

Performance Measurement Systems:Benefits

Organizational researchers and managers alike have long held the view that performance measurement and management systems have a positive impact on business performance. Nevertheless, there is relatively little research to support this hypothesis.

This study tested the effect of performance measurement and management systems (PMMS) on a UK energy supplier using contingency theories. The research findings suggest two types of effects of PMMS; internal effects and external effects. The evidence points out that the positive internal effects of PMMS reside on four main sets of effects 1) people management, 2) organizational capabilities, 3) organizational behavior and 4) operational performance. The negative impact resides on the bureaucracy on design of measures. Nature of the business, PMMS maturity and corporate leadership are the three main contingent factors that support the successful performance of the energy supplier. This research proposes a model to better understand the effects of PMMS on business performance. Finally, the paper concludes with some contributions to theory, implication for practitioners and implications for future research.

KEY WORDS: Performance Measurement Systems, Performance Management Systems, Benefits, Factors

INTRODUCTION

In the last two decades, performance measurement and management has received considerable attention from academics, practitioners, consultants and policy makers. Nowadays, many organizations place substantial amounts of time and effort in designing and using performance measurement and management systems (PMMS) (Frigo and Krumwiede, 1999). Evidence

suggests, for example, that the balanced scorecard has a utilization rate of 44% worldwide: 57% in the UK, 46% in the US and 26% in Germany and Austria (Marr et al, 2004; Rigby, 2001; Silk, 1998; Speckbacher et al., 2003; Franco et al, 2004).

Investments are based on the hypothesis that the use of 'balanced' performance measurement and management systems has a positive effect on the performance of the organization. Nevertheless, there is relatively little research that tests this hypothesis (Kennerley and Bourne, 2004; Davis and Albright, 2004; Schiemann and Lingle, 1999; Franco et al., 2004). Even less investigation has been done on the identification of factors that lead to a positive impact of performance measurement and management systems on business performance (de Waal, 2003; Hoque and James, 2000; Vasconcellos, 1988; Fisher, 1995; Ketelhohn, 1999).

Taking into account the principles of the contingency theories in management control systems, the objective of this research is to investigate the effect of PMMS in business performance in a UK energy supplier, which has a good PMMS implementation. It involves the assessment and evaluation of contextual factors interacting in our particular research unit.

This paper consists of six main sections. i.e. 1) We discuss the theoretical background for contingency theory of research on the impact of performance measurement and management systems; we derive our research questions. 2) We describe the methodology used. 3) We discuss the research findings, particularly the two types of effects of PMMS and the contingency factors associated. 4) We propose a model to understand the effect of PMMS in business performance. 5) We discuss the conclusion of the research. 6) Finally, we discuss the contributions and implications from this study.

THE CONTINGENCY THEORY OF PERFORMANCE MEASUREMENT AND MANAGEMENT SYSTEMS

The contingency theory

The principles of contingency theory were born from the systems approach that established itself as a popular tool for studying organizations on the 1950s (Emmanuel et al., 1990; Rejc, 2004). In the late 1950s and early 1960s, researchers noted that particular environmental conditions were better to particular forms of organization. Proponents of contingency theories such as, Dill (1958), Shaw (1976) and Woodward (1965), argue that an approach might be suitable under one specific set of circumstances [conditions or factors], and might be unsuitable for a different set of circumstances. The majority of studies in this research domain highlight that there is not a single form of organization that was best in all circumstances.

Contingency theory of management control systems

Control is used to create conditions that motivate the organization to achieve desirable or predetermined outcomes. Fisher, based on Ansari (1977), Anthony (1965) and Walsh and Seward (1990) research, identified three types of management controls; i.e. control at the corporate level, management level and operational level (Fisher, 1995). This article pertains primarily to control at the management level; i.e. strategic business units and divisions.

In the performance measurement literature, contingency-based studies are mainly focused on the relationship between accounting control systems and business performance. The contingency factors that have been studied are: organizational size, organizational structure, culture, market position, product lifecycle and strategy (Hoque and James, 2000; Epstein, et al., 2004; Braam and Nijssen, 2004).

