, UK; and is the *Swedbank* visiting professor at Lund University, Sweden.

non-financial measurement systems have generally comprised loosely coupled local systems, guided by local needs and with little direct connection to the organisation's strategic objectives, and without any explicit balancing of local and organisational needs (Nørreklit, 2000, p. 66; see also Merchant, 1985).

In recent years, considerable research has been directed at constructing systems of non-financial measures linked to strategy (McNair et al., 1990; Beischel and Smith, 1991; Grady, 1991; Euske et al., 1993; Ittner and Larcker, 1998; Vaivio, 1999a, b, 2004; Surysekar, 2003; Ittner et al., 2003a, b; Malina and Selto, 2004; Chenhall, 2005; Tuomela, 2005). Probably, the most well known of these systems is the balanced scorecard (BSC) of Kaplan and Norton (1992, 1993, 1996a, b). Kaplan and Norton claim that ''the scorecard addresses a deficiency in traditional management accounting systems: their inability to link a company's long-term strategy with its short-term action'' (Kaplan and Norton, 1996c, p. 75). Whereas the BSC is intended to provide the means for putting strategy into action, in this paper we will explore an alternative approach in which a scorecard—a so-called ''Business Values Scorecard'' (BVS)—was used in order *to develop* strategy. In 1997, BAE Systems introduced its BVS to give managers financial and non-financial information covering the five key values of its culture change project.

In this paper, we will discuss the linkages between the BVS in BAE Systems and the company's culture change project. We will also contrast the BVS with Kaplan and Norton's BSC. We will describe how the BVS evolved, rather than being imposed, and examine the way in which the BVS was used to enable strategy to emerge, rather than as a way to implement the strategy set by top-level managers. The paper is organised as follows: the next section will review the literature on non-financial performance measures; then after Section 3 describes our research methods, Section 4 will describe performance measurement systems (PMS) in BAE Systems; Section 5 then discusses issues arising out of our case study and Section 6 provides some conclusions.

2. Non-financial performance measures

As mentioned above, the interest in non-financial performance measures is not a new phenomenon, but clearly such measures have become increasingly widely used in recent years (for reviews see Ittner and Larcker, 1998; Neely et al., 1995; see also Burns et al., 2003). In addition, over the years, a number of theorists have pointed to the importance of non-financial measures (e.g. Hopwood, 1973; Anthony et al., 1984; Merchant, 1985; Schoenfeld, 1986; Eccles, 1991; Maciariello and Kirby, 1994). Probably the most popular system associated with the use of non-financial performance measures in management accounting is the BSC developed and promoted by Kaplan and Norton (1992, 1993, 1996a–c, 2000). In part, the popularity of the BSC is because it has a range of different uses, and it can mean different things to different people (see Nørreklit, 2000).

Recent academic research has suggested that there are a number of different ways in which the BSC can be used (e.g. Malmi, 2001; Speckbacher et al., 2003; Ax and Bjørnenak, 2005). For example, Malmi distinguished, on the one hand, companies which use the BSC in a system of management by objectives and, on the other, companies which use the BSC merely as an information system. It is worth noting at this point that, in his study, Malmi also observed that many users of the BSC direct their attention to each perspective (of the score card) in turn, rather than exploring the cause-and-effect relationships between the different perspectives. We will explore this point in more detail later. Returning for the moment to the different uses of the BSC, Speckbacher et al. (2003) distinguished three types of BSC:

Type I: a specific multidimensional framework for strategic performance measurement that combines financial and non-financial measures;
Type II: type I, plus an explicit recognition of cause-and-effect relationships;
Type III: a type II BSC which explicitly implements strategy by defining objectives, action plans and reports, and which is linked to incentives.

In the case of types (II) and (III), BSC measures are linked in a chain of cause-and-effect relationships, but it is the type (I) which is the most common in Speckbacher et al.'s sample of BSC implementations in German-speaking countries. In another study, Ax and Bjørnenak (2005) found that the implementation of the BSC in Sweden had distinctive Swedish characteristics. For example, whereas Kaplan and Norton clearly state that their BSC is a shareholder model (1996a, p. 36), Ax and Bjørnenak argue that the typical Swedish version emphasises employees as much as shareholders and, as such, has the characteristics of a stakeholder (rather than a shareholder) model. Despite these differences, an essential feature of all the discussions and references to BSC is the linkages between performance measurement and strategy. In the following sub-section we will explore the nature of Kaplan and Norton's approach with specific reference to the way they link the BSC to corporate strategy.

2.1. Kaplan and Norton's balanced scorecard

In their two-part Commentary in *Accounting Horizons*, Kaplan and Norton (2001) described "transforming the balanced scorecard from performance measurement to strategic management". They describe how strategy can be translated into operational terms through strategy maps, which express the cause-and-effect relationships both within and between the four perspectives of the scorecard. Through the use of incentives and rewards attached to the various performance measures, the day-to-day operations of the organisation can be aligned with its strategy.

Essentially, this is a top-down approach in which senior (i.e., top level) managers develop their strategic vision and the strategies needed to achieve it. By building strategy maps and identifying with the appropriate leading and lagging indicators the (four[2]) perspectives of the scorecard can communicate this strategy down the organisation. They can then monitor the achievements through the BSC in much the same way as a pilot flies a plane (Kaplan and Norton, 1996a, p. 2). As such, the design of the BSC is a logical, strategy-driven process. However, Kaplan and Norton do acknowledge that it may be necessary to allow appropriate performance indicators to emerge, as strategic learning takes place (2001, p. 154). Nevertheless, the use of the BSC (in Kaplan and Norton's terms) is a top-down, rational design process, in which strategy maps and cause-and-effect relationships provide the linkages between the strategic vision of senior managers and the operational activities of the business.

Although the BSC is portrayed very positively in the practitioner literature, as a modern sophisticated management technique (e.g. Marr, 2001; Silk, 1998; Williams, 2001), a number of somewhat more negative critiques of the BSC have appeared in the academic literature in recent years. In the following sub-section we will outline some of these critiques.

2.2. Critiques of the balanced scorecard

As mentioned above, the BSC is used in many different ways in practice and, furthermore, diverse forms of reporting non-financial performance measures are often referred to as a "balanced scorecard". In many cases these performance measures have some links to strategy, but not necessarily through the logical process envisaged by Kaplan and Norton. Furthermore, where cause-and-effect relationships are recognised, they are often only "within" the individual perspectives, and not necessarily between the different perspectives. In general, studies have shown that it is only a relatively small number of what might appear to be "balanced scorecards" that are of the form which would represent the full application of Kaplan and Norton's BSC (e.g. see Malmi, 2001).

In a paper, which appeared in *Management Accounting Research* in 2000, Nørreklit explored the nature of cause-and-effect relationships in the BSC (see Nørreklit, 2000). Amongst other things, she pointed out that time lags are not well understood or modelled within the BSC. Furthermore, the directions of causality are not always clear, and the linkages between the different perspectives may be non-linear. In addition, there was only limited empirical evidence for the casual relationships assumed in Kaplan and Norton's portrayal of the BSC. Nørreklit also argued that Kaplan and Norton confuse cause-and-effect relationships with both logical relationships and means–ends (also called, finality) relationships (see also Nørreklit and Mitchell, 2007).

Nørreklit pointed out that, in cause-and-effect relationships, the events are logically independent and can only be inferred empirically. For example, the relationship between machine speed and resource consumption

[2]Normally, the BSC has four perspectives: financial, customer, internal, and learning and growth. However, Kaplan and Norton acknowledge that individual organisations may select different perspectives, and could have more or less than four.

is a cause-and-effect relationship. But logical relationships, say between a reduction in costs and an increase in profit (other things being equal), are, in essence, a matter of accounting language. Finality relationships, however, are concerned with the means for achieving particular ends. These are fundamentally different from cause-and-effect relationships. Whereas cause-and-effect is a statement of an empirical relation, finality is concerned with the ways in which actions might be taken to achieve a particular outcome. As such, finality is more complex and ambiguous; it involves intentions and uncertainty about both the means and the ends. For example, a company might initially supply products at low prices, in order to make customers satisfied and to gain market share and brand image; then later it could increase prices to secure higher profits.

