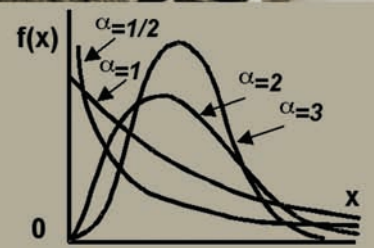


Impact of Performance Measurement and Management Systems



Written by:

Veronica Martinez, Research Fellow
Centre for Business Performance, Cranfield School of Management

Mike Kennerley, Research Fellow
Centre for Business Performance, Cranfield School of Management

Richard Harpley, Director of Performance Management
EDF Energy Networks Branch

Richard Wakelen, Head of Street Works
EDF Energy Networks Branch

Kathy Hart, Head of Performance Development
EDF Energy Networks Branch

James Webb, Performance Management Manager
EDF Energy Networks Branch

EPSRC

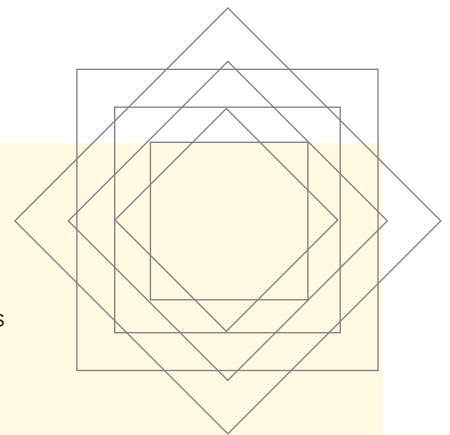
Engineering and Physical Sciences
Research Council

Effects of Performance Management Systems at EDF Energy's Networks Branch: Summary Report

about CBP The Centre for Business Performance at Cranfield School of Management is the leading research centre in the field of performance measurement and management within Europe. CBP is well positioned internationally through running the five international conferences in performance measurement in 1998, 2000, 2002, 2004 and 2006 and hosting the Performance Measurement Association, a global network of academics and practitioners. Members of the Centre for Business Performance engage in academically rigorous and practically relevant research in the field for more than 10 years and have a proven track record of delivering significant commercially and government funded research projects.

CONTENTS

- Executive review
 - 1. Introduction to Performance Management Systems and Research Study
 - 2. Link of Performance Management to Business Results: The Theory
 - 3. Survey Study
 - 4. Case Example: EDF Energy
 - 5. Purpose of Implementing Performance Management Systems in EDF Energy
 - 6. Positive Effects of PMS in EDF Energy's Performance: The Practice
 - 7. Negative Effects of PMS in EDF Energy's Performance: The Problems
 - 8. Benefits of Performance Management Reviews
 - 9. Factors Moderating the Benefits of PMS in EDF Energy
 - 10. A Retrospective View of the PMS Implementation at EDF Energy
 - 11. Conclusions and Forward-looking Suggestions
- Appendix 1



This report describes the results of a detailed research on the impact of performance measurement and management systems (PMMS). It presents the results of the first UK Survey on this specific theme. Then, it explains the effects of the implementation of a scorecard-based performance management system (PMS) within *EDF Energy's Networks Branch*, the UK-based division of a multinational company.

Cranfield School of Management's Centre for Business Performance has conducted this research, with funding from the Engineering & Physical Sciences Research Council. It has two phases: 1) a survey study in the UK manufacturing and service sectors and 2) an in-depth case based on multiple structured interviews.

The report addresses an analysis of the positive, negative, internal and external effects in the UK manufacturing and service sectors. It is extended to the analysis of EDF Energy's experience of implementing a PMS, in the context of Cranfield researchers' previous research findings in this field. In doing so, it describes the factors that contributed most to the PMS's successful implementation and those aspects which, at least initially, tended to hold it back from achieving its full potential, and so draws conclusions and lessons from these research results.

The report also identifies moderating factors that influence these critical effects and highlights the vital importance of performance reviews at both executive and operational levels. It provides guidance too on where EDF Energy will need to make future adjustments to the ongoing development of its PMS.

The results of this research will make interesting reading for all executives involved in the PMS development process; and the report also contains valuable lessons for executives in other companies who wish to embark on a similar implementation process. We hope, therefore, that EDF Energy will be willing to share their learning experience with other executives in other industries. This report has, therefore, been structured in such a way that this can easily be enabled.



1. Introduction to Performance Management Systems and Research Study

Today, many organisations place strong emphasis on the adoption and usage of broad-spectrum performance management systems (PMS) – as opposed to traditional financially focused systems. Partially, this has been driven by the popularity of “balanced scorecards”, a management framework developed by Kaplan & Norton over a decade ago. Evidence suggests, for example, that in 2001, the balanced scorecard had a utilisation rate of 44% worldwide: 57% in the UK, 46% in the US and 26% in Germany and Austria^{ab}. However, few of these adoptions are strictly what Kaplan & Norton advocate and a balanced scorecard has become a generic term for a PMS that extends beyond regular financial measurement systems.

Scorecards do not necessarily have to be built around Kaplan & Norton’s original framework, the sub-components of which have subsequently been patched and modified over time (not always satisfactorily) by the originators to try to compensate for the apparent absence of key aspects of contemporary management issues^c. Other frameworks, such as the Performance Prism for example, arguably work much better in today’s business and public sector environments where multiple stakeholder and intangible assets considerations are increasingly commonplace^d.

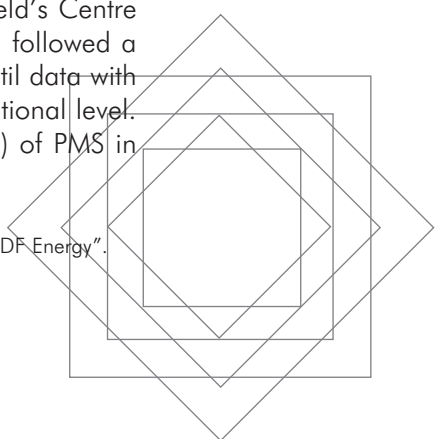
Recent research carried out by the Centre for Business Performance at Cranfield School of Management^e shows that organisations generally implement performance management systems to: (1) monitor productivity, (2) communicate strategy, (3) reduce costs, (4) review their business strategy, (5) support their compensation systems and (6) control operations. A few organisations suggested that they had implemented performance management systems because it became a legal requirement to report non-financial data. While others said that their PMS was a requirement to gain customers’ contracts – particularly in fast-moving environments, such as the telecommunications and automotive industries, where managing suppliers’ performance is critical to the business.

The objective of this research is *to study the diverse effects and significant impacts of implementing new performance measurement and management systems in the way organisations operate.*

This report shows a) the results of a UK survey study in the manufacturing and service sectors carried out in 2006 and b) the results from eight months of research in EDF Energy’s Networks Branch carried out by Cranfield’s Centre for Business Performance during 2004-5. The data analysis used followed a rigorous and systematic methodology to analyse, interpret and distil data with a range of employees from top management level down to operational level. The results highlight the mixed effects (both internal and external) of PMS in EDF Energy’s Networks Branch¹.

**In 2001,
the
balanced
scorecard
had a
utilisation
rate of 44%
worldwide**

¹For brevity’s sake, EDF Energy’s Networks Branch is referred to hereafter as simply “EDF Energy”.