Impact of performance measurement and management systems and the contingency theory

Performance measurement and management systems, although extensively studied in the last two decades, has mainly concentrated on the design, implementation and use of different performance measurement frameworks (Kaplan and Norton, 2000; Neely, Mills, et al. 1996; Silk, 1998; Olson and Slater, 2002; Frigo, 2003). Nevertheless, there is relatively little research on the impact of performance measurement systems (PMMS) on business results (Kennerley and Bourne, 2004; Davis and Albright, 2004; Schiemann and Lingle, 1999; Franco, Bourne and Neely, 2004).

Early studies show some positive impact of PMS on business results. Lingle and Schiemann (1996) and Gates (1999) agree that organizations managed through ‘balanced’ performance measurement systems perform better than others. Similarly, Lawson, Stratton and Hatch (2003) show that the use of performance measurement and management systems as a management control tool reduces the overhead costs by 25% and increases organizational sales and profits.

Said, HassabElnaby and Wier’s survey (2003) on 144 US firms shows that non-financial measures have positive relationships with stock market returns. In addition, Ittner and Larcker (2003) highlight that only 23% of 157 organizations surveyed consistently build and test causal models, but that these 23% achieved on average 2.95% higher return on assets and 5.14% higher return on equity.

Although this previous research provides insight into how performance measurement and management systems affect business results, it is limited in two important aspects. First, it has mainly focused on the ‘financial effects’ of performance measurement systems and less focused on the ‘intangibles and operational’ effects of PMMS on business performance.

de Waal (2003), Sandt, Schaeffer and Weber (2001), Bititci et al (2002) and Malina and Selto (2001) find less tangible benefits from the use of performance measurement systems. Dumond’s evidence (1994) suggests that the using balanced performance measurement systems improve the

decision-making performance of managers and employees. Lawson, Stratton and Hatch (2003) show that performance measurement systems linked to compensations systems significantly increase employee satisfaction, although Ittner and Larker (2003) present evidence to the contrary.

Forza and Salvador's research (2001) shows that employee communication from measurement systems increases collaboration and facilitates buy-in of strategic objectives. Ketelhohn (1999) and Vasconcellos (1988) agree that the selection of appropriate measures enhance the implementation and acceptance of business strategy, and staff's business understanding. This leads us to our first research question:

RQ1. What is the effect of performance measurement and management systems on business performance?

We refer to business performance in a boarder sense to cover business results and the way of how organizations operate [i.e. operational performance].

Second, a major need of existing research in the impact of performance measurement and management systems resides in the identification of 'factors' such as environmental, behavioral and contextual that lead to a positive impact of performance measurement and management systems on business results (de Waal, 2003; Hoque and James, 2000; Vasconcellos, 1988).

Givindarajan (1988) highlights that organizations that align performance measurement systems with contingency factors achieve higher performance (Said et al, 2003; Fisher, 1995). De Waal's evidence (2003) highlights 18 behavioral factors that affect managers using performance measurement and management systems and business results.

Hoque and James (2000) studied the relationship of three organizational factors (size, product lifecycle and market position) and the balanced scorecard affecting organizational performance. Their results show that greater use of balance scorecard systems is associated with a) larger

organizations [size] and b) with products lifecycles at early/growth stages. They suggest that higher scorecard usage is associated with higher organizational performance. They concluded that more contextual factors should be studied. This leads us to our second research question:

RQ2. What are the factors that influence the effects of performance measurement and management systems?

METHODS

Rationale and settings

We regarded it as appropriate to adopt the social constructionism approach based on case studies to our research inquiry. In particular, we argue that previous studies have been inadequate to examine two important features of the impact of PMMS on business performance. First, lack of identification of PMMS effects on organizational operations. Second, lack of understanding of factors associated on the impact of PMMS.

This approach based on case studies drives us to the fundamental point where the phenomenon takes place in real time (Easterby-Smith et al, 1999). It provides a high degree of involvement in different data sources, access to sensitive situations, richer and higher quality of data, tacit information and insights. It can deliver an in-depth and detailed understanding of current phenomena and its environment (Voss et al, 2002; Burrell and Morgan, 1979; Yin, 1994).

Methodological process

Our methodological process consisted of six steps: (1) The point of departure consisted on the identification and selection of relevant lines of inquiries 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 (Voss et al, 2002). (3) Pilot case- we tested and improved the tools developed. (4) Data collection- the

case study method was supported by the structured questionnaires, semi-structured interviews, archival records, documentation and observation (Yin, 1994). (5) Data analysis- the data gathered from different informants and sources of information was reduced, simplified and compared in different sets of tables (Miles and Huberman, 1984). (6) Finally, the interpretation of data was done by using different techniques such as a cognitive maps, high level of the analytic hierarchy process, decomposition and categorization techniques (Saaty, 1983; Pidd, 2001; Miles and Huberman, 1984).