If relationships are based on finality, Nørreklit argued that the concept of coherence becomes important in designing PMS (2000; see also Nørreklit and Mitchell, 2007). Whereas causal relations imply a form of consistency, which refers to the individual elements within the (performance measurement) system, coherence relates to the alignment and integration of the system as a whole. Furthermore, Nørreklit and Mitchell (2007) argue that finances, markets, technology and internal business processes need to be continually monitored to ensure that the strategic focus remains coherent over time. ‘‘Any imbalance must be identified through continual monitoring and then rebalanced. Strategic coherence therefore needs performance measurement support that integrates and coordinates the components of the firm across functional specialisms and over time’’ (Nørreklit and Mitchell, 2007, p. 185).

Thus, the notion of coherence focuses attention on the wholeness of the system. This does not suggest that causal relations are unimportant, but we need to look beyond individual cause-and-effect relationships. In a paper presented at the European Accounting Association Annual meeting in Seville, 2003, Bourguignon et al. reviewed the literature on coherence and looked at the semantic differences between English and French usage of the words coherence and consistency. They argued that, from an English perspective, ‘‘coherence’’ can be linked to alignment and has implications for the wholeness of the system, whereas ‘‘consistency’’ relates to individual elements within the system. These are the meanings which will be used in this paper. Bourguignon et al. (2003) also drew a distinction between instrumental coherence and psychological coherence. The former relates to achieving an alignment between strategy and operational management, whereas the latter is concerned with the individual desire for a sense of coherence. In a subsequent EAA conference paper, Bourguignon and Jenkins (2004) used a case study of the French railways to illustrate how attempts to achieve instrumental coherence can have adverse consequences for psychological coherence, as individuals are subject to ‘‘multiple influences in specific work communities’’ (p. 17). In our study of the BVS in BAE Systems the term coherence will refer to instrumental coherence (unless otherwise indicated).

As mentioned above, Kaplan and Norton see the BSC as the culmination of a process which begins with the top (or corporate) management’s strategic vision for the business. This vision is then used to develop the performance measures needed to communicate strategy down the organisation. This implies that strategy is developed by the senior managers and then imposed on the organisation through a rational process in which performance measurement plays a central role. However this begs an important question which has been debated in the strategy literature: i.e., whether strategy can be imposed *on* an organisation by senior management, or whether it emerges from *within* the organisation (see Mintzberg, 1978; Dermer, 1990; Lord, 1996; Nyamori et al., 2001). If strategy is essentially an emerging process, rather than something imposed by senior managers, the important question becomes whether performance measures can be used to support the emergence of strategy (Lord, 2007, p. 148). De Haas and Kleingeld (1999) propose a system of strategic dialogue through which performance measures are formulated through continuing dialogue within the organisation about the nature of the leading and lagging indicators. Such (strategic) dialogue can thereby promote organisational learning and strategic development (see also de Haas and Algera, 2002).

Such debates emphasise the evolutionary nature of the development of PMS. In this paper we will explore the evolutionary way in which a new PMS, specifically the BVS, emerged within BAE Systems. We will discuss, in particular, the coherence of the systems and the way in which the BVS was used to encourage strategy to emerge within the organisation (rather than as a process of imposing strategy from the top of the organisation). But before turning our attention to the case, we need to briefly review some of the literature on the evolution of PMS in order to provide a framework for our analysis of the BAE Systems’ case.

2.3. The evolution of PMS

In recent years, a substantial amount of literature has developed exploring issues of organisational and accounting change and, in particular, there have been several studies looking at management accounting change (see Scapens, 2006). Much of this literature explores the evolutionary nature of change processes. In addition, there are also a significant number of studies which seek to identify the factors which contribute to successful programmes of change and the forces which shape processes of change (e.g. Shields, 1995; Shields and Young, 1989). In relation to PMS, more generally, Waggoner et al. (1999) identified a number of forces which shape their evolution and change. Based on a review of several distinct strands of academic research, including operations management, social psychology, management accounting and organisational behaviour, they developed a framework, which summarises several important issues that can impact on the evolution of PMS. As can be seen from Fig. 1, Waggoner et al. classified the forces shaping the evolution of PMS into four groups (1999, p. 58):

(1) internal influences—e.g. power relationships and dominant coalition interests;
(2) external influences—e.g. legislation and market volatility;
(3) process issues—e.g. manner of implementation and management of political processes; and
(4) transformation issues—e.g. degree of top-level support and risk of gain or loss from change.

This framework is particularly useful for identifying and categorising the multiple and diverse forces which shape PMS, and it explicitly recognises the evolutionary nature of change processes. However, the distinctions between the four groups are rather arbitrary and, although useful for theoretical discussions, they become somewhat problematic when used to explain the emergence of PMS in practice. Initially, in analysing the BAE case, we attempted to explore each of the four categories separately, and to classify the forces at work into one of the four groups. But we soon found that in practice there are many interconnections between the various forces and, although the four groups identified by Waggoner et al. were useful for categorising the PMS literature, they are quite difficult to use for analysing a specific case, such as the development of the BVS in BAE systems.

In our analysis, we found it more helpful to combine the internal and external influences, which we will refer to as antecedents, and then to explore the transformation and process issues together. In the later sections of the paper we will describe the cultural change project, and the ways in which the BVS was adapted and routinised. In particular, the major changes that were taking place in the world, such as the fall of the Berlin Wall, had major consequences for BAE. But these external forces interacted closely with the developments which were taking place within the company. So it was very difficult, and rather arbitrary, to classify some

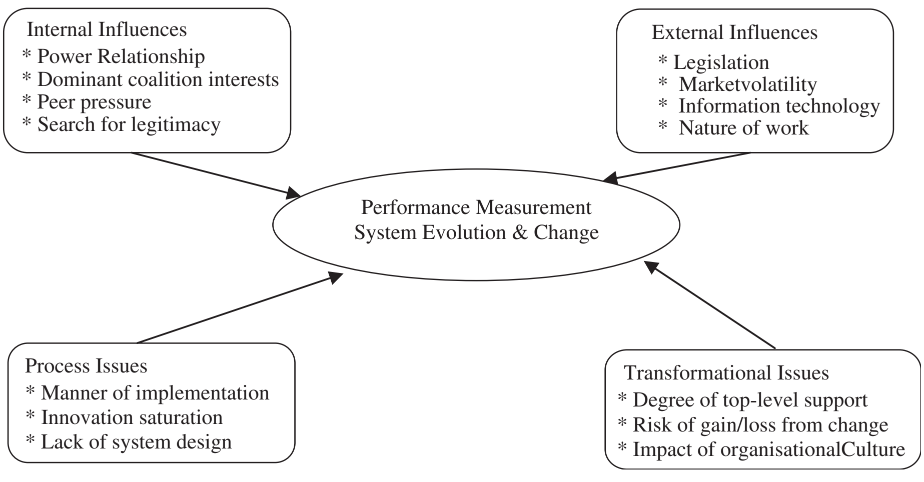

Fig. 1. Forces impacting performance measurement system evolution and Change. *Source*: Waggoner et al. (1999, p. 58).

influences as internal and some as external. These (external and internal) influences could be thought of as the "motivators" of the PMS change in BAE—see Innes and Mitchell (1990), who propose three factors for analysing processes of change: motivators, facilitators and catalysts.

As we will see later, in BAE the external and internal influences provided the motivation for the development of a new PMS, and the culture change project together with the evolution of the existing PMS (the transformation/process issues) were facilitators of change. However, there was no single catalyst, although a number of issues, which came together in 1994, prompted the Chief Executive (CE) of BAE to instigate the culture change project. As such, it could be said that, rather than a single catalyst, the more evolutionary way in which many events and issues can together create the conditions in which change became possible may be even inevitable.

To summarise, although the Waggoner et al. framework was an initial starting point for our study of the evolution of the BVS within BAE Systems, it was not applied through the four groups shown in Fig. 1. In a sense it was simplified, as we only had two categories, but nevertheless the framework was helpful in drawing attention to the multiple and diverse forces which shaped the evolution of the BVS. In the later sections of this paper we will describe the internal and external background (or, in our terms, the antecedents) to the changes in BAE and we will then locate the BVS in the context of the culture change project and explore the process and transformation issues. This will enable us to understand the evolutionary process through which the new PMS was developed within BAE. More formally, we will:

(1) locate the BVS within the context of the culture change project;
(2) explore how and why BAE implemented its BVS; and
(3) understand how the new PMS have evolved.