2. Link of Performance Management to Business Results: The Theory

A number of survey studies indicate that organisations with integrated and balanced performance management systems perform better than others^f. A US survey's results shows that PMS, used as a management control tool, increases both organisational sales and profits, and reduces overhead costs by 25%; while another found that PMS improves the return on assets and stock market performance^g. Other researchers found less tangible benefits, such as customer or employee satisfaction^h. Indeed, some also show that PMS increases employee communication and collaboration while facilitating buy-in of the implementation of strategic objectives.

Despite the great promises from these survey studies, some organisations do not see the positive effects in their financial accounts. In fact, some suggest that it is very difficult to isolate the financial effect of PMS from other management systems. A couple of senior managers from fast-moving organisations reported that their general perception is that PMS might have a negative effect on their financial performance, because it consumes significant resources and time. On the other hand, some managers suggested that performance management systems create a greater business impact by driving people's behaviours, and creating new practices and routines, than just by trying to increase their business's profits aloneⁱ.

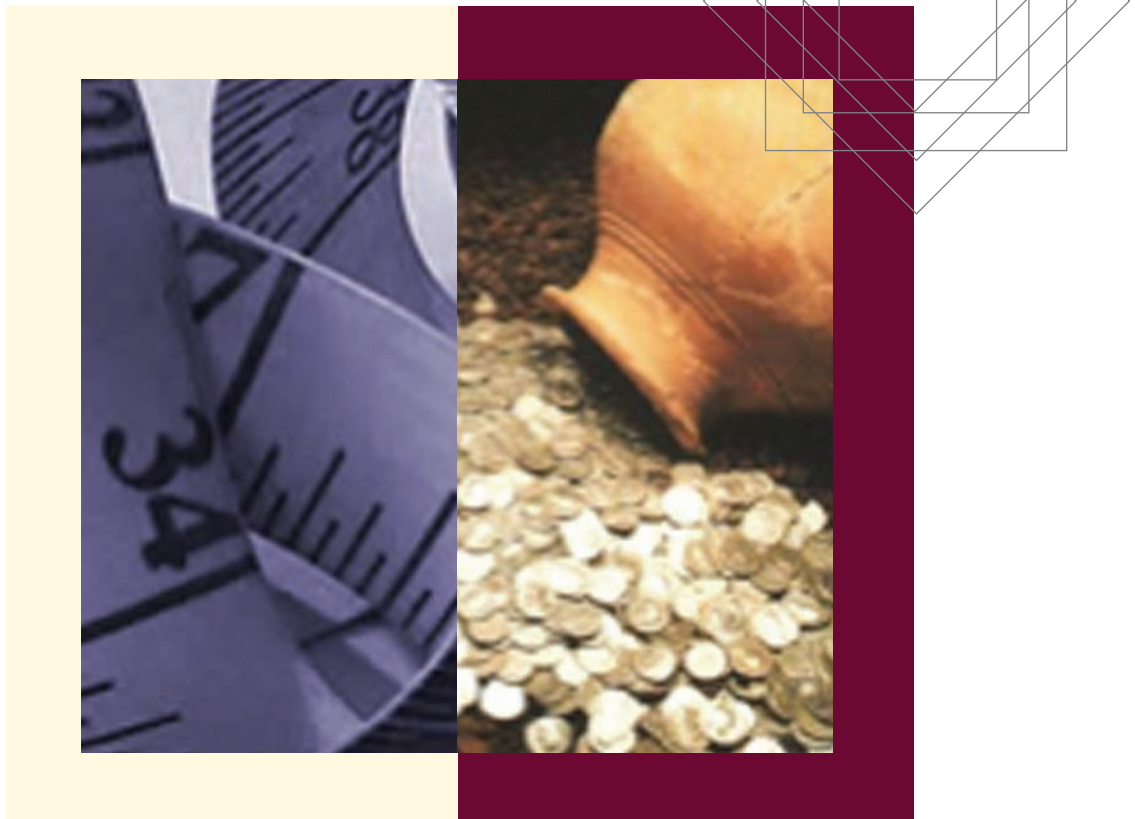
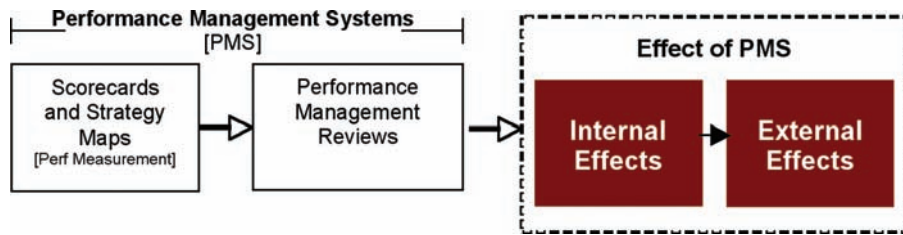
These studies suggest to us that the effects of performance management systems need to be better understood in order to maximise their benefits. In doing so, we differentiated two types of positive effects; i.e. internal and external effects.

First, we defined the **external effects** of PMS as those that are reflected in the business results, such as profitability, market expansion, company reputation and leadership in the market. They are external expressions of the company's performance and are perceived by different stakeholders, such as customers, suppliers and regulators (among others), as well as by industry competitors.

Second, the **internal effects** of PMS are reflected in the way the organisation operates, such as operational processes, organisational behaviour, culture, employees' capabilities, and so on. The internal effects are embedded in organisations' day-to-day performance; they are internal expressions of the company performance. Hence, they are mainly perceived and experienced by employees and some shareholders.

In general, organisations should pay more attention to the 'internal effects' of performance management because they directly affect the way that they operate. These internal effects are the engines that drive an organisation's results (e.g. profitability, reputation, productivity, etc.), but a time lag often occurs between the achievements of positive effects and organisational results. The following figure shows the effects of performance measurement and management systems.

Effects of Performance Management System



3. Survey Results

58% of manufacturers and services agree that PMS help them in the achievement of key objectives.

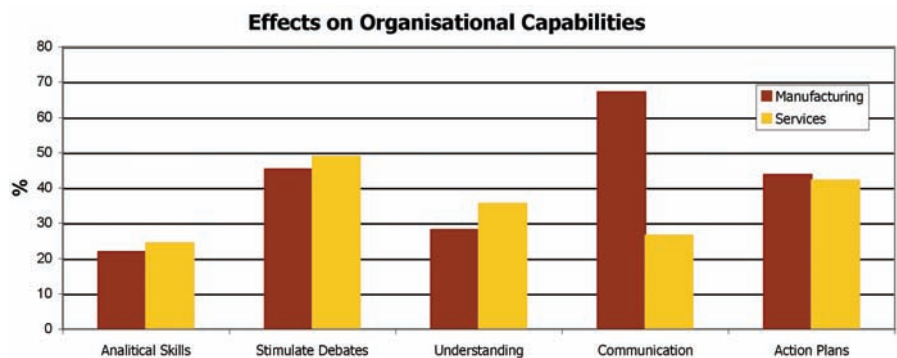
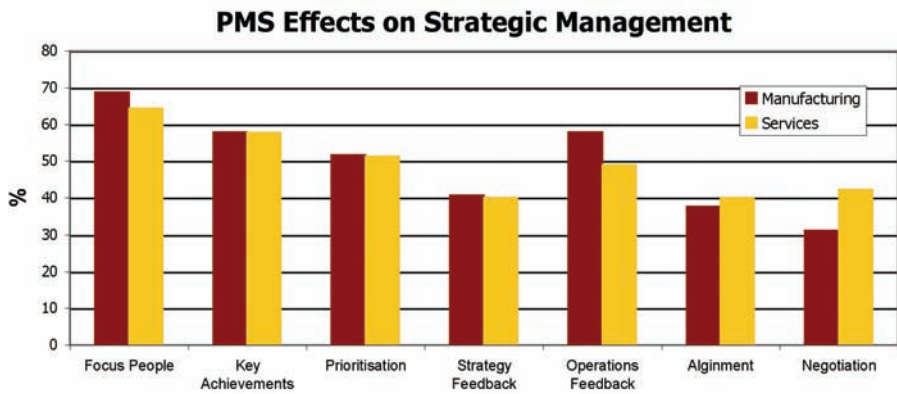
The objective of this survey is to study the effects of performance measurement systems (PMS) in the UK manufacturing and services sectors. It is important to note that this is the first survey that analyses the effects of PMS in the UK context.