Data collection

Data was collected from an energy supplier, which will be referred to as 'Energy'. It was born two and a half years ago by a merge of several local energy suppliers. It has three regional units 'South, Central and North' and provides energy to one quarter of the United Kingdom. Currently, Energy is using the balanced scorecard at the executive level, business unit level, team and individual level. They have the same performance measurement and management initiatives based on the balanced scorecard. Each unit has standardized processes, tools and practices to design, implement, review and use [to a certain extent] the scorecards. The three regions follow the strategy map of the UK division to guide their regional objectives, measures and targets. Their operations, services and performance management are very similar, although the balanced scorecard of the South region is two and a half years older than the other two regions.

Energy's chief operating officer (COO), twelve senior managers and three regional managers were interviewed. The interviews lasted from two to four hours with each interviewee; these were conducted over the period of six months during 2004.

Questionnaires were designed to study the impact of PMMS on business performance at two levels; i.e. operational and strategic levels. This strategy aims to support our first research

question. The case study was conducted in two phases; each phase had its own questionnaire, and was directed to different interviewees. They are:

Phase 1 focused on the study of the effects of PMMS on the major strategic fields of the organization.

Phase 2 focused on the study of the effects of PMMS on operational fields of the organization.

Multiple data collection tools. We used multiple data collection tools for two purposes. First, to get a comprehensive overview of the context of the research issue, in doing so, we ensure a mechanism to enhance the analysis of our second research question (Yin, 1994); i.e. contingent factors influencing the PMMS effects. Second, to increase the reliability, construct and internal validity of our research (Voss et al, 2002; Easterby-Smith, 1999).

RESULTS

Energy's context

In the last two years, Energy has exceeded its key strategic objectives by improving safety, customer service, financial return and building reputation. It has switched from a short-term strategy to a long-term strategy; hence it is strongly investing in infrastructure and people development.

The position of Energy's stakeholders is complex. Energy has final customers, who receive and pay for the service, and intermediate customers, such as local councils who negotiates the service. Economically, Energy depends on two bodies; first, its investments are established by Energy's corporation and owners and second, its income and expansion plans are controlled by regulators. In this type of industry, customers are represented by the regulators. Regulators assess the quality of the supply and exercise penalties when the expected service/supply is not provided. Table 1

summarizes the company's context and highlights the factors that influence the company performance.

TABLE 1
Energy's contextual environment

Element of field	Description	Factors
Market share	Supply a quarter of the UK population.	No direct competitors
Customers	The energy is supply to end customers, but supply projects and targets are administrated and regulated by the government	Two customers: end customers and councils
Regulators	The energy price and projects are established by regulators. Energy service is constantly evaluated.	Product price and incomes are set up by regulators
Contractors	Energy outsource services for specific projects, i.e. connection of new supplies on new habitat ional areas.	Project coordination to reduce lead time
Owners	Energy is owned by a foreign financial capital	Owners determine capital investments and revenues
Leadership	New leadership is characterized by positive attitude to business development, tolerance to failure and strong encouragement to business improvements. It is different from traditional command and control style	The top management commitment is a key factor for the scorecard success.
Culture	Encourages teamwork where problems are highlighted, discussed and solved	New culture
Strategy	Focused long term planning and investment	Change from a survival strategy to long term strategy

General benefits of performance measurement and management systems

To better understand the effect of performance measurement and management systems on Energy's performance, we started by analyzing the purpose of the PMMS implementation, the positive impact and the negative impact. Table 2 presents a summary of the evidence from respondents. It is important to note that quantitative and qualitative data gathered from different informants was reduced to more precise categories in common tables (Miles and Huberman, 1984) and then systematically interrogated (Yin, 1994) by comparing and noting patterns (Kvale, 198; Miles and Huberman, 1984).