In so doing, we will describe how the BVS was used to enable strategy to emerge within BAE, and we will contrast this approach with the strategically driven design of the BSC described earlier. By exploring the evolution of the BVS as part of the cultural change project, we will describe PMS as both an object of change and a mechanism of change.

3. Research methods

As mentioned earlier, the CE of BAE, Sir Richard Evans, was the instigator of the cultural change project. His position, and that of the senior management of BAE, is clearly documented in a book, titled "Vertical Take-Off", that Sir Richard wrote with Colin Price (one of the consultants who advised the company on the cultural change project)—see Evans and Price (1999). In this paper we will draw on the views expressed in that book, together with interviews and archival material collected within a particular division—the Customer Solutions and Support division. These interviews provide a useful counterbalance to the corporate management views expressed in the Evans and Price book. Ten interviews were conducted with managers from the shop floor to senior divisional level, using open-ended questioning, during site visits over a period of 8 months in 2002–2003. The interviews, which lasted between 2 and 4 h, were tape recorded, and later transcribed for subsequent analysis. Internal documents, graphical charts and official company histories were also collected.

In this paper, we will seek to reconstruct the story of the evolution of the BVS within BAE Systems, through the words of the managers who were interviewed in Customer Solutions and Support division, and the views expressed in the Evans and Price book. We will begin by describing the (internal and external) antecedents of the change, and then by exploring the culture of change project and how the BVS was adapted and routinised.

We will discuss how the emerging PMS in BAE Systems, specifically the BVS, which superficially looks like many other "balanced scorecards", is actually quite different from Kaplan and Norton's BSC. Although in both types of scorecard there are connections to strategy, the BVS is more concerned with enabling strategy to emerge, rather than with imposing strategy previously developed by senior managers. We will also explore the extent to which the notion of coherence in the BVS is more important than the individual cause-and-effect relationships, as in the BSC. Finally, in the case analysis we will adopt an evolutionary perspective, as we explore how the BVS evolved in the context of the culture change project which took place in BAE in the late 1990s.

4. PMS in BAE Systems

4.1. The organisation

British Aerospace became Europe's largest defence company in 1999 when it bought Marconi Electronic Systems (MES) and formed BAE Systems. Globally, BAE Systems is the second largest defence contractor and the joint-third aerospace and defence company. In 2000 it had more than 100,000 employees worldwide, while in 1999 its annual sales were £12.2 billion and its order book amounted to £41.0 billion. The new company had customers in more than 80 countries, but there are only really three major customers: the governments of the US, UK and Saudi Arabia.

At the beginning of the new century, following the MES acquisition, the company's principal objectives, as stressed in publicity material and by management, were to focus on three aims: (1) to maximise the value of its existing portfolio and to deliver increased performance from its order book; (2) to exploit key growth opportunities and to grow the business; and (3) to exploit further consolidation of the industry. These aims were seen as being most likely to be achieved by: firstly, continuous expansion, initially in the US, Middle East, Kazakhstan and Libya, and, secondly, by exploiting the opportunities created as a result of the combined strengths of the British Aerospace and MES.

BAE Systems is divided into eight business units (see Table 1). The Customer Solutions and Support division, which was the site of this study, is responsible for service-based prime contracts, programmes and equipment. It is also responsible for generic support services and the development of opportunities in adjacent markets. As a manager explained:

> The (Customer Solutions & Support) business unit… basically starts to provide products and services to clients once they have bought our equipment. So we have an operation that focuses on extensive life cycle logistic support… We actually support and maintain aircraft and ships through our MASS [military aircraft and support] and land and sea support systems in addition…we also have organisations that deal with the infrastructure, both civil and military infrastructure, in terms of both the hard facilities, management provision of buildings, airports, docks, runways and the like, and the soft facilities management which provides the services that are necessary to keep the businesses running.

Customer Solutions & Support is a new area for BAE Systems and it has significant growth potential. Overall, BAE Systems is expected to grow primarily in three areas: (i) customer support, (ii) commercial aircraft and (iii) defence systems. There is a growing demand for integrated systems solutions and, as a result, the opportunities for Customer Solutions & Support are expected to increase significantly in future years (Air & Space Europe, 2000).

Table 1
Divisions of BAE Systems in the United Kingdom

1	Shared services
2	Military air solutions
3	Surface fleet solutions
4	Customer solutions and support
5	Integrated system technologies
6	Regional aircraft
7	Under water systems
8	Submarine solutions

Source: www.baesystems.com.

4.2. Internal and external antecedents

British Aerospace (BAE) was created by the Labour government's nationalisation of the UK's aircraft and shipbuilding industries in 1977. Then in 1979 the company was privatised by Prime Minister Thatcher's privatisation initiative. However, the government continues to closely regulate the sale of weapons. As BAe's CE was quoted as saying:

> It is the Government that has to deal with the foreign policy, which governs the sale of weapons. We are simply the designers, builders and sellers of military products. We can't sell anything without their approval because we need an export licence for everything we sell (see Davidson, 1997, p. 38).

During the 1980s the company's performance improved as a result of the privatisation and natural growth in the market (Miller, 1995). As one manager recounts:

> The company had not done badly throughout most of 1980s. The order book was healthy. The shares were middling performers in the FT-SE 100.

When in 1989 the Berlin Wall fell, many saw it not just as the close of a dark chapter in European and world history, but as the end of the entire book, and as a result it was thought that the world would become a safer place. But ironically, according to the United Nation's Human Development Report (see Staples, 2000), globalisation is creating new threats to human security. Economic inequality between Northern and Southern nations has worsened, not improved. There are more wars being fought today—mostly in the Third World—than during the Cold War. Most of these are not wars between countries, but civil wars, where the majority of deaths are civilians, not soldiers (Staples, 2000). One manager explained:

> Following the fall of the Berlin Wall what has happened is that the demands of defence forces worldwide have changed completely… What you've actually found is that conflict has now become more diffused, much more diverse and one finds that in places like Yugoslavia ethnic conflicts have tended to arise and this tends to be a much, much more intense kind of inter-ethnic type of fighting.

Faced with changing markets and increased competition, BAe struggled to re-establish its dominance and to regain market share. Senior managers soon realised that the key to competitive success was to transform the way the company functions. As one senior manager explained:

> There is a greater requirement for both peace-keeping and peace-making that is being pushed upon the armed forces. And also it means it tends to take place in places which are further away. From the defence point of view it therefore is actually much harder for the defence forces in this country to actually gauge and assess and produce the right response to all these particular challenges and it's much harder to assess the threat posed by, say, semi-organised militia in Sierra Leone than it is to actually to be able to go out and look at aerial photographs and see that the Russians have tanks and all this type of thing.

He added:

> So what we must do is (a) change the way we do business and (b) change the type of business that we actually do… What happened is that it was increasingly recognised that the business model we had would not fit the changing circumstances of the customers…

In 1991–92 the company encountered serious problems due to the government's defence spending review, losses in the commercial aerospace sector, declines in the property market, the rapid contraction of its major customers, the worldwide recession and the end of the Cold War. To continue to operate the company additional capital was urgently needed. In the autumn of 1991, BAe went to the City to raise £430 million from rights issues, but this was poorly received by investors and sent the stock into a long-term decline. Then in 1992 the company recorded the biggest single asset write-off in UK corporate history—£1 billion. As a result, the share price fell to an all-time low of £0.97, down significantly from the price of the rights issue at £3.80. A hostile takeover by the British General Electric Company seemed a very real possibility. As a reaction to the downturn in profitability, BAe reduced costs by downsizing and restructuring. The CE explained the process in the following terms:

> We immediately had to eliminate huge amounts of costs from the business, which could only be done by closing and reducing the size of many of our facilities and shedding thousands from the workforce. Through restructuring we eliminated 60,000 out of 127,000 jobs that were on the payroll when I took over, more than 40,000 of them in regional aircraft alone (see Evans and Price, 1999, pp. 2–3).

It was in 1990 that Sir Richard Evans had become the CE of BAe. In that year the company's profit had increased and he told shareholders that ''the company's resilience against the background of uncertainty and change in the environment had been amply demonstrated'' (Evans and Price, 1999, p. 1). He was confident that the company would continue to improve its performance in the future. As will be discussed later, in 1991–94 the company encountered serious problems due to: (1) competitive pressures from Boeing, one of its strongest competitors; (2) the dramatically declining demand from its two main customers, the United States Department of Defence and the British MoD; and (3) overcapacity in the European aerospace industry.