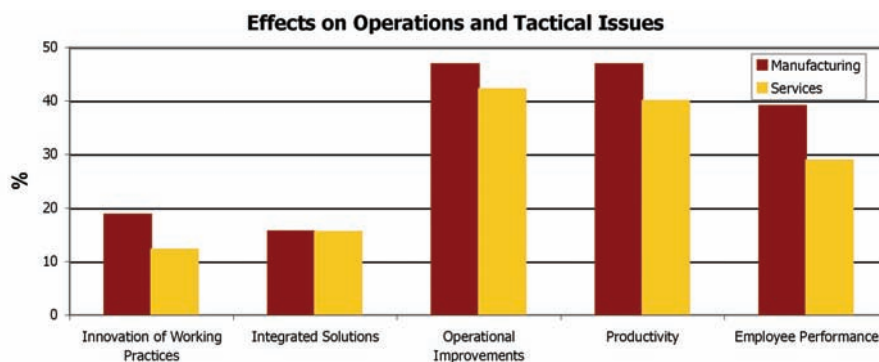
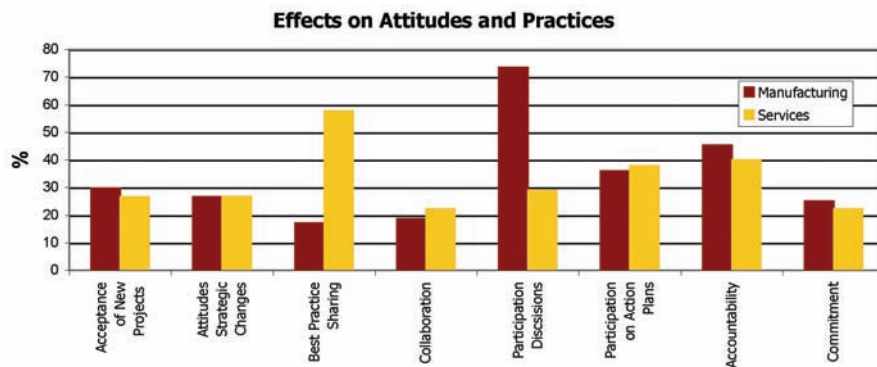
The population frame was taken from the FAME database, we used the SIC code to identify large UK organisations operating in the manufacturing and service sectors. Using a random sampling process, 500 organisations were targeted. The survey was supplied in two waves in 2006. 121 UK companies participated in the survey, 45% of organisations were from the service sector and 55% from the manufacturing sector.

The survey results show that 69% of manufacturing companies and 62% of services companies agree that Performance Measurement Systems improve people focus. 58% of manufacturers and services agree that PMS help them in the achievement of key objectives. 58% of manufacturers suggest that PMS improve their operation’s feedback, in contrast to 49% of services.

68% of manufacturers agree that PMS enhance their communications skills. Moreover, 49% of services and 45% of manufacturers suggest that PMS help them to stimulate debates around performance. In addition, 62% of manufacturers and 48% of service providers agree that somehow PMS contributes to their employee’s satisfaction.

62% of manufacturers and 48% of service providers agree that somehow PMS contributes to their employee’s satisfaction.





Theory suggests that Performance Measurement Systems improve people's motivation. This study did find that 52% of manufacturers and 41% of services agree that PMS increases managers' motivation.

72% of manufacturers suggest that PMS encourage employees' participation in the discussions around performance improvement; whereas 58% of services report that PMS support them the most on sharing best practices.

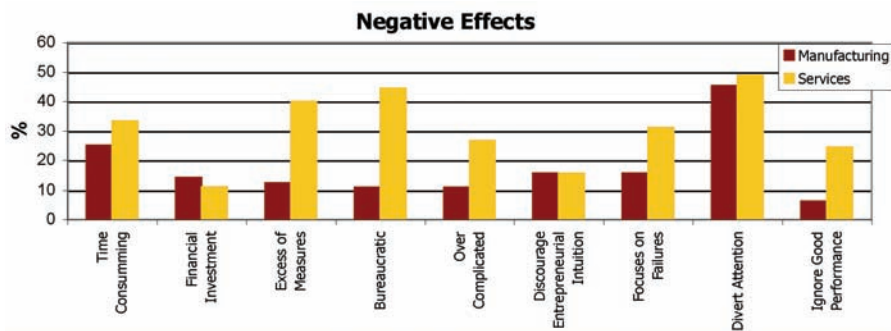
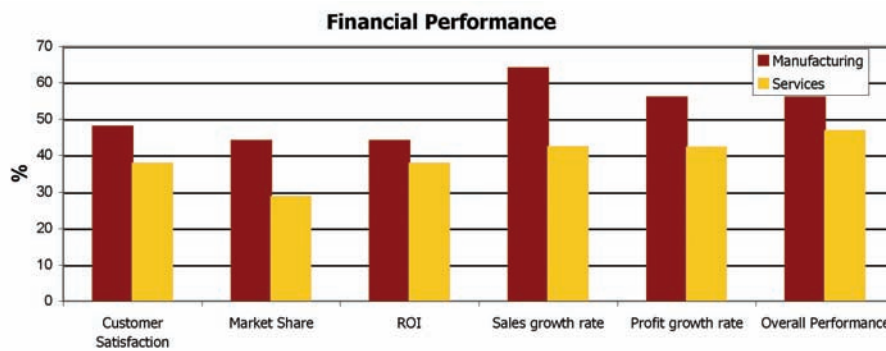
53% of manufacturers and 50% of services report that PMS support their productivity. Similar figures are reported on the PMS effects on operational improvements. However, only 39% of manufacturers and 29% of services agree that PMS affects their employees' performance.

A common agreement among manufacturers and services is that PMS improve their customers' relationships, customers' satisfaction and customers' retention. Nevertheless, only services reports that PMS support them on building stronger relationships with other stakeholders such as, suppliers and regulators.

63% of Manufacturers agree that PMS support their sales growth as opposed to 41% of services. In general, manufacturers find more PMS support their financial performance and market share than service organisations.

The major negative effect on the manufacturers and service front is the 'Deflection of/ Misleading prioritisation'. i.e. when a 'red' measure flashes (in a traffic-lights reporting visualisation) it attracts attention and resources – even if this measure might not be as important as other measures in 'green'.

The tolerance to failure and getting employees involved in solutions to problems, are the two strongest factors, that influence the effects of PMS according to service organisations.



63% of manufacturers agree that PMS support their sales growth as opposed to 41% of services.

4. Case Example: EDF Energy

For the benefit of non-employee readers of this report, some brief context about its subject may be appreciated.