TABLE 2
Scorecard effect – General Perception

Interviewee	SC purpose in Energy	Positive Impact	Negative Impact
1	To improve customers' services. To have a tool to communicate the company strategy. To improve performance	Improve transparency of performance. Achieve performance improvements. Align top objectives (ambitions and vision) with operational performance.	In some areas, data are not captured.
2	To improve customer service, To achieve better performance, To take better decisions on capital expenditure & operational costs	Achievement of strategic objectives because we know what those are and we now our performance on each objective	Some measures are difficult to understand, e.g. productivity index, so people loose the attention to PMMS.
3	To standardize performance management. To have clear objectives and to communicate them to staff.	Allows staff to share information, which is motivational. Get a balanced view of the business, so the organization is not totally focused on finances or processes.	No, negative effects perceived
4	To align objectives and strategy and to review performance.	Improve business performance. Increase sense of achievement by hitting targets. Improve reputation.	BSC can become a little bureaucratic and mechanic. Mechanic: 'slaved devoted' by managing by objectives.
5	To improve performance.	Achievement of targets. Gain integration of processes, Improved health, safety and business improvements	It is bureaucratic because they have 34 measures. These are too many that is an obstacle to keep people focused
6		Focus people and resources, Improved consistency on identifying areas of improvement	It is time consuming, it is not very dynamic to monitor business and cover everything specially long term
7	To focus on people on target setting and target achievement. To change & homogenize company culture.	Provides focus on a simple and balanced way, improved people management	The way you see negative in symbols does not tight performance; therefore they cause 'a lost of fait.
8	To balance what we do. To focus on people (safety and development). To improve performance.	Improve employee satisfaction, it is motivating tool, it's a mechanism to talk with people, set targets and hit them. Improve achievement of objectives	It requires a lot of IT support to produce the reports, therefore we need more automation of measures,
9	To evaluate company performance. To identify and focus on areas that need improvements	Focus on areas for improvement, and highlight you the best practices. It tell you how your people is performing	People don't use overcomplicated measures, complicate targets, people don't use them.
10	To recognize business needs, minimize costs, improve people satisfaction	Improve costs, improved staff performance. Improve sense of purpose. Reduce unit cost. Improved productivity. Clarify faults	

BSC=Balanced Scorecard

Note: This is an example of 10 respondents

Specific benefits of performance measurement and management systems

We divided the specific benefits in two categories 1) effects in the three regional business units and 2) effects in organizational management and behavior. The specific benefits relate to interviewees' functions and operations.

1) Scorecard's effects in the three regional business units. We analyze the effects of the PMMS on the three regions and compared them. Table 3 shows a brief summary of the evidence collected.

TABLE 3
Performance measurement and management effects in regional units

Theme	Central	South	North
Innovation of new practices	SC motivates challenges, improve operational and focus people on the right direction.	PMMS support the development of a new technique 'live line' as a result they reduce customers minutes lost, improve costs & develop a core competency	PMMS support the project development to reduce outstanding faults as a result they hit the target.
Productivity	Increased productivity by setting high targets and working to hit them	Improved productivity, faults' plans, maintenance plans and service delivery	Increased productivity, i.e. customer minutes lost and customers interruptions
Employees attitude to SC	Positive attitude towards success and failure. People talk about success and improvements. They are more tolerant and contribute to improvements	Employees like to propose and execute improvements in their operations, because they know that those will be reflected in the scorecard.	People are driven by the scorecard because they like to set their objectives and targets
Collaboration	SC allows you to share what works and what does not work. It provides a common language to communicate with your people.	SC is the glue for functions. Teams help each other. Performance is not to over perform in a function and let the partner function under perform.	SC helps us to collaborate and work in teams. Improve areas by getting help from other functions and units.
Employee accountability	SC increases staff accountability because it is written in the SC boards, so they care about tasks	Accountability is clearer for everybody because you see your responsibility and performance every day	Improved accountability, especially during team briefing when teams share results.
Operational focus	Improve people focus. SC focuses people to discuss more and relevant issues.	Improve focus on processes that need attention. It assesses the results of action plans and process improvements.	SC clarifies the decision making. Employees consider how data impacts all business.
Operational capabilities	Improve teamwork capabilities; this was not usual in this business.	Mastered some processes to reduce faults and deliver better supply quality. Increase process improvements.	Increase process improvements. Improve the ability to drill down problems and bring solutions.
Profitability	SC does not improve our profitability	The development of new techniques reduces financial regulatory penalties; but equally, SC consumes a lot of money.	Not relationship that SC delivers profitability; there are other initiatives at the same time.
Cultural change after SC implementation	Culture is honest, supportive and tolerant to mistakes. The negative side is that you don't have enough challenge and competition.	Culture oriented to people's health and safety, this cultural change came from the corporate leadership. The SC is a vehicle or tool to assist this change.	Growing culture, it makes people more interested in how are they performing.