For example, in Europe there were 10 helicopter and military aircraft contractors (versus five in the US), 10 armed vehicle makers (versus two in the US), 13 naval shipyards (versus four in the US), 11 missile contractors (versus three in the US). To offset the defence-budget cutbacks, which were expected following the ending of the Cold War and worldwide recession, the previous top management had bought several commercial firms. Their rationale had been that these companies would be able to offset periodic weak revenues in the defence sector (see Evans and Price, 1999). The best known of these companies were the Rover Group, Royal Ordnance and Arlington Securities. Following the problems in 1991–92, the company adopted a long-term strategy that concentrated all its efforts on defence and aerospace activities. In January 1994, it sold Rover to BMW and exited from the corporate jet business, the construction business, the satellite business and some parts of the property business. In that year the company returned to profitability, but its problems were far from over. As the CE explained:

> In 1994 we made our first profit in three years and shares had at last climbed to roughly their level at the time of the ill-fated rights offering. However, relative performance was still lacklustre when set against our sector peers in the FT-SE 100. Our projections of future performance indicated that this gap would widen in the years ahead … and BAe might not survive as an independent entity (see Evans and Price, 1999, p. 9).

In 1994, along with new investments in up-to-date facilities and machinery, the company implemented major changes in its control systems (with activity-based costing, Japanese-style kaizen-based manufacturing methods and enterprise resource planning with SAP). Unfortunately, competitive performance did not improve as expected. Senior management perceived the company's strengths and weaknesses in the following terms:

Strengths were its good reputation in aerospace, advanced technology, very good penetration in export markets, a large number of skilled people, positive cash flows (due largely to the Saudi Arabian Al Yamamah II programme for Tornado aircraft, plus associated in-service training and support), and good relationships with customers.

Weaknesses were diagnosed as a lack of cost control at the design stage of its products, a lack of a marketing strategy for new markets, poor responses to changing customer needs after the fall of the Berlin Wall, eroding market share and low profits (due primarily to the overcapacity of the European aerospace and defence industries, and American competition).

The disparity between these strengths and weaknesses led to frustration and confusion amongst BAe managers. As one manager said:

> The company had such great capability but it wasn't adding up to anything. It was really painful. We had product strength, people strength, and a lot of technological and marketing skill. Yet we weren't making the most of it.

Another manager observed:

> The process of nationalisation had produced no change in our essential character. All that happened was that we changed the signs on vans and doors. Then when Mrs. Thatcher decided we would be privatised, we

> spent more money and changed the signs on the vans again. But we still did not change in our approach to customers and we did not work hard at leveraging advantage from each of the strengths within the corporation.

It was at this point that the CE recognised the need for a significant change in the culture of the company, which would reduce its reliance on managerial authority, narrow divisions of work, and formal rules and procedures. He explained it in the following terms:

> That summer of 1994, while on holiday in Spain, I decided that the moment of truth had arrived—to launch a radical and uncompromising cultural change push immediately. Furthermore, it looked like I'd have to be the champion of the process (Evans and Price, 1999, p. 10).

Consequently, in late 1994, a culture change project was adopted to restructure the operations of BAe by creating teams, sharing information, and delegating responsibility and accountability all the way down the hierarchy. As such, the company was moving from a privatised bureaucratic model of organisation to a task-driven organisation in which what needs to be done governs who works with whom and who leads (cf. Beer et al., 1990).

However, although BAe's CE recognised the need for change, and that he would have to champion the process, he also realised that he could not do this with a big stick, and furthermore it could not be done too quickly. He took the view that:

> unless the need for change freely emerges out of honest and open discussion, deep-seated transformation will simply never occur……Since the goal was to change behaviour, we had to deploy group and peer pressure to achieve [this] purpose. So I looked for a balance: neither hurrying the process, nor letting it take too long (Evans and Price, 1999, p. 28).

In the following sub-section, we will describe the nature and process of the culture change project. As this encompasses the period in which BAE Systems was created, following BAe's acquisition of MES, in subsequent sections the abbreviation BAE will be used to refer to the company in general over the entire period, and BAe and BAE Systems will be used, as necessary, to refer explicitly to the periods before and after the acquisition of MES, respectively.

4.3. Cultural change

The culture change project was intended to focus everyone within BAE on five key values: performance, people, customers, partnership, and innovation and technology—see Table 2. The project included the development of the BVS to measure performance in terms of these five key values—see Fig. 2. The evolution of the BVS will be discussed later; first we will describe the main steps in the culture change project:

(1) The process began with the CE addressing the whole organisation—identifying and discussing the company's strengths and weaknesses, actual and potential crises, and major opportunities. He recognised that the essential first step was to secure employee involvement and that, without motivation and a recognition of the crisis facing the company, people would not be fully committed to the change project.
(2) The CE then initiated a broad review of the business, and he engaged outside consultants[3] to help him and other senior managers function more effectively as a group. Next, he set up the "130 Group", which comprised the Board's five directors and all the senior managers of the company's divisions and some of its joint ventures. The Group's job was to form a powerful guiding coalition for the project's next stage. An important aspect of this second step was that the 130 Group included key line managers with enough power to lead the process of change and to encourage others to work as a team.

[3] Colin Price, the co-author of 'Vertical Take-Off' (Evans and Price, 1999), was one of these consultants.

Table 2
The five key values

The following explanations, taken from the comments during various interviews, illustrate the five key values of the culture change project in the interviewees' own terms:

Performance:
Basically our key value is performance, which is basically the key to winning and which means that we will set targets to be the best and to continually challenge the way we actually do things.

People:
People are our greatest strength and what happens is that we recognise the fact that we can no longer treat our people as being extensions of the machine and that we've actually got a large number of highly talented people and we want to get the best people to work here and actually enable them to work in the best possible way.

Customer:
Customers are our highest priority, both internal and external, by understanding and exceeding their expectations.

Partnership:
Increasingly what happens is that we are moving into areas that we do not normally operate in, but other people do and therefore what we have to do is to engage partners on a long-term basis.

Innovation and technology:
We have to continually change our business and the way we do business. So what we're actually trying to do is to preach stable values as well as change in the dynamic environment.

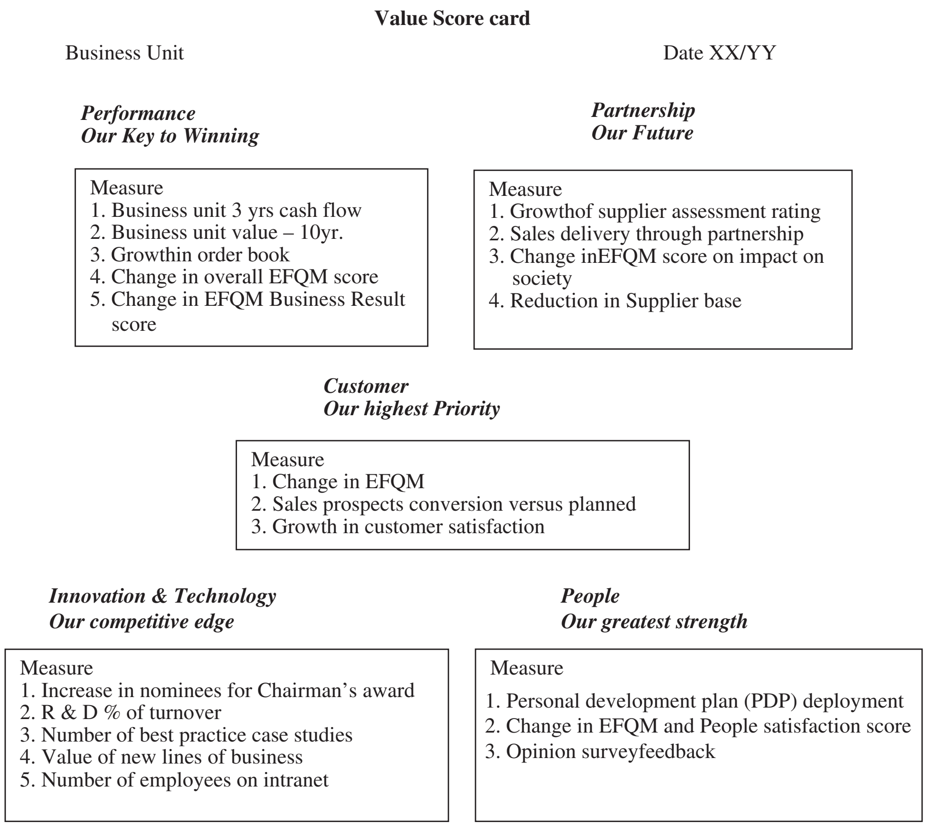

Fig. 2. The adaptation of the BVS within BAE Systems. *Source*: Evans and Price (1999, p. 191).