EDF Energy is part of EDF Group (formerly Electricité de France), one of the three largest energy groups in Europe. It is also one of the largest energy companies in the UK. It generates 7.6 per cent of the UK's electricity, employs over 13,000 people and supplies gas and electricity to over 5 million customer accounts. It has a turnover of more than £4 bn.

The creation of EDF Energy, in 2003, was the culmination of a merger between London Electricity and the Seaboard Group of companies. The latter was acquired by London Electricity (already owned by EDF) from American Electric Power (AEP) in 2002.

EDF Energy is a vertically integrated energy company, including generation, distribution and supplying customers. Its operations are structured into four principal divisions (or Branches) and the EDF Energy corporate:

- Energy Branch
- Customers Branch
- Networks Branch
- Development Branch
- Corporate

The subject of this particular study is the regulated Networks Branch, which is responsible for the electricity distribution networks that provide power to 7.8 million homes and businesses across London, the East of England and the South East.



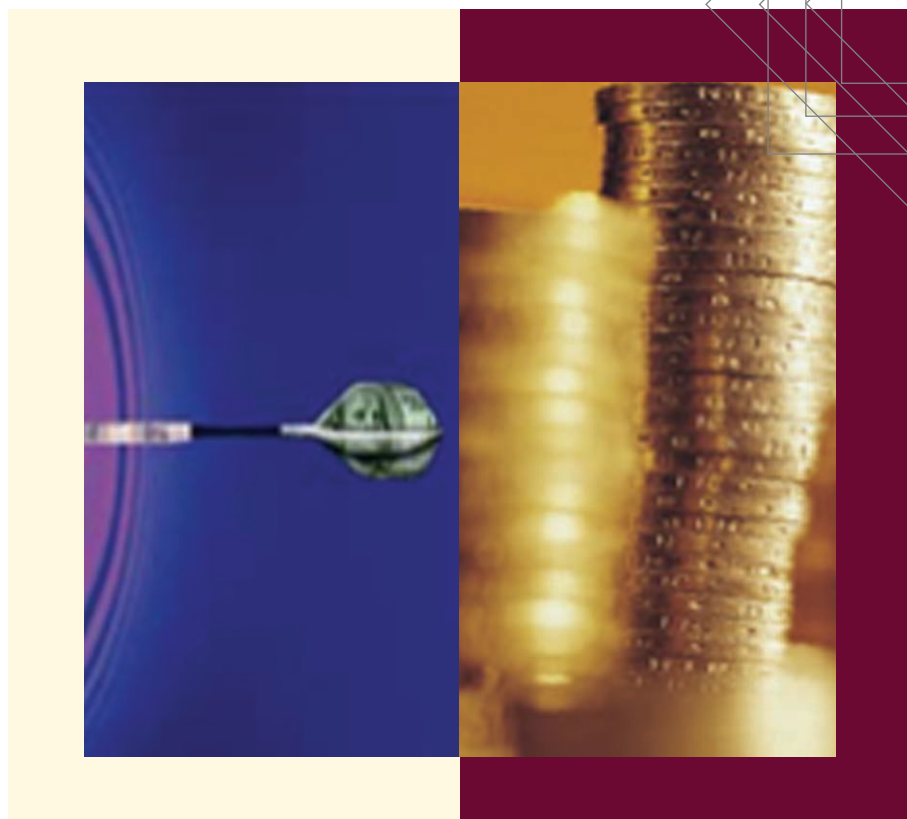
5. Implementing Performance Management Systems in EDF Energy: The Purpose

In 1999 [before the merger], business units initially implemented the scorecard because it was facing financial problems, i.e. a 3% income reduction and the consequences of re-adjustments by the regulatory regime; in particular it had strong pressure to reduce costs and improve customers' supplies. Based on the initial benefits of the scorecard, in 2002, EDF Energy decided to adopt a performance management system to:

- Improve productivity and performance
- Enhance EDF Energy's reputation
- Focus and align resources.

The company's performance management systems support the integration of different stakeholders by providing a common language to communicate with and by sharing similar practices and routines across newly merged operations.

Like many other firms, EDF Energy has adapted Kaplan & Norton's balanced scorecard framework – for example, the Learning & Growth perspective has been substituted by a People one. The customised PMS scorecard approach has been gradually deployed throughout the whole organisation.



6. Positive Effects of PMS in EDF Energy's Performance: The Practice

As a result of the interviews conducted and our analysis of the results of these , we were able to identify *eight* main effects (from a list of thirty-eight) that were regarded as the most important positive contributions towards the success of EDF Energy's PMS.

TABLE 1. TOP EIGHT POSITIVE EFFECTS OF PMS

1. Focus people's attention on what is important to the company
2. Get business improvement
3. Improve customer satisfaction
4. Increase productivity
5. Align operational performance with strategic objectives
6. Improve people satisfaction
7. Align people behaviors towards continuous improvement
8. Improve company reputation

The top one is the fact that performance management systems "focus employees' attention on important issues to the company", by linking key objectives to employees' jobs and continuous reviews. Analysis shows that this is the main driver that contributes to EDF Energy's customer satisfaction improvement.

One of the less visible, but nevertheless powerful, benefits at EDF Energy has been the change in employees' behaviour. PMS has improved the tolerance to failure, improved the transparency of information, improved vertical and horizontal cooperation, and encouraged friendly competition between teams. As a result, the culture has moved from a reactive, command-and-control culture to an open and proactive one. Currently, the branch is focused on both customer satisfaction and continuous improvement in productivity performance – not always compatible bedfellows, but important objectives nevertheless.

The other effects of PMS in EDF Energy are discussed below. They are divided into internal and external effects.

EDF Energy has been the change in employees' behaviour..

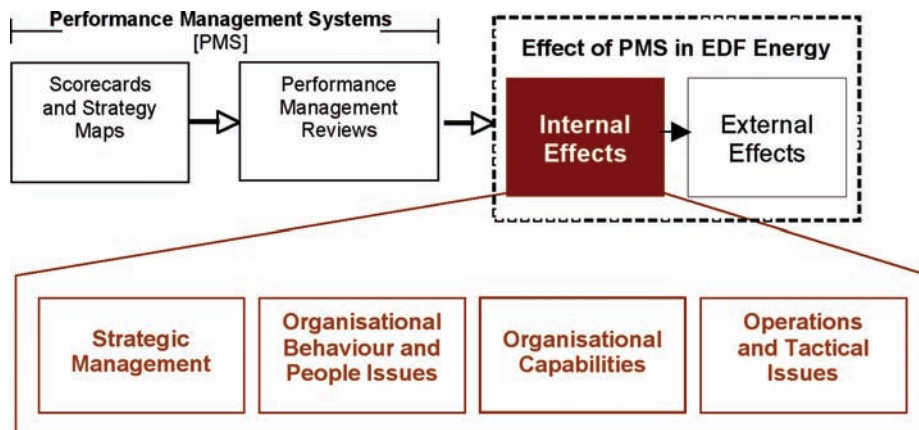
5.1 Internal Effects

Our data analysis identified 38 internal effects of performance management in EDF Energy. These effects are divided into four categories: strategic management; organisational behaviour and people issues; organisational capabilities; and operations and tactical issues.

For schematic, see following Figure:

ⁱSee Appendix 1 for methodology applied.