SC= scorecard

2) Organizational behavior and management.

Organizational behaviors One of the major effects of the scorecard resides on the development and support of organizational principles, values and behaviors.

Energy's scorecard broke the myth of its industry; i.e. organizations totally driven by profits. It has a balanced view of its underpinning values, such as safety, customer service and profitability. Its scorecard is a driver of this balanced approach.

Our evidence suggests that the scorecard influence employees' behaviors; for instance, middle managers' behaviors are driven by objectives and employees by targets. Scorecards start to create employees' ownership on what they are doing. Contrarily for some employees the scorecard is too friendly that makes people relax, perform enough but not to over perform.

Organizational management The major PMMS effects reside in planning and budgeting, operational improvements, rewards, leadership, decision making, goal deployment and communications.

a) Budgeting, planning and negotiation - Our evidence supports that the scorecard makes the financial negotiation with owners easier. Last year Energy increased by one third of its initial capital expenditure by negotiating targets using scorecard measures.

b) Operational improvements- Our results demonstrate that business improvements are embedded on the system, in people management, capabilities, behaviors, customers' satisfaction, safety, process performance and some of them are difficult to quantify.

c) Compensation and rewards- the annual incentive plan (AIP) initiative is associated with current scorecards, although employees are quite skeptical about its benefits. The positive effect is that 'people have in their minds that their performance affects the company, and so their AIP'. The negative effect is that employees only focus on AIP related measures and not on

'improvements'. Nevertheless employees and senior managers are quite skeptical to this initiative.

d) Leadership- our evidence shows that at senior level, the scorecard is a tool that supports business leadership; but at operational level, leadership becomes a factor that affects PMMS.

e) Decision making- our data suggests that at the executive level, although the scorecard enhances managers' decisions by providing focus, setting targets and encouraging analytical thinking, it does not improve the speed or effectiveness of decisions. At the business unit level, the scorecard does not improve the quality of the decision, although it is a good feedback mechanism to inform decisions.

f) Communication- our results show that the scorecard, as a communication media, has decreased the ambiguity by clarifying company objectives, improved accountability and improved processes and corrective actions. Senior managers and union have a joint scorecard. It facilitates the communication between parties; as a result, it improves their relationship, trust, sense of belonging and cultural environment.

g) Commitment- a common perception of managers is that they do not have clear evidence that scorecard improves staff commitment. Employees are committed to the customer for who they switch the lights on, but not to the company.

h) Brand/ image- one of Energy's objectives is to be point of reference for government, regulators, and contractors. Recent survey results show that customers have perceived a better approach to service deliver; a piece of evidence is the number of letters of 'thank you' from customers. The department of trade and industry (DTI) regards Energy as the traditional business that has moved on and improved service performance and image. A couple of councils expressed their positive perceptions of Energy's performance after seeing the PMMS results.

Factors influencing the effect of the scorecard. The last column of Table 1 shows the contextual or circumstantial factors that influence the scorecard effect on Energy's performance. In addition, there are other factors categorized as business improvement initiatives, which are running at the same time as the scorecard, and affect the performance management initiatives; e.g. investors in people (IIP), e-factor, total quality control (TQM), etc.

FINDINGS: WHAT IS THE EFFECT OF PMMS?

Our first research question asks, what is the effect of PMMS in business performance? According to our results, senior managers agree that there are generic positive and negative effects from the scorecard utilization in Energy (Table 2).

Positive effects

Our evidence shows nine positive effects of PMMS in Energy (Table 2), these are: to a) focus people attention on what is important to the company and b) get business improvement, c) achieve objectives and targets, d) align operational performance with strategic objectives, e) improve productivity, f) improve customer satisfaction g) improve people satisfaction, h) gain better understanding of the company performance and i) improve company reputation.

Our analytic hierarchy analysis points out two main positive effects of PMMS. This argument leads us to our first proposition:

Proposition 1. PMMS positively affects business performance by focusing people attention of what is important to the company and achieving business improvements.

Negative effects

The negative effects found are a) over complicated measures, b) excess of measures more than 20 measures, c) some managers highlighted that the scorecard can become quite mechanic; i.e. it

limits the freedom of entrepreneur management, d) it is time consuming and e) it demands great investment.