(3) The 130 Group then created a "vision" to direct the change process. As one manager explained:

> In order to actually create corporate change programmes inside your organisation you need to have various tools. The first tool basically is a vision…and when you get a vision, what you actually need to do is to have a sound of trumpets. It's got to be simple but ambitious.

(4) To create consensus around this vision, the 130 Group drafted a statement of the five key values. One manager described this step as follows:

> …You've got to have this vision because it is through this vision that you communicate, but it's not sufficient just to have a vision. What you've got to actually be able to do is to back that vision by various forms of behaviour.

He added:

> So what happened is that he (the CE) said that we'd have values, basically to deliver the vision. And it would be behaviour and conduct that would actually enable the company to deliver the results that we were looking to deliver. So what happened is that we actually have benchmark values and these values are basically five areas, which by consensus inside the company, we agree are the things we needed to do to enable us to actually get up and go.

(5) The 130 group systematically created short-term targets on an ongoing basis. They recognised that organisational transformation takes time, but continued effort risks losing momentum if there are no short-term targets to be achieved on the way to meeting the long-term goals. One manager commented:

> As far as we are concerned performance involves two elements; it means achieving business targets, which are essentially the short-term results, and also achieving individual objectives and appropriate behaviours.

(6) The five key values were developed and reinforced through the setting up of five "Value Teams". Each team consisted of members of the 130 Group, led by the managing director of a significant business unit, and a coach, also drawn from senior management. Each member of the 130 Group had a role in a Value Team, and each was expected to contribute significantly to the effort. As each Value Team was led by a senior line manager (e.g. a head of divisions), they had the power to bring about change. It has been argued (see Kotter, 1995) that, no matter how capable or dedicated the staff, groups without strong line leadership never possess the level of power that is required. Efforts without a powerful guiding coalition can make apparent progress for a while, but sooner or later opposition will gather to resist the change. This is not to imply that there was no resistance to the change within BAE, as will be discussed below.

(7) Finally, it was necessary to articulate the linkages between the culture change project and the company's competitive success. As argued by Evans and Price (1999), people engaged in culture change need to feel that they are having an impact on objective measures of performance. If they do not, they can lose faith very quickly. In BAE Systems the link between the culture change project and the (bottom-line) financial performance was established through the creation of a values scorecard (which will be described in the next sub-section).

The extent to which the values became accepted within the company is illustrated by the way in which interviewees themselves expressed the five key values. Table 2 provides illustrations of how each of the five values was expressed by interviewees. However, these values were not accepted without some resistance from both management and non-management personnel. As one manager explained:

> He (CE) deliberately engaged the middle of the organisation and the bottom of the organisation and he actually made us develop the change programme. And there was no question that you weren't going to change. We did have some people who couldn't cope with this and they are usual with organisational change programmes.

He added:

> About 30% of the management of BAE could not cope with the change programme and did leave the organisation and so the change programme, in part, drove an awful lot of the rationalisation that was necessary as well. But effectively, how was the process introduced? It was basically developed collectively

and introduced as a mandatory practice because the chairman of the board wanted us to actually manage the company on this basis.

As mentioned earlier, the cultural change project was taking place at a time when there were substantial reductions taking place in the numbers employed in the company, and there were various programmes involving both voluntary and compulsory redundancies. So it was not too difficult for people who could not cope with the change programme to either leave or be forced out. However, resistance to change is not necessarily an irrational process—it can be a perfectly rational response to the situation in which an individual finds himself or herself (see Hirschhom, 2002). It can have many sources, including people's habits, personal relationships, political alliances and the scepticism towards the intentions of those promoting the change initiatives. As with most change programmes the real problem is not the technical change *per se*, but the human changes that frequently accompany technical innovation. This was clearly recognised within BAe, and could be expressed in very stark terms:

> You have to change the people in their minds or they have to leave the company and go and do something else. And that's been a fairly interesting time as well.... Those difficult people who didn't ever want to change are no longer with the organisation. (*Interview with Head of the Customer Solution & Support Division*).

The source of the resistance within BAe (and later, but to a lesser extent, within BAE Systems) can be seen in the following comments made by the CE:

> I faced two main sorts of objections. First came a number of arguments that reflected the fact that all humans are innately stick in-the-mud. As I presented my case to senior colleagues, I hardly expected any to stand up and shout hallelujah. People's conservatism, their inertia, their identification with the way things are, makes them natural antagonists to change. Any big new initiative in a corporation, or any significant innovation, will come up against this form of resistance. And for good reason, really. In a large organisation, most executive energy and effort are directed at fulfilling the basic requirements of the business. Everyone is running flat out. The amount of time and energy left over to consider anything radically new is very small. Consequently, there are always good arguments about the scarcity of resources and of the 'if it ain't broke don't fix it' type (Evans and Price, 1999, p. 13).

In particular, there were significant tensions between headquarters' and the business units' managers. The fact that the culture change project was conceived by, and led by, the CE became an increasing source of concern for the business units. These concerns were expressed in the following terms by the CE:

> In the case of BAe that tension ran high, which is why some of my fellow senior managers were concerned about the risk of unfavourable reactions by the business units to my ideas for the change programme. My biggest concern was to prevent a feeling of resentment in the business units—that this was a case of 'headquarter knows best' (Evans and Price, 1999, p. 19).

It was thought that "if such a feeling did emerge, then the business units would be hostile to the programme" (Evans and Price, 1999, p. 19). Consequently, the 130 Group encouraged input from the business units. However, according to the CE, the early meetings of the 130 Group were pretty stiff and awkward affairs (Evans and Price, 1999, p. 32), and, to promote greater openness and honesty, the CE insisted that afterwards each participant should write him a full and honest reaction to what had gone on in the meeting, or about anything related to the culture change project. For example, one participant wrote:

> Dear Dick
> There are many positive changes coming from [this project], but I am starting to worry that we are recreating a hierarchy, the 130 Group, then a larger group, some of whom (but not all) went to Blackpool, then a still larger group not really picked up by anything. We need to break down 'them & us' and status type barriers. Instead we seem to be creating them and enforcing them (Evans and Price, 1999, p. 178).

The idea behind the *Letters to Dick* was an attempt to deal with one of the trickiest issues in a change programme—allowing forthright criticism of the existing culture in a way that does not attack the company *per se*. They allowed business unit managers to be open and frank about their concerns, thereby alleviating some of the tension between headquarters and the business units. Scapens and Roberts (1993), who studied a change programme in a large UK-based multinational company, referred to as Omega, also found resistance that emerged from the tensions between headquarters and business units[4]. In the case of Omega these tensions had arisen in the context of a long history of what was perceived as central "interference" in the unit companies. This was something that the CE of BAE particularly wanted to avoid in implementing his culture change programme. In the Scapens and Roberts study the resistance eventually led to the abandonment of the change project. In that study, although the support of the unit companies had been secured in a formal sense at a meeting of the Divisional Management Advisory Committee (which included all the unit company general managers), the project nevertheless continued to be perceived as being imposed on the business units. In the case of the cultural change in BAE, although it was clearly a project conceived and imposed by the CE, explicit steps were taken to ensure that there was substantial input from the business units. More specifically, although the vision was set at the top, the strategy that was needed to achieve that vision emerged essentially from the bottom up, and was facilitated by the use of the BVS, which itself evolved out of existing practices within the company. In the following sub-section we will describe how the BVS was adapted in an evolutionary process to support the strategy emerging through the culture change project.

4.4. Adapting the BVS

The BVS has five perspectives which link to the five key values in the culture change project (see Table 2 and Fig. 2): performance, partnership, customer, people, and innovation and technology. The form and content of the BVS evolved over time to offer managers at all levels within the company a "real-time" picture of both short-term and long-term performance and, as such, it provided an important link to the culture change project. Specifically, the BVS evolved out of the previous system of, so-called, "traffic light" reporting, which had been common in the company for quite some time. As one interviewee explained:

> We have for a long time within the company used traffic light scoring and traffic light reporting: green, amber and red. Green if everything is on target, on programme, amber if there are minor problems, red if there are major problems that need some sort of major action…and then we have a few other colours to make it look attractive. We have blue if it's finished, black if there's no report, that type of thing, or white if there's no measure in there and we're not actually measuring anything.