EDF Energy's Internal Effects of PMS



Strategic Management

Our research shows that PMS enhances EDF Energy managers' ability to focus their efforts by aligning strategy with operations. Moreover, it provides direction on the achievement of key strategic objectives, which closely relates to strategy execution. It improves the clarification of business priorities and reduces the ambiguity.

Organisational Behaviour and People Issues

PMS substantially changed employees' behaviours: it enhances people's attitudes towards improvements, allows accountability for actions, and creates better motivation. PMS has strengthened both the vertical and horizontal collaboration within EDF Energy, it can be noticed in the increment of integrated solutions on service delivery.

Managers explained that, currently, EDF Energy has reached the level where employees propose process improvements and simplification of operations. They also express their opinions and demonstrate their expertise in the development of their activities. Our data analysis shows that there is a close correlation between the PMS maturity and the degree of proposed improvements and changes. This is further discussed in the section on factors that influence PMS.

Organisational Capabilities

The research analysis shows that PMS affects the way employees perform. In particular, it provides vital information to stimulate debates on performance and allow people to drill-down the data needed to identify specific problems and find relevant solutions.

In doing so, it enhances employees' analytical thinking. This study shows an early correlation between the PMS's maturity and employees' analytical thinking, i.e. the higher the PMS's maturity, the stronger employees' analytical thinking.

We also identified that one of the most valuable lessons from PMS came from the discussion [at different organisational levels] about the generation of measures and goals, the prioritisation of objectives, and the delegation of tasks to improve performance. They enhance the performance practices, the understanding of partners' and customers' expectations, their relationship with other activities, partners' trust, plus the sense of belonging and effectiveness of action plans.

Operations and Tactical Issues

The research analysis shows that PMS supports EDF Energy's productivity by hitting and improving strategic and operational targets, such as customer satisfaction, customer minutes lost, safety, maintenance, and project development. Moreover, it supports the improvements in operations and integration of processes.

Table 2 summarises the internal effects of PMS in EDF Energy.

It is clear that the vast majority of internal effects of performance management systems concentrate on the development of intangible competencies, such as skills, behaviours and values. Intellectual capital theorists suggest that intangibles competencies are the foundation of sustainable competitive advantage. Without significant and substantial internal effects, external effects cannot be achieved.



TABLE 2 – INTERNAL EFFECTS OF PMS IN EDF ENERGY

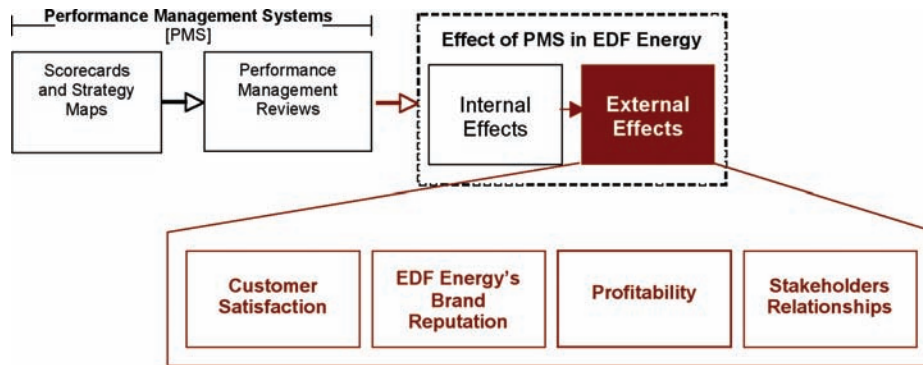
SC= Scorecard

Category	Effect	Example
<i>Strategic management</i>	<ol style="list-style-type: none"> 1. Enhance negotiation of capital expenditure, budget & projects 2. Focus people on key issues to the company 3. Improve the alignment of strategy and operations 4. Improve the prioritisation of actions and projects [when weighted measures are used] 5. Enhance the selection of capabilities for (new) projects 6. Improve the goal deployment 7. Support the achievement of key strategic objectives 8. Improves the feedback from operations and field work to company strategy 	<p><i>Interview:</i> ‘SC facilitates the negotiation of expenditure with owners; last time they achieved an increment of a third of the capital expenditure’</p> <p><i>Interview:</i> ‘At the top level, SC supports the diffusion and communication of strategic objectives’.</p> <p><i>Interview:</i> ‘It enhances the leadership of the organisation by directing employees towards common ambitions.’</p> <p><i>Interview:</i> ‘At top level, SC improves the visibility of the business to take more informed decisions. At operational level, it only highlight areas of weak performance’</p>
<i>Organisational behaviour and people issues</i>	<ol style="list-style-type: none"> 9. Changed from a reactive to a proactive culture; focused on continuous improvement. Command and control style no longer exists 10. Improve people behaviours, i.e. improve transparency of information, shared practices and cooperation 11. Strengthen company’s values and beliefs, e.g. improve credibility on data and honesty 12. Improve vertical and horizontal collaboration. Teamwork between functions, business units, suppliers and some close customers (councils) 13. Positive employee attitude to improvements 14. Creates a sense of employee accountability 15. Improves employees’ satisfaction – because their opinions are taken 16. Increase employees motivation at team and strategic level 17. Change from imposition to consensus and acceptance 18. Improve cultural orientation to soft issues, e.g. safety 19. Forces managers to keep employees in the loop of where the firm is going 	<p><i>Interview:</i> ‘At top level, managers set tight targets and motivation comes when they achieve targets. At the team level, motivation comes when the team over-performs and becomes the reference team of the month; it creates friendly competition’</p> <p><i>Interview:</i> ‘SC increases the staff accountability. It makes explicit people’s responsibilities and diffuses on SC boards; so it is difficult to miss responsibilities’.</p> <p><i>Interview:</i> ‘the SC is the glue of our functional units’</p> <p><i>Interview:</i> ‘Before SC, functions had individual measures & targets; few damage the performance of partner functions, i.e. when customers called to report a problem, the service desk used to send 1 or 2 teams to solve the problem; so this function performs well by providing a fast customer response; on the other hand it was expensive and inefficient because in most cases one person solved the problem and the rest of people lost time allocated to maintenance work. The SC brought agreement on measures, so we don’t have to fight with other functions to achieve the good performance at better cost’</p>
<i>Organisational capabilities</i>	<ol style="list-style-type: none"> 20. Improve employees’ analytical thinking. 21. Stimulates debates in performance improvement 22. Better understanding of their operations 23. Enhance vertical and horizontal communication; Improve relationship between parties, increase trust, etc. 24. Focus people’s attention on improvements 25. Improve the abilities to identify training needs 26. Improve employees’ understanding of how their actions affect the company’s performance 27. Improve customers’ understanding [having joint scorecards] 28. Improve problem solving 	<p><i>Interview:</i> ‘SC is a good way to share information and work with people. For instance, before the merger one unit had pure financial measures as a business measurement system, but employees were not involved. It was a managers’ tool with no impact on employee involvement’</p> <p><i>Interview:</i> ‘SC improves people’s abilities to drill down & understand problems’ root’</p> <p><i>Interview:</i> ‘At business unit level, scorecard creates a habit or routine that forces managers & teams to spend time together to discuss performance and set up actions’</p>
<i>Operations and tactical issues</i>	<ol style="list-style-type: none"> 29. Innovation of new practices 30. Improve productivity 31. Improve processes integration 32. Enhance the speed and organisation of action plans 33. Increase operational improvements 34. Reduce maintenance costs 35. Enhance the prevention of some operational problems(breakd 36. Increase sense of purpose 37. Increase focus on sensitive operations 38. Improve employee performance 	<p><i>Interview:</i> ‘SC supported the development of a new technique “live line”, as a result they improved productivity by reducing penalties from regulators; e.g. customers minutes lost’.</p> <p><i>Interview:</i> ‘SC monitors trends in performance (although limited), it helps them to identify what is wrong, and thus to take action plans’</p> <p><i>Interview:</i> ‘Some employees start thinking in terms of operational improvements and costs’.</p>

5.2 External Effects

The external effects of PMS – really, downstream impacts – are reflected in customers' satisfaction, company reputation, plus regulators' and local councils' satisfaction.