Two types

Further evidence suggests that perceived consequences from PMMS involve two types of PMMS effects; i.e. external effects and internal effects.

First, the external effect is an external expression of the company performance and is perceived by different stakeholders. Second, the internal effect of PMS is an internal expression of the company performance. It affects the company's operational processes, organizational behavior, employees' capabilities and skills. Hence, it mainly perceived and experienced by the company's employees and some shareholders. The internal effects of PMMS sequentially affect the external impact of PMS; however very little research explores the sequential effects of the impacts of PMMS. Our interviews with three industry experts supported our two general types, in that they all agreed that a) internal effects are embedded in organizations day-to-day performance and b) internal effects support external effects although the relationship is not always clear. Our data suggest that both effects improve the company performance.

Type 1: Internal effects

Our analysis identified four categories of internal effects by using a cognitive mapping of internal effects and following the high level of analytic hierarch process (Pidd, 2001; Saaty, 1983). Each category reflects particular level of effects. Table 4 summarizes the internal effects found in our research and classifies them within the four categories.

Our analysis of the influence of PMMS in business performance highlights that a) most relevant benefits came from the 'internal effects', in particular organizational behavior and operational

performance, and b) moderate benefits came from ‘external effects’ of PMMS, in particular brand reputation and customer satisfaction (Table 4).

TABLE 4
Type 1: Internal effects

Category	Effect	Example
Management skills	Enhance budgeting negotiation	<i>Interview:</i> ‘SC facilitates the negotiation of expenditure with owners; last time they achieved an increment of a third of the capital expenditure for 2005’
	Improve top leadership	
	Improve goal deployment	
	Better select your people (capabilities) to work on projects	<i>Interview:</i> ‘At the top level, SC supports the diffusion and communication of strategic objectives. It enhances the leadership of the organization by directing employees towards common ambitions.’
	Improve the prioritization of projects when you use weights in measures	
Organizational capabilities	Improve peoples abilities to drill down & understand problems’ root	<i>Interview:</i> ‘SC is a good way to share information and work with people. For instance, before the merge one unit had pure financial measures as a business measurement system, but employees were not involved. It was a local tool with not impact on employee involvement
	Improves teamwork	
	Improve the identification of training needs	
	Increase employees’ understanding that their actions affects the process performance	
Organizational behavior	Positive employee attitude to SC	<i>Interview:</i> ‘At regional level, scorecard creates a habit that forces managers & teams to expend time together to discuss performance and set up actions’
	Motivate performance discussions	
	Improve collaboration with other functions, teams, suppliers and customers (councils)	<i>Interview:</i> ‘At top level, managers set tight targets and the motivation comes from the management team to achieve those targets. At the regional level, there is not motivation because the SC does not break to team levels’
	Improve the company’s values and its cultural orientation to health and safety.	
	Improved tolerance to mistakes, the command & control style not longer exists	<i>Interview:</i> ‘SC increases the staff accountability because it is clear in the scorecard and diffused on the PMMS boards. It makes difficult to miss responsibilities, on the contrary at team levels it is motivating factors that provides friendly competition’
	Improvement of employee satisfaction	
	Improve motivation at the top management level	
	Employee accountability	
	Enhance company principles of teamwork and transparency	<i>Interview:</i> ‘the SC is not over perform in one function and let the partner function under perform’, ‘the SC is the glue of functional units’;
	Improve communication	
Operational performance	Innovation of new practices	<i>Interview:</i> ‘SC supported the development of a new technique ‘live line’, as a result we improve productivity by reducing customers minutes lost’.
	Improve productivity	
	Improve prevention of problems	
	Focus attention of sensitive areas	<i>Interview:</i> ‘SC monitors trends in performance (although limited), it helps you to identify what is wrong to take action plans’

SC= Scorecard

Type 2: External Effects

Our analysis identified three external effects of PMMS; these are company image, customer satisfaction and profitability.

We found a positive effect of PMMS on company's brand image and reputation. On the contrary, our evidence suggests that PMMS does not have a clear impact on profitability. It was difficult to quantify the profitability created from the scorecard because there are other management initiatives running at the same times as the scorecard that makes difficult to isolate the impact of only one.

This argument leads us to our second proposition:

Proposition 2: Performance measurement and management systems have internal and external effects on businesses performance.

