Theory and practice in SME performance measurement systems

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Abstract *Describes research undertaken to evaluate the appropriateness of strategic performance measurement (PM) system development processes for small- and medium-sized enterprises (SMEs). An evaluation is undertaken of ten PM approaches found in the literature. To facilitate this evaluation a typology is presented which synthesises current theory. This evaluation resulted in the identification of a process, based on its congruency to the theoretical model, which is used for an empirical investigation. Empirical data from SMEs is collected and analysed using the typology. This indicates a discontinuity between current theory and the requirements of practitioners in small companies. The paper concludes with a number of recommendations to facilitate the development of appropriate PM processes for SMEs.*

Introduction

The need for companies to align their performance measurement (PM) systems with their strategic goals is well documented in the literature (Kaplan, 1983; Eccles, 1991; Gregory, 1993). To address this need a number of frameworks and processes (approaches) for the development of PM systems have emerged. The most popular of these is the balanced scorecard (Kaplan and Norton, 1992), which emphasises a balance between the use of financial and non-financial measures to achieve strategic alignment. The popularity of the balanced scorecard has acted as a catalyst for further research into the characteristics of, and approaches for developing, strategic PM systems (Neely *et al.* 1996a; 1996b; Bititci *et al.,* 1997; Oliver and Palmer, 1998). These approaches have been designed primarily for use in a medium to large company context. Small- and medium-sized enterprises (SMEs) exhibit distinct characteristics that differentiate them from the majority of their larger counterparts (Storey, 1994). Therefore, there is a need to establish the relevance of existing PM approaches for SMEs and to identify an appropriate process for the design and implementation of strategic PM systems in this context.

This paper describes the research that has been undertaken to specify a set of requirements for a SME focused, strategic PM development process. A typology is presented that synthesises the characteristics of PM development

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processes, for this purpose. There is also a need to ensure that the outputs of the process are appropriate. Therefore, the typology also identifies the characteristics of well designed performance measures and appropriate dimensions of performance. This framework is used to evaluate current strategic PM development approaches found in the literature. A survey is used to establish current PM practice in SMEs and a case study is undertaken to assess the relevance of an existing PM development process in a SME context. Ten existing approaches are evaluated using the typology. This evaluation highlights an appropriate PM development process, with respect to current theory, for empirical analysis. The empirical data is analysed using coding techniques. The codes, which are pre-selected from the typology, are used in an attempt to identify any discrepancies between the empirical and theoretical data. The results obtained are used to characterise SME PM systems, and to inform the development of a practical development process within a SME context.

Research methodology

The research presented in this paper is specifically concerned with the investigation of the following question: Are current approaches for the design and implementation of strategic PM systems appropriate for SMEs? An initial literature survey was undertaken to establish the status of current knowledge in the area of strategic PM for SMEs. This survey revealed that while there has been increased attention on PM *per se*, current literature is inadequate in respect of the specific SME context.

The research falls into two phases: theoretical and empirical. The theoretical phase of the research approach may be conceptualised in more detail as two stages:

(1) the formulation of a typology; and

(2) the analysis of current PM approaches.

Stage one focused on the deduction of a typology that embodied the findings of previous research on process methodologies, the characteristics of well designed strategic performance measures and appropriate dimensions of performance. The typology resulting from the synthesis of these areas was used to evaluate ten PM development approaches found in the literature (stage two). This evaluation, although constrained by existing theoretical frameworks, resulted in the selection of a process based on its coverage (completeness) of the criteria within the typology, and indicated the need for an empirical study.

The second phase of the research approach focused on the collection, verification and analysis of empirical data, and was divided into two stages:

(1) semi-structured interviews with managers of SMEs;

(2) participant observation of strategic PM system development, in a SME, using the selected process.

The semi-structured interviews were conducted with managers from eight SMEs, drawn from a sample of companies who had recently undertaken programmes focusing on strategic improvement. This is consistent with "judgement sampling" (Sekaran, 1992), which was used because there is a distinct scarcity of strategic planning in the majority of SMEs (Mintzberg *et al.*, 1998; Cagliano *et al.*, 1998; Barnes *et al.*, 1999). The rationale for the selection of this sample was that companies actively seeking strategic improvements would be most likely to view PM as a strategic improvement tool. Company size ranged from 12-240 employees, which is consistent with current SME definitions (European Commission, 1996). The interviews were taped and transcribed. Summaries of the transcripts were produced and were verified by both the original interviewees and an additional manager. This enabled multiple source triangulation (Denzin, 1978). The interviews were then analysed using thematic coding (Flick, 1998) and were compared against the formulated typology. The rationale for this approach was to highlight any discrepancies between theory and practice.