EDF Energy's External effects of PMS



Our analysis shows that PMS improved EDF Energy customers' perception. Months after the PMS implementation, service trends show that customers notice the difference in service delivery. In some areas, complaint letters decreased and commendatory letters increased. Consequently, PMS has improved EDF Energy's reputation and image among institutions and competitors. For example, take the comment from a DTI manager that: "the DTI regards EDF Energy as a company which has moved on from the traditional way energy companies operate to a business focused on service performance."

Despite some other researchers' findings¹, our research shows that it is extremely difficult to isolate the financial impact of PMS from other concurrent management initiatives. Our analysis of the effect of PMS on EDF Energy's profitability did not show any clear pattern so far. The logic might suggest that EDF Energy should have improved its profitability by enhancing productivity, customers' satisfaction and corporate reputation as a result of the use of PMS; however, the hard (financial) evidence does not convincingly support this proposition yet. However, the vast majority of interviewees believe positive financial effects will come through within the next three to four years.

Early data shows that PMS has had some benefits on stakeholder relationships. In particular, city councils and contractors are more responsive about the expectations of different parties in relation to EDF Energy contracts; and performance communication is considered to be more effective. For example, a manager explained that as a result of a joint scorecard with a city council, EDF Energy now has a clearer idea of the city council's particular priorities for restoring the service in the event of a supply fault.

PMS has improved EDF Energy's reputation and image among institutions and competitors.

7. Negative Effects of PMS in EDF Energy's Performance: The Problems

EDF Energy has also identified, through this analysis, a few negative impacts too. The Top 7 negative effects of PMS from our data analysis are highlighted in Table 3.

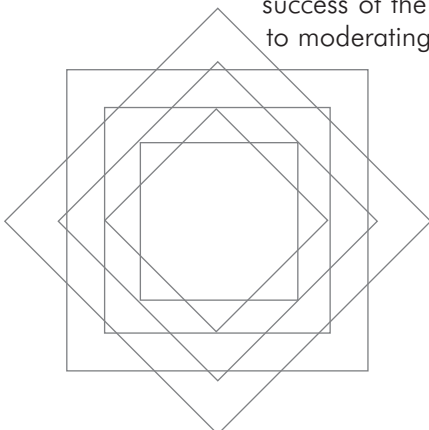
TABLE 3 – TOP SEVEN NEGATIVE EFFECTS OF PMS

1. Time consuming
2. Demands considerable financial investment
3. Bureaucratic – too many measures make PMS bureaucratic
4. Over-complicated measures – difficult to understand and manage.
5. Misleading prioritization – 'red' measures can divert attention from most critical measures
6. Mechanistic – can discourage entrepreneurial intuition.
7. Monotonous – managers have to continuously refresh the way in which performance is reviewed.

The most significant of these is that some of EDF Energy's employees found PMS to be too time-consuming, especially at the initial implementation stage because the benefits were then uncertain. They did not know the new process and therefore everything was difficult to remember and implied more work to be done. EDF Energy's experience also shows that 'over-complicated measures' become difficult to understand and manage. They make employees lose attention and interest in them. EDF Energy's learning experience shows that 12 to 20 simple measures are the optimal number to keep employees interested, and these helped to focus them on the key business issues.

EDF Energy's staff also thought that 'Misleading prioritisation' is one of PMS's main drawbacks. That is illustrated by when a 'red' measure flashes (in a traffic-lights reporting visualisation) it gets people's attention, focus and resources – even though this measure might not be as important as other measures in 'green'. In this way, resources and attention can easily be diverted away from potentially more vital measures.

At the strategic level, some of EDF Energy's senior managers found that PMS can be somewhat mechanistic – thereby limiting the freedom for intuitive management. At the tactical level too, the performance review process of PMS can be quite monotonous. This means that managers have to continuously refresh the way in which performance is reviewed to keep it interesting and attractive. Hence the leadership role of local managers plays a key role in the success of the performance management systems; moreover, they are crucial to moderating the outcomes of PMS implementation too.



8. Benefits from Performance Management Reviews

The “agency theory” of the firm (an academic construct about dependencies) suggests that organisations implementing performance reviews seek to control their employees’ performance, and so the firm’s efficiency and effectiveness and, therefore, its financial results and attractiveness to stakeholders – not least its customers and investors .

Our previous research shows that firms could obtain additional benefits from performance reviews on ‘the internal way their organisations perform’, since this is a dependency of these firms’ productivity, profitability and reputation.

Our findings at EDF Energy show that:

Performance reviews at operational levels have the power to:

- Drive new routines and practices, and eventually drive cultural changes
- Change people’s behaviours
- Develop key competencies
- Make operational improvements
- Improve business results
- Refresh the whole organisation bottom-up
- Create hard-to-replicate skills
- Drive organisational learning

Performance reviews at executive level have the power to:

- Improve management capabilities
- Improve people management skills

The implications for practice are:

- Performance reviews have a direct effect on the ‘internal way organisations perform’, which influences firms’ sustainable competitive advantage
- Managers should consider the deployment of performance reviews to operational levels to ‘liberate the full potential’ of their PMS.
- Organisations that identify and understand the factors that positively affect performance reviews have ‘more opportunities to maximise their results’.
- Organisations implementing performance reviews only at managerial levels are potentially missing more than 50% of their benefits.



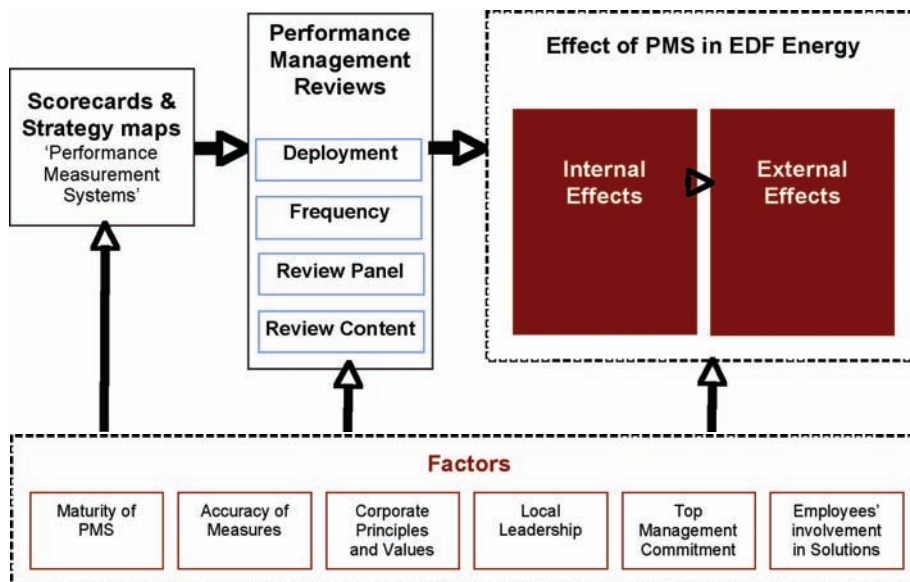
9. Factors Moderating the Benefits of PMS in EDF Energy

Our analysis identified seven factors that influence the PMS effects on EDF Energy's performance. They are:

1. Corporate principles and values
2. Local leadership
3. Top management commitment
4. Maturity of PMS
5. Underpinning performance management reviews
6. Accuracy of measures
7. Involvement of employees in the solutions of operational problems.