Factors influencing the PMMS impact on business performance

Our analysis pointed out four main factors that influence PMMS effects on Energy's performance. They are 1) business context, 2) Energy's business improvement initiatives, 3) PMMS status and 4) environment (Table 5). Our research shows that the increased PMMS maturity of the South region positively affects analytical skills and the development of innovations and new practices.

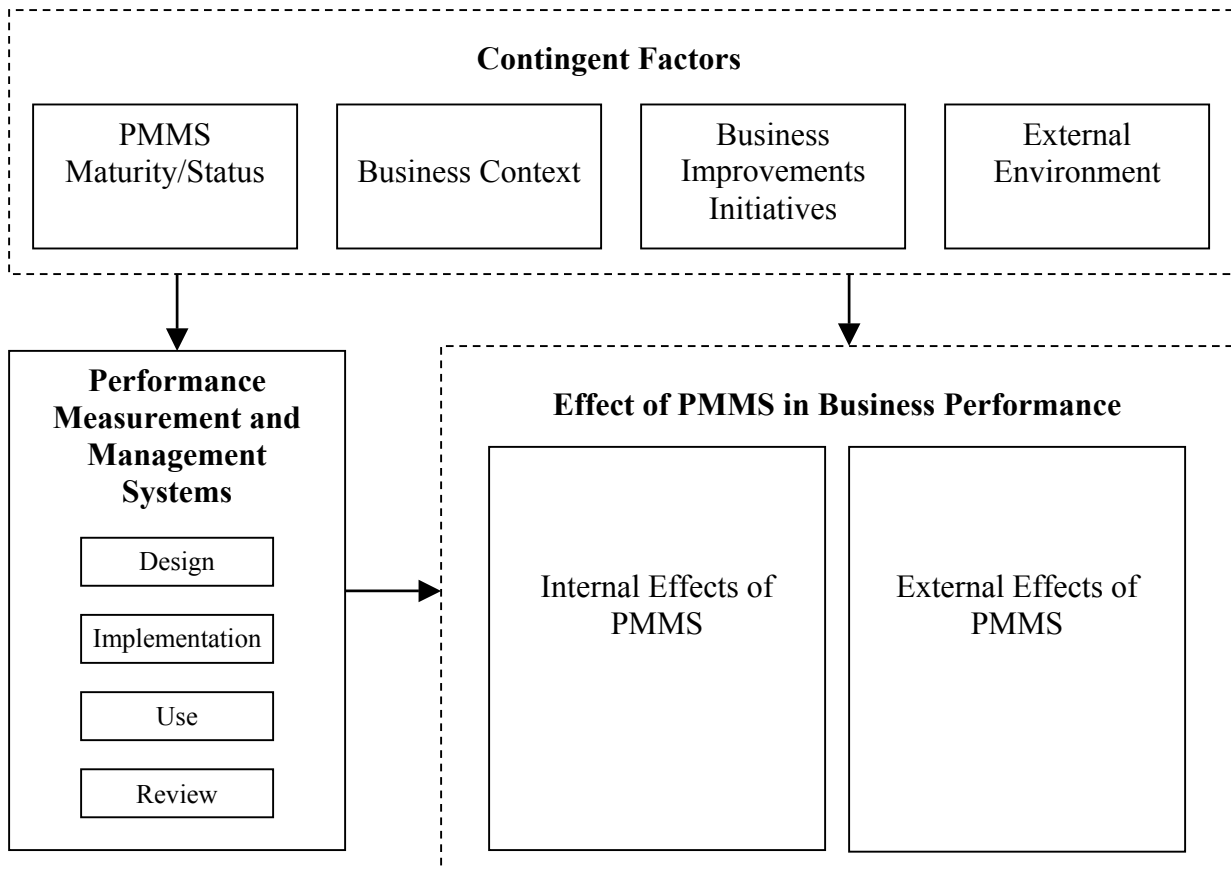
TABLE 5
Factors influencing the effect of PMMS

Business context	Energy's business improvement initiatives	PMMS status	Environment
<i>Nature of the business:</i> Market share: monopoly Recent merge	Investors in people (IIP)	Design	Whether conditions, particularly storms
<i>Critical stakeholders:</i> Regulators Owners Contractors Middle customers: councils End customers	Total quality management (TQM)	Implementation	Foot and mouth disease
	e-factor	Use	
	Enterprise resource planning (ERP)	Review	
		Maturity	
<i>Culture:</i> Company leadership Culture			
<i>Business strategy</i>			

TOWARDS A MODEL TO UNDERSTAND THE EFFECTS OF PMMS

Viewed in conjunction, the findings from this study suggest that the effects of PMMS in business performance can be characterized in terms of internal and external PMMS effects, as depicted in Figure 1. According to this model the effect of PMMS in business performance entail two effects; the internal and external effects. The internal effects could be manifested on management skills, organizational capabilities, organizational behavior and operational performance. The external effect could be manifested on company's reputation, profitability and market expansion.