It was this long-standing system of "traffic-light" reporting which was called upon when it became necessary to use a scorecard to report on the five key values within the culture change project. As such, the BVS was not simply designed as a complete and comprehensive PMS and then implemented across BAE Systems, but rather it evolved over an extended period of time. As one manager described:

> We've used traffic light reporting. Personally, I've used it for 20 years and I've always found it very, very powerful and very useful. For two reasons, you have to look at it regularly to actually get something, so you're looking at the performance regularly. It's forcing you to do that. And secondly it gives you a good visual image very, very quickly of what the situation is. And I think we evolved that into a scorecard …I don't think we ever went out and selected a particular scorecard. I think it evolved by recognising that it would be useful not to look at single traffic lights, but to pull them together and then when you've pulled the traffic lights together you begin to realise that there are other things you should be measuring. It isn't just a red, amber, green. There are other measures that you should have in there….. So you start tracking financial performance with graphs and you start tracking other things with graphs. And I think we just came upon what we suddenly realised everyone else was calling a balanced scorecard. I don't actually think we sat down and said, "Let's have one".

[4]In the case studied by Scapens and Roberts (1993) the tensions were between the headquarters of the Engineering Division and the unit companies within that division, whereas in BAE the tensions were between the corporate headquarters and the business units. Nevertheless, comparable issues emerged as the Engineering Division in the Omega case was exercising a role similar to that of the corporate headquarters in BAE case.

Despite what that previous manager said about having what everyone else was calling a balanced scorecard, the BVS has some important differences from the BSC of Kaplan and Norton. As pointed out above, the BVS was not used to impose on the rest of the company the strategy formulated by senior (headquarters) management, instead it was used to enable strategy to emerge within the company and to avoid the feeling that the change was being imposed on the business units by the headquarters. Furthermore, the content of the BVS was not explicitly designed using the notion of cause-and-effect relationships. As will be explained below, the measures within each of the perspectives emerged within the company as the culture change project led to a clearer understanding of the five key values. Furthermore, what was important was ensuring that all the measures fitted together in a coherent way and, in particular, that the different perspectives were all pursued simultaneously. Describing the need to look at the scorecard as a whole, one of the managers used the analogy of a children's game, called Ludo, in which the object is to get all four pieces to the centre of the board:

> So, as far as we are concerned, the business values scorecard is not an individual entity, it is an element in our managerial organisation principles of structure. That is called the Ludo. The objectives of the game Ludo is to try to get four pieces to the centre and what we're actually saying is that we look at people, customer, partnering, innovation and technology and we specifically map where we are within those value areas and then take action.

In other words, the focus is not on the cause-and-effect relationships, but on the coherence of the various perspectives. The different perspectives have to fit together in a coherent way so as to integrate and coordinate the actions of the various functions and the activities of the business as a whole. The perspectives represent the five key value of the business and each perspective has to be monitored and action taken as necessary, but at the same time they have to be seen as a whole, rather than as individual parts. The differences between the BVS and Kaplan's BSC will be further discussed later. In the meantime, we will explore the way in which the BVS was established as a routine feature of the PMS used in BAE.

It was very apparent from our case study that the managers in BAE Systems use the BVS as a framework for their management control processes. One thing that seems to focus everyone's attention on the BVS is that management and operations committees regularly look at the BVS in their reviews of business unit performance. As one manager explained:

> [The BVS is] embedded in the business. It's fully recognised as one of the main reporting tools within the business and it's fully recognised as providing a very strong indication of the state of the business… The other thing is that each of the people who sit on the management committee effectively own [owns] one of the lower levels [of the BVS]. So it's measuring their performance when they sit down and review it at a management committee meeting.

As this suggests, the BVS is widely communicated within the company and is a key part of the management control system. An ERP System (SAP) is used to report "online" the monthly scorecard in a visually appealing way. This information is shared with all employees, as well as business unit managers. The online reports include easy-to-read charts that summarise the data, with colour coding (the traffic lights mentioned above) to signal performance status on individual and composite measures. The reports also include a lot of other data. All employees can access specific information about how they are doing, expressed both in absolute terms and in terms of targets. As one manager explained:

> I think the thing that's important for me, and this is the balanced bit of it, is that you can see the impact of one element of the business on another element of the business very easily. So, for instance, we have had a period where we had a low order intake and you could see the low order intake measured against the performance of some of the projects and against timescales, and there is a correlation between the two. I think that is something that has taken us a lot of time to understand and develop. But we've now got to the level of maturity where it's not isolated measures on there; it's measures which are inter-related with each other.

Thus, although there are relationships between the individual measures, and possibly even some cause-and-effect relationships, it is the way that they are all inter-related with each other—i.e., their coherence—that is particularly important.

A particular feature of the BVS in BAE Systems is that it contains layers of hierarchically linked data. This allows data to be looked at from the top down or from the bottom up. For example, if the Business Support Manager for International Programmes wants to know more about what is contributing to performance on certain summary measures, he can access the report online and "drill down" (via a series of intranet links) to find the root causes within specific business activities or geographic areas. This enables him to give special attention to any activities that are operating "in the red", and individuals or teams responsible for those activities will be expected to provide explanations and to take appropriate actions to improve performance. Being able to "drill-down" in this way has been made possible through the use of SAP. At the same time, other employees can also look at data from the bottom up, in order to see how the work they are doing contributes to the performance targets of their unit or of the business as a whole.

The BVS went "live" in 1997, which meant that, at that time, measures were in place and performance began to be recorded in a systematic way, and that procedures had been established to communicate the results throughout the company. The scorecard initially consisted of only eight measures. One reason why so few measures were used was that the managers wanted the measurement systems to evolve. One manager commented on this evolutionary process in the following terms:

> At the time when BVS went live, the measures were very simple—six, seven, eight measures. Now we're using sixty, seventy, eighty measures. But it's taken us a long time to get to a level of maturity where we're able to do this; where we're able to understand it. When we first started, it was simple things; what is the obvious thing for us to measure?

He added:

> I think the change is evolution. I think as we use something we understand it better. Measuring the customer is something we've always found difficult and so as time has gone on, we've been able to develop better measures, more accurate and more meaningful to us, than we've had in the past.

Business unit, project and plant personnel all participated in multi-level cross-functional teams, which came up with the business unit scorecards. However, in each case the measures were organised into the five key values. As one manager explained:

> We have effectively five sectors on the scorecard and then within those sectors, it is very much a question of what are the critical numbers? What are the critical activities that you need to measure to manage the business? And, as I've said, what happens is, depending on the nature of the business you are in, there is latitude to change individual measures.... Some measures, order intake, cash flow, cost, etc., you'll see on everybody's scorecard because they tend to be consolidated upwards. Others aren't consolidated upwards.

He added:

> We basically have a format which has some consistent links that run right the way through the business unit, and some which are local to an area within a business unit. But if it is critical to the business, then it is measured.

Fig. 2 sets out the five values in a format which all the business units used to develop their own performance measures. Targets are established for each measure derived, for example, from the European Federation for Quality Management (EFQM) framework or from benchmark data for world-class performance measures.

As indicated above, a simple set of measures was used at the outset, but as more confidence was gained in their use, and the nature of their inter-connections was better understood, new measures were introduced, and now the measures are reviewed annually, as one manager explained:

> ...So we've started off by saying "we need a measure for the customer", so let's put a box in and we'll decide what colour it is. Now we've got a much deeper level of understanding behind 10 or 12 measures for the customer, and each of those 10 or 12 measures has some depth behind it; a reason for it. We've evolved to that situation; we haven't introduced anything new. Every time we've updated the scorecard on an annual basis we've looked at the measures and said "well we now feel we can measure this because it's more meaningful than before" and that I think applies right the way through everything. We're constantly

looking at the measures and seeing if we can find something that is better, more accurate, means more to us, gives us more value.