The first three factors are related to EDF Energy's leadership and management and the last four factors to the PMS use and design. The following figure highlights these factors.

PMS Effects and Factors in EDF Energy



Corporate principles and values

DF Energy's cultural change, from a reactive to proactive mode of action, has transformed its principles and values. In particular, our research identified that its 'tolerance to failure' is a key factor that affects the success of PMS, for example, employees feel less threatened and are more open to talking about aspects of performance. This creates a different working environment where people are prepared to take some risks, create new approaches to improve performance, challenge their targets, and so on. It is impossible to fully quantify the full impact of this significant difference in attitudes, other than to acknowledge that it exists and that it is perceived as a positive force.

Local leadership

We refer here to local leadership as the leadership executed by business unit managers, functional managers and team leaders. We found that local leadership has great influence on the PMS success. We analysed three EDF Energy business units with similar operations, scorecards, measures, targets, etc. – we identified that one particular business unit excels in productivity, development of action plans and operational improvements. After comparing these three business units, our analysis concluded that the local leadership was the factor that differentiates this one's exceptional performance.

We realised that people working in this particular business unit are more engaged with PMS, motivated through different [non-financial] incentives; for example, the business unit's leader edits a local newsletter distributing news about performance and targets, congratulating teams that over-perform, organising drinks out to celebrate performance, creating groups of best performers, etc. This particular leader appears to have a mental model of how to encourage people to use PMS and achieve targets.

Maturity of PMS

Our analysis of the different effects of PMS shows that the level of PMS maturity affects the results of performance measurement systems.

Firstly, our analysis shows that there is a close correlation between PMS maturity and the degree of improvements and changes. The business unit with almost three years more experience in PMS shows better ability on the solutions provided, more confidence in the process of discussions and approaches to changes than the other business units with less PMS experience.

Second, our research also shows a correlation between PMS maturity and analytical thinking. The business unit with more experience in PMS uses the scorecard to support the development of new techniques, one of them is the 'live line technique' that improves service delivery during maintenance or faults and reduces penalty costs. In summary, we identified a preliminary pattern: the higher the PMS maturity – and so confidence in applying data to help achieve better performance solutions and operational improvement – the more successful these business units are likely to be. This factor definitely warrants further study.

The business unit with almost three years more experience in PMS shows better ability on the solutions provided

Top management commitment

We identified that top management commitment brings formality to the performance management reviews; and so, it influences employees' commitment to achieve targets and improve performance.

Measurement design and deployment

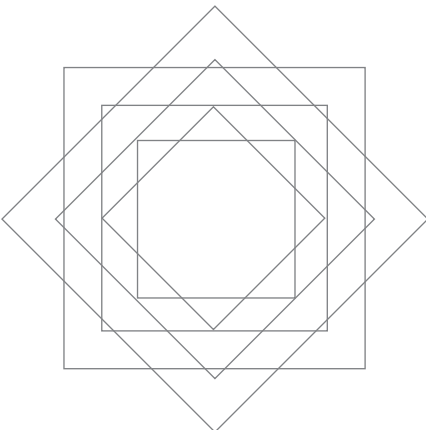
An implicit factor in the design and deployment of the scorecard is the '*autonomy with guidance*' principle for measurement design. In other words, it is the autonomy that employees have for creating and aligning their own measures [based on their operations] to strategic objectives and targets set by the higher level scorecards. This factor has a great impact on employees' learning, commitment, contribution to solutions and understanding of the business. This factor ensures that the business learning spreads within the company; in doing so, the learning does not remain in just a few employees, a department or even a consultancy, but instead it becomes an integral part of the operational performance of the organisation.

Performance management review policies

Our analysis identified that the policies for performance management reviews, in particular those underlying the rules around frequency of review, review panel and review content, have an influential effect on: (a) employees taking responsibility for their actions, (b) behaviour towards target completion and development of action plans, (c) forcing employees to raise their own performance (outcomes), (d) providing formality to the scorecard process, and (e) focusing people on key issues.

Approach of the performance management team

The research shows that the performance management team facilitates the performance management reviews; they support the development of scorecards and strategy maps, set policies and protocols of performance reviews and coordinate the performance reviews. For instance, this team created the best practice's fertilisation scheme to inform employees about new practices and recognised teams, and which provided those best practices. This approach enhances an employee's capabilities in the learning process of new practices and development skills such as data analysis, interpretation and usage; hence the knowledge belongs to people and not to one specific department. This approach increases the employee's accountability, ownership and motivation.



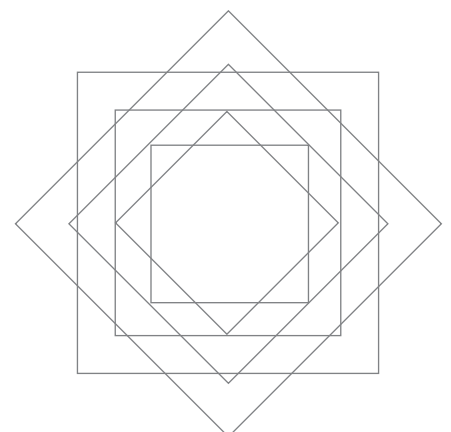
10. A Retrospective View of the PMS Implementation at EDF Energy

The over-riding perception was that the effort and resources that EDF Energy invested in ...

Lastly, EDF Energy's managers were asked a retrospective question in order to assess the overall effects of their performance management systems: If you had the opportunity to implement PMS again, would you do so? Interestingly, nobody said no – every one of the thirty-six interviewees would implement PMS again without hesitation. Why? Generally, they pointed out that PMS has provided focus and a different way to operate their business. The over-riding perception was that the effort and resources that EDF Energy invested in enhanced performance measurement and management systems provided a real and substantial payback over time.

Our conclusions are that PMS implementation is not an easy route to success (and most worthwhile things do not fall into that category) – it requires perseverance, large doses of encouragement, management listening in order to iron-out some initial implementation glitches, the quantification of largely intangible benefits, and patience for the realisation of tangible outcomes. But it is worth it most of all for aligning management and staff efforts with the organisation's strategic objectives. And that is one enormous return on investment that company Finance Directors need to be aware of when considering such initiative budgets.

... provided a real and substantial payback over time



11. Conclusions and Forward-looking Suggestions

The survey results show the effects of performance measurement and management on an average manufacturing and service organisation. Using this as a benchmark, organisations can compare their PMS effects on the Survey Results and identify their own effects. It will help them understand what effects can be maximised and what others should be minimised.

In this case currently, EDF Energy has the right attitudes, behaviours and routines to enable it to sustain a competitive position in its market. So far, the company has done the hard work of designing and implementing its PMS. However, it will be important for management to understand the longer-term lifecycle of its PMS.

The next step is to bring the system to maturity; i.e. learning from it, enhancing its shortcomings and ensuring its full deployment. Once everybody makes PMS part of their lives, the company can move on to developing smart ideas to better exploit its potential. PMS is a dynamic system and so its re-vitalisation will be essential to supporting EDF Energy's future success.