FIGURE 1
Model to understand the effects of PMMS



CONCLUSIONS

The primary aim of this study was to investigate the effects of performance measurement and management systems in business performance. Evidence from this study on the effects of PMMS in a best practice energy supplier suggests that there are two types of effects on business performance; they are internal effects and external effects.

The internal effects archetype involves four main sets of effects 1) people management, 2) organizational capabilities, 3) organizational behavior and 4) operational performance. Our analysis of the influence of PMMS in business performance highlights that a) most relevant benefits came from the 'internal effects', in particular organizational behavior and operational

performance, and b) moderate benefits came from ‘external effects’ of PMMS, in particular brand reputation and customer satisfaction. Despite evidence from other investigations (Ittner, Larcker and Randall, 2003; Davis and Albright, 2004; Said, HassabElnaby and Wier, 2003), our results did not find a positive impact on profitability, basically because it is difficult to isolate the effect of PMMS on profitability from other business improvement systems running at the same time as PMMS.

Importantly, however, our findings also strongly indicate that the internal effects of PMMS, although perhaps necessary to achieve positive effect on business results [external effects], do not completely explain how internal effects of PMMS influence external effects such as organizational brand reputation and profitability.

Our evidence, analyzed through the analytic hierarchy process, pointed out two main effects of PMMS; I.e. PMMS positively affects business performance by a) focusing people attention of what is important to the company and b) achieving business improvements. Meanwhile, the negative impact of PMMS resides on the bureaucracy on design of measures and on performance reviews.

Our results thus identify a number of important contextual factors influencing the effect of PMMS on business performance that have not been observed in previous studies. Specifically, they demonstrate that the nature of the business, PMMS maturity and corporate leadership are the three main contingent factors that support positive effects of PMMS.

Based on our research findings and literature on contingency theory of performance measurement systems, we propose a model to better understand the effects of PMMS in business performance.

In the following sections, we elaborate on some of the contributions to theory and implications for practice. It is followed by implications for future research.

Contributions and implications

This paper contributes to theory by proving a model to better understand the effects of PMMS on business performance. According to Fisher (1995), control is used to create conditions that motivate the organization to achieve desirable or predetermined outcomes. Our model proposes a better understanding of a) how a management control system [PMMS] affects the performance and outcomes of organizations, and b) how contingent factors influence the PMMS results (Shaw, 1976; Dill, 1958).

In particular, our research has demonstrated two types of PMMS effects; i.e. internal effects and external effects. This research also has implications for practitioners especially for those whom have major influence in business management. Our evidence show that the major PMMS benefits resides on a) focusing people attention of what is important to the company and b) achieving business improvements. Energy's evidence suggests that three major contingent factors that influence the effects of PMMS in business results are nature of the business, PMMS maturity and corporate leadership.

Future work

The explanations and post hoc analyses we have discussed point to new research avenues. In this concluding section we want to emphasize three potential areas for future research.

- 1) The study of the effect of multiple control mechanisms [including PMMS] on business performance. Our research found difficult to isolate the effect of PMMS on the profitability of the business, basically because there are some other business improvement initiatives running at the same time as the PMMS. Fisher (1995) also support our finding and suggest that there is a lack of

research that the test the effect of multiple control mechanisms [including PMMS] on business performance.

2) The study of concurrent or sequential effects of PMMS on business performance. Our research finds that there are concurrent or sequential effects of PMMS on business performance. More research should be carried out in this research issue.

3) The study of the effects of the maturity of PMMS on business performance. Our analysis suggests that the most challenging innovations and practices came from one regional business unit; interestingly this unit is two years and a half more mature on the use of PMMS than other units. We find two potential relationships between a) the maturity of the PMMS and the level of innovation, and b) the maturity of the PMMS and the level of improvements. More research should be carried out in to test this relationship.

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