Fig. 3 provides an example of the measures which are now used for Customer Solutions and Services International Programmes. Annual targets are set for each of the measures within the BVS and incentives are tied to these targets. Most interviewees thought that these incentives reinforce their commitment to the BVS. One manager described it as follows:

80% of the targets on the international programmes scorecard are within the personal objectives of the management committee members. So they can actually point to them and say, ‘‘that is written into my personal objectives’’ and those personal objectives indicate the pay he gets and the bonus he gets. So it’s very, very personal and very, very directly linked.

Another manager said:

It’s a good incentive if you know that that measure impacts your pay, in particular your bonus at the end of the year. It’s a very powerful tool to motivate you to make sure you deliver against it, because it’s that personal motivation. But that doesn’t mean that those things wouldn’t happen if you didn’t have that link.

As such, the BVS is at the centre of the organisation’s control system, linking operational practices with strategic intent. And, in addition, it links to budgetary control systems in a productive and complementary manner. As one manager explained:

Yes, we do budgeting… Our budgeting is part of our integrated business-planning schedule and so we actually have a rolling budget… That again is all part of the performance scorecard.

Thus, the BVS does not stand alone and it seems unlikely that BAE Systems could survive just using a BVS; i.e., without the normal budgetary apparatus and reward systems. As the above quotes suggest, targets and incentives are important management tools within BAE Systems. All managers set goals for their subordinates and for the functions and business units they manage. The BVS is used as a systematic way of analysing critical performance variables and it links performance measures to the emerging strategies. As such, in BAE the BVS has evolved into a tool that top managers use to communicate key values to business units, and then

BAE Systems Customer Solutions & Service International Programmes		
CORE BAE SYSTEMS VALUES SUPPORTED	KEY PERFORMANCE INDICATORS	MEASUREMENT METHOD
Performance	Project management	Monthly RAG
	Prospects/Business capture	Monthly RAG
	Process Improvement	Monthly RAG
	Order Intake	Cumulative value graph
	Operating cash flow	Value graph
	Sales	Cumulative graph
	Oil price	Histogram
	Cash forecasting	Monthly RAG
	Working capital	Monthly RAG
People	Recruitment and retention	Monthly RAG
	Expatriate redeployment	Histogram
	Personnel Development Reviews completed	Monthly RAG
	Personnel Development Reviews delivered	Cumulative % graph
	Employee opinion survey	Monthly RAG
Partnerships	Joint venture performance	Monthly RAG
	Strategic Partnership suppliers	Monthly RAG
Customer	Customer satisfaction index	Monthly RAG
Innovation & Technology	CAFI Nominations	Cumulative number
	CAFI awards	Gold, silver, bronze awards

Fig. 3. Examples of measures from each for the five values.

to help the managers in the business units to shape their own strategies. It then links business unit strategic objectives and performance measures, and it gives attention to the achievement of the targets in the strategic plan. As such, it reports on those values which top managers have decided should be emphasised in a particular period of time. However, it is not simply a mechanism for cascading headquarters' strategy down the organisation. Instead, it plays an important role in facilitating the development of strategy at lower levels in the organisation. As one manager explained:

> I would say it captures the strategy and it records how you're progressing and the progress against that strategy. But it's not in any way managing the strategy.

Another interviewee said:

> So what happens is that the business values scorecard doesn't shape strategy; strategy shapes the scorecard, which shapes the results, which shapes the strategy. So it's a complete continuum as far as we're concerned.

To summarise, the BVS which is used within BAE Systems does have links to strategy, but it is more complex than the top-down imposition of senior managers' strategy which underpins the Kaplan and Norton BSC. The similarities and differences between the BVS and the BSC will be discussed in more detail in the following section.

5. Discussion

Kaplan and Norton (1996a) assume a causal relationship between non-financial measures and financial outcomes. For them, the assumption of a cause-and-effect relationship is essential because it allows the measurements in non-financial areas to be used to predict future financial performance. But in BAE Systems simple cause-and-effect relationships were regarded as problematic (cf. Nørreklit, 2000). One manager described it thus:

> I think it's wrong to say that you can look at the complete scorecard—it's not sophisticated enough for you to be able to see cause-and-effect everywhere. It's not as clever as that. But there are areas of the scorecard where you can see an impact on the other areas and where you can see poor performance in one area having a knock-on effect on poor performance in another area at some other time.

Nevertheless, there can be some cause-and-effect relationships, but with time lags. A manager commented:

> Things like performance on projects can have an impact on order intake and you can see a relationship between the two. And there tends to be a time line between the two. So, poor project performance can lead to poor intake performance some months later.

The effects of the various measures have to be seen over a long time period, as the effects of the different values involve quite distinct time scales. As one manager explained:

> They tend to be fairly discret … it's not as if you can see something evolving. No. I think the time line would be longer. You would probably see the impact over a longer time period. I think poor performance you tend to notice quicker than you notice good performance……But again I wouldn't want to play this card too strongly. It's not that clear, but the more you understand the scorecard and the more you get used to reading them, the more you see these connections and the more you understand that you've got a complex set of connections.

Another interviewee said:

> They all fit pretty well together. If you start to ignore the people aspect, then you don't have the people performance, and you don't have the customer satisfaction, you don't generate any innovation within the company… They're linked in a sort of dynamic way, so that if you influence one area, it actually has an impact on the others.

As the above quotes suggest, not only are the measures within the individual perspectives interconnected, but there is also interconnection between the five perspectives. For instance, people measures are related to innovation and technology, which are related to the customer and partnership, which in turn are related to financial performance. This is similar, but not identical, to Kaplan and Norton's (1996a) idea of a causal chain running through their BSC, whereby better trained employees lead to better business processes, which lead to more satisfied customers and then to improved financial performance. In BAE Systems managers thought that such a description of cause-and-effect relationships is an over-simplification. As one manager explained:

> I would love to make a connection [between] people and performance. But I've never worked out how to do that. I'm not satisfied that we've got really good people measures that we can actually relate to our performance. I think that's a very, very difficult one to do.... We do things like employee opinion surveys; we do them every two years. And so you put actions in as a result of employee opinion surveys. We track all the results; we track all the actions, but where the connection is between that and performance? A very, very difficult connection to make.

Another interviewee said it is difficult to establish a direct relationship between the quality of a project and its financial outcome:

> It would be nice to say that I can see a relationship between training and improved project performance, and then improved financial performance. I cannot honestly say I can see that. But I'm sure, hidden in the cards somewhere, there is that, you know, that trail of improvement, but it's not something that we're sophisticated enough to actually see.

In other words, the managers in BAE Systems see inter-relationships in the various measures, but not necessarily causal relationships between different areas of the BVS. Furthermore, they recognise that the effects of the measures can occur at different points in time. As a result, there needs to be coherence in the individual measures within each of the five perspectives, and also coherence between the five perspectives themselves. This coherence is necessary in order to coordinate and integrate the PMS as a whole (cf. Nørreklit, 2000; Nørreklit and Schoenfeld, 1996; Nørreklit and Mitchell, 2007) and also to align strategy and operational management—the notion of instrumental coherence described earlier (see Bourguignon et al., 2003). But, in addition, the comments of the various managers give the clear impression of them, as individuals, striving to understand how the various measures and perspectives fit together, and this suggests that they are individually looking for a sense of coherence—which Bourguignon et al. (2003) referred to as psychological coherence. Thus, to understand the nature of the BVS and how it evolved within BAE, the notion of coherence is more relevant than the idea of causal chains and cause-and-effect relationships. However, the coherence of the new PMS has emerged over time as new measures have been added to the BVS and as managers have developed better understandings of how the various measures and perspectives fit together.

Within BAE Systems the level of understanding of the BVS, which is now common, is such that the BVS has become the centre of the organisation's management control system and the heart of its PMS, linking budgetary control and operational practices with strategic intent. There are targets for the various projects and responsibility for their achievement lies with individual managers who receive rewards linked to their achievement. This has some similarities with the use of the BSC for strategic management, as proposed by Kaplan and Norton (2001: Part II). They argue that managing strategy should be a "continual process", with senior managers monitoring achievements in terms of the BSC, and then amending (or updating) strategy. In this way strategy evolves as senior managers learn about and adapt to new strategic opportunities. However, they see this as the role of the senior (or corporate) managers, who then "communicate the complete strategy down to individual employees" (2001, p. 151). Furthermore, they see the evolution of strategy as a process of hypothesis testing, with the BSC making explicit "the cause-and-effect linkages in the strategic hypothesis" (2001, p. 154). This top-down approach and the focus on cause-and-effect relationships is rather different from the way in which strategy evolved and the BVS was used in BAE. The relationship between the BVS and strategy was more dynamic and complex. The BVS was used to allow strategy to emerge at various levels in the organisation and, in particular, within the individual business units. Thus, rather than being a mechanism for imposing the senior managers' (or more specifically, headquarters') strategy on the rest of the organisation, the BVS was part of a complex process through which strategy emerged through time as part of the cultural change project. In other words, it was a tool of both strategy formulation and strategic management. As such, the BVS was a mechanism of change, as well as an object of change.