It is important also for the company to understand the PMS effects – both positive and negative – so that they can be conscious of their management's views at all levels. Positive effects can be internal or external, and there tends to be a lag from internal to external benefits. Hence the company's challenge is to develop and extrapolate the positive internal effects of PMS into more external ones as soon as possible. It is important to bear in mind too that the positive internal effects are the drivers of a sustainable competitive advantage for the firm.

This leads us to our next point, which is that this can only be achieved by gaining a real understanding of the factors that influence the PMS effects and so their downstream impacts. In doing so, the company can begin to optimise its results.

Evidence shows that it is important for the company to understand the learning cycle of their PMS so that it can better manage its evolution and growth. PMS is about learning and improving, learning and improving.....for ever. This needs to be established as part of the firm's culture.

The resource analysis also shows that, in future, it is likely that the growth of the company's PMS will require complementary IT capabilities (infrastructure investment and skills development) to be deployed throughout the organisation. This sensitive issue will require an in-depth analysis of current and expected demands, benefits and costs.

The company has initiated "the review or assessment of its performance management reviews". This 'double loop' review ensures the efficiency and effectiveness of the PMS, and should not be carried out only when the company changes its organisational and operational structures. It will be very important to continue with this double loop review periodically to ensure that a healthy PMS is maintained.

By following these principles, we believe that EDF Energy will be in an excellent position to optimise the tangible and intangible benefits of its PMS-based continuous improvement programme in the future.

Acknowledgements

This report is dedicated in memory of Mr. Alan Cary for his dedication and beliefs in performance management systems for the sustainability of EDF Energy.

In addition, the authors would like to acknowledge the support of the EPSRC under grant number [GR/S28846], which supported this research.

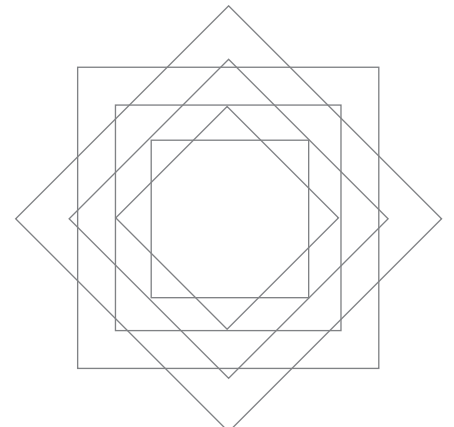
We are also grateful to our colleague Chris Adams at the Centre for Business Performance for his help in developing this report in a way that practitioners can readily relate to its contents.

Appendix 1: Case Methodology

This report shows the results from eight months of research in EDF Energy carried out between 2004-5. The study followed a qualitative research approach based on in-depth interviews.

Our methodological process consisted of five steps:

1. The point of departure consisted of the identification and selection of relevant lines of enquiries and development of research questions based on literature and exploratory analysis.
2. In the construction of the research tools' step, we developed the research protocol, all the data gathering tools and some data analysis tools.^l
3. Data collection – the case study method was supported by the structured questionnaires, semi-structured interviews, archival records, documentation and observation.^m The interviews were carried out in two phases. The first focused on strategic management issues. The second focused on operational issues around PMS. Performance reports, scorecards, survey results, annual incentive plan (AIP) measures, review processes, strategy maps, workshops practices and other documents were studied.
4. Data analysis – the data gathered from different informants and sources of information was reduced, simplified and compared in different sets of tables.
5. Finally, the interpretation of data was done by using different techniques, such as cognitive maps, a high level of the analytic hierarchy process, decomposition and categorisation techniques.^o



Bibliography

- ^a Rigby, D. (2001), "Management tools and techniques: a survey", *California Mgmt Review* 43(2), pp.139-160. Marr, B.,
- ^b Rigby, D. (2001), "Management tools and techniques: a survey", *California Mgmt Review* 43(2), pp.139-160. Marr, B., Neely, A., Franco, M., Wilcox, M., Adams, C. and Mason, S. (2004), "Business Performance Measurements - What is the state of the art?" Conference proceedings Performance Measurement Association, 28-30 July, Edinburgh, UK :627-.634. Speckbacher, G., Bischof, J. and Pfeiffer, T. (2003), "A descriptive analysis on the implementation of balanced scorecards in German-speaking countries", *Management Accounting Research*, 14, pp. 361-387. Franco, M. , Bourne, M., and Neely, A. "Understanding strategic performance measurement systems and their impact on organisational outcomes: a systematic review." (Working paper 2004).
- ^c Marr, B. and Adams, C. (2004) "The Balanced Scorecard and Intangible Assets: Similar Ideas, Unaligned Concepts," *Measuring Business Excellence*, 8, 3, pp.18-27.
- ^d Neely, A., Adams, C. and Kennerley, M. (2002), *The Performance Prism – The Scorecard for Measuring and Managing Business Success*, Financial Times Prentice Hall.
- ^e Martinez, V. and Kennerley, M. (2005), "Performance Measurement Systems: Mix Effects," EURAM Conference, online proceedings; 4-7 May; Munich, Germany. [<http://euram2005.wi.tum.de/proceedings/trackdetail.php?trackid=22>]
- ^f Lingle, J. H. and Schiemann, W. A. (1996), "From the balanced scorecard to strategic gauges: Is measurement worth it?", *Management Review*, 85(3), pp. 56-61. Gates, S. (1999), "Aligning strategic performance measures and results," New York, US.
- ^g Lawson, R., Stratton, W. and Hatch, T. (2003), "The benefits of a scorecard system". *CMA Management* June/July, pp. 24-26
- ^h de Waal, A. A. (2003), "Behavioural factors important for the successful implementation and use of performance management systems," *Management Decisions* 41(8), pp. 688-697
- ⁱ For more information about the theoretical background of this research issue, see Martinez and Kennerley (2005); "Mixed effects of performance measurement and management systems," *International Journal of Operations and Production Management* [Forthcoming].
- ^j Davis, S. and Albright, T., (2004), "An investigation of the effect of Balanced Scorecard implementation on financial performance," *Management Accounting Research*, Vol.15: 135-153.; Said, A. A., HassabElnaby, H. R., and Wier, B., (2003), "An empirical investigation of performance consequences of nonfinancial measures," *Journal of Management Accounting Research*, Vol.15: 193-223.; Ittner, C. D., Larcker, D. F., and Randall, T., (2003), "Performance implications of strategic performance measurement in financial service firms," *Accounting, Organisations and Society*, Vol.28: 715-741.
- ^k Eisenhardt, K.M. 1989. "Agency theory: an assessment," *Academy of Management Journal*, 14 (1): 57-74.
- ^l Voss, C., Tsikriktsis, N. and Frohlich, M., (2002), "Case Research in Operations Management," *International Journal of Operations & Production Management*, Vol. 22: 195-219.
- ^m Yin, R. 1994. *Case study research - design and methods*, Sage Publications.
- ⁿ Miles, M.B. and Huberman A. M. (1984). *Qualitative data analysis - a source of new methods*, edn. London: Sage Publications.
- ^o Pidd, M., (2001), *Tools for thinking: Modelling in management science*. England: John Wiley & Sons; Saaty, T.L., (1983), 'Priority setting in complex problems', *IEEE Transactions on Engineering Management*, Vol. 30, No. 3: 140-155.