The second stage of phase two was based on the observation of the PM development process identified in phase one. The process was facilitated by a member of the original development team and focused specifically on the development of a set of top-level strategic measures. This was planned as a series of five workshops. The study utilised a case study approach that focused on the accumulation and interpretation of qualitative data. As Gummesson (1991) states:

> The general reason for doing case study research is to better understand complex phenomena such as change processes. Innumerable factors, and entangled interconnections between them, do not allow simple unambiguous research designs and quantifications.

Data collection was based on both participant observation and on face-to-face interviewing methods. An observational method was identified as appropriate for the collection of both processual and behavioural data that would emerge from the application of the process. In an attempt to overcome any observer bias, face-to-face interviews were also undertaken. This included structured interviews with each of the SME participants at the beginning of the intervention and a set of semi-structured interviews at the end of the intervention. As Sekaran (1992) states:

> Because almost all data-collection methods have some biases associated with them, collecting data through multimethods and from multisources lends rigor to research.

Data analysis of the observational data was undertaken using thematic coding (Flick, 1998). This facilitated the identification of a set of issues that were verified and validated with workshop participants and with the process facilitator. Using the classification of Denzin (1978), the data triangulation undertaken was multiple data source, multiple method, and multiple researcher involvement.

The interview data relating to the SME PM systems, together with the issues identified from the observational data, were compared against the typology.

This facilitated the identification of discrepancies between the empirical and theoretical data. This approach has the advantage of informing theory, through the enhancement of theoretical frameworks, and improving practice, through the identification of the key constraining issues.

A typology of strategic PM system development process characteristics

The concept of strategic PM was developed in response to the criticisms that traditional PM systems are financially driven and historically focused (Kaplan and Norton, 1993). According to Neely (1999), this change in emphasis represents a revolution in the field of PM, evidenced by the increasing body of research that has been developed over the last decade. This plethora of information included many different proposals and guidelines that attempt to explain the characteristics of strategic PM. These may be divided into two broad categories: appropriate dimensions of performance for which measures might be developed and the characteristics that these measures should display. These categories, however, focus only on the content of strategic PM systems, rather than identifying the requirements of effective processes for developing them.

Previous research has failed to address explicitly the features of PM development processes that enhance the likelihood of successful implementation. This makes the evaluation of existing approaches problematic. This problem has been addressed by the identification of features of typical process methodologies, which can be applied to the PM development process. The three resulting categories are described in the following sections and are synthesised to form a typology for evaluating the PM approaches that have emerged in the literature.

Development process requirements

In order to develop a strategic PM system, it is critically important to identify the properties of an effective development process. Without this, there can be no practical value for business from the concept of strategic PM. As the PM literature is deficient in addressing this issue a wider review was undertaken looking at process methodologies. The objective of this review was to identify general principles of effective development and implementation, which could be applied to strategic PM system development processes.

Mills *et al.* (1995) suggest that:

> To be useful, a process should specify how an organisation might be attracted to implement the process; who should participate in the process and how the project of implementing the process should be managed.

Their subsequent examination of the manufacturing strategy development process used the generic process framework identified by Platts (1990, 1994):

- point of entry;
- participation;

- procedure;
- project management.

Applying this framework to PM development processes, an effective point of entry would necessarily involve an evaluation or audit of the existing PM system, to highlight areas of deficiency and indicate a need for improvement. Furthermore, participation in the process, according to the PM literature, should include the staff who will be the key users of the performance measures developed (Globerson, 1985; Lynch and Cross, 1991; Neely *et al.*, 1996a). Identifying the procedures for developing strategic PM systems is rather more problematic, as these will vary between processes. However, to ensure strategic alignment, a procedure for identifying strategic objectives should be included. In addition, a method for developing the measures is necessary, along with a procedure for maintaining the new PM system. Slack *et al.* (1998) identify nine rules for the effective project management of strategy implementation. In addition, Smith and Tranfield (1989) present a similar set of guidelines for the effective implementation of advanced manufacturing technology (AMT). From these, the key principles for effective management of the PM development process have been identified as:

- top management support;
- everybody on board;
- clear explicit objectives;