The main focus of this study was the linkages between the culture change project and the implementation of the BVS. In BAE Systems there is now a separate scorecard for each of the business units, a consolidated scorecard (which goes up to the group level), and a group scorecard which goes to the head office. The BVS has layers of hierarchy that interlink the levels of the organisation using the five key values of the culture change project. The individual scorecards comprise both hard and soft measures, which include short-term business performance and long-term business growth, for each business unit. The BVS supported the culture change project, by reinforcing the desired behaviours, values and beliefs, and it is now used for organisational communication. As the mechanism for such communication, the BVS continues to focus attention on the five key values, especially as targets and rewards for their achievement are based on the measures included in the BVS. The monthly meetings of managers, which articulate shared goals, values and beliefs, also reinforce the key values introduced though the culture change project. As one manager explained:

> We have a system in place whereby every project manager is now totally responsible for every aspect of his project, so he's responsible for all milestone delivery. But he's also responsible for all the financial information and we use the scorecard at project level to assist the project manager in understanding the status of his project….. from his scorecard he has to say "my project is red, green, and amber because…". And he has to make that statement every month. And that gets fed into the main scorecard so we can see that project. So all the project information is fed up into the high-level scorecard. But the project manager also has his own scorecard.

As the above suggests, the BVS is now used in BAE Systems in ways that are apparently similar to what the proponents of the BSC would suggest (e.g. see Kaplan and Norton, 2001). But in this case, the BVS was introduced and has evolved as part of a cultural change project. It was initially introduced as a mechanism to facilitate the process of cultural change by effectively creating and communicating a credible vision for the company. It also enabled strategy to emerge within the organisation, and was sufficiently flexible to adapt as strategy developed. As the key values of the culture change project are now embedded within the organisation, the BVS has a role at the centre of the company's management control and PMS.

So, can we argue that the evolution of the BVS has been a success story? Referring to the culture change project, the CE claimed:

> Since the company set out on this journey in late 1994, better sales and profits, as well as perceptions of management ability, have propelled the stock price from £4 to £24 in the autumn of 1998. The turnover at the end of 1998 was just short of £9 billion, and the operating profit (before tax and exceptional) was just a shade over £700 million. And the order book was a fat £28 billion, a 27 per cent improvement over the previous year (Evans and Price, 1999, p. 12).

In the sense that the BVS is now widely used in BAE Systems and the key values of the culture change project are embedded in corporate practices, it can be claimed that the new PMS has been "successfully" introduced. But does this necessarily mean that it has been a success in terms of improving corporate performance? Unfortunately, it is very difficult to isolate the direct effect of using the BVS on the performance of BAE Systems, and to separate out the impact of the culture change project from the many other factors which have affected the company's performance over the years. For example, the company has gained considerably from the Saudi Arabian contract signed in January 1993,[5] as well as the relative boom in the UK economy since 1994. As one manager explained:

> I find it difficult to actually say there's particular benefit from only the business value scorecard. There is a particular benefit from having a change programme, which focuses [on] your organisation, like our change programme focussed [on] our organisation. The business scorecard is part of the change.

Nevertheless, the BVS is generally regarded as a success story by the management of BAE Systems, as it provides a complete view of the business and highlights areas where there are problems, and these can then be traced directly to specific projects. A manager commented:

> I think the major benefit for us is that it captures the complete view of the business very, very simply. But in order for it to have that benefit, you need to have good robust information beneath it. Poor information in

[5]Recently, this project has been under considerable scrutiny in the media as a result of alleged payments to Saudi Arabia's former ambassador to Washington. However, it is widely acknowledged that this contract has been very profitable for BAE Systems.

> will only produces poor information out. And if the business is going to depend on the scorecard as a real measure that is used all the time, as a barometer or thermometer of how the business is, we have to be confident that we're getting good information. But if you get that, the real benefit is that it's so simple to use. Very, very simple and very, very powerful.

However, the bottom line, as Evans and Price (1999) pointed out, is that during the 5 years of the culture change project, the company's market capitalisation soared from £1.3 billion to £8.7 billion. But it is impossible to estimate how much of this increase was due to the BVS.

6. Conclusions

It was pointed out earlier that one of the reasons that the BSC is so popular is that it has a wide range of different uses and it can mean many different things to different people. In the case of BAE, the BVS superficially appears similar to the BSC, and indeed some of the managers described it as a "balanced scorecard". However, there are some important differences between the BVS and Kaplan and Norton's notion of the BSC. Rather than a means of implementing strategy set by top-level managers (as suggested by Kaplan and Norton), the BVS was introduced to reinforce a cultural change project. As such, it facilitated strategic development and enabled strategy to emerge from *within* the organisation, rather than being imposed from the top.

In this paper we have sought to locate the BVS within the context of the cultural change project, which was taking place within BAE in the mid-1990s, and we have shown how the BVS was used to reinforce the five key values of that project: namely, performance, partnership, customer, people, and innovation and technology. In particular, we have shown that the BVS was not simply designed and implemented as a complete system, but it evolved over an extended period of time. Although there was some resistance to the cultural change project, steps were taken to ensure that the business units were fully involved and, consequently, managers throughout BAE have generally responded quite positively to the BVS.

Studies which discuss the introduction of new accounting (and performance measurement) systems usually view those systems as the object of change. However, in this study the BVS was both a mechanism of change, as well as an object of change. The introduction of the BVS could be considered an implementation of a new PMS—i.e., an object of change. But in BAE Systems, the BVS was introduced to facilitate cultural change; as such, it was also a mechanism of change. As part of the cultural change project, the BVS provided a focus on the five "key values" and a process through which strategy could emerge. In this process, managers across the organisation gained a deeper understanding of the performance measures that were included in the BVS. This emphasised the importance of coherence both within the five perspectives and also across those perspectives. This contrasts with the emphasis on cause-and-effect relationships in Kaplan and Norton's approach to the BSC. However, they do recognise the importance of strategic learning, but for them this means testing hypotheses about cause-and-effect relationships. But in the BAE case we saw the need for managers to gain deeper understandings of how all the perspectives, as well as the individual measures within those perspectives, fit together as a whole—rather than focusing only on the individual elements and their cause-and-effect relationships. Furthermore, the case study illustrated how the BVS evolved over time as deeper understandings of the interconnections between the different measures within each of the perspectives were gained.

Our evolutionary approach was informed by the framework of Waggoner et al. (1999). However, it was found that the distinctions between their four categories, although useful for theoretical discussions, were too arbitrary to be used to understand the complexity of the evolutionary processes in our case analysis. We found it easier, and more appropriate, to focus first on the antecedents of the change, in terms of the interactions between the internal and external context in which the cultural change project, and the BVS, was set. Then, in order to explore the process and transformation issues, we studied the adaptation and routinisation of the BVS, as managers used the five perspectives on the scorecard to develop strategies to implement the five key values, and to better understand the measures used within each perspective. We saw how, over the time, the BVS evolved to become a central feature of the management control system within BAE Systems, linking budgetary control and organisational practices with strategic intent.

To summarise, there are similarities between the BVS and Kaplan and Norton's BSC, but there are also important differences. In particular, the BAE Systems case illustrates the importance of the concept of coherence. Although this concept has been discussed by some writers (see, for instance, Bourguignon et al., 2003; Bourguignon and Jenkins, 2004; Nørreklit, 2000; Nørreklit and Mitchell, 2007), far less attention has been given to it in the literature, than has been given to the notion of cause-and-effect emphasised by Kaplan and Norton. More research is needed to further explore the concept of coherence, and to examine the extent to which it could be helpful in understanding the evolution of PMS and, in particular, the use of non-financial measures. In the case of BAE Systems that we discussed in this paper, the new PMS, and more specifically the BVS, was introduced in the context of a cultural change project. The question remains whether the concept of coherence will be equally important in developing non-financial performance measures in other contexts, and this question awaits further research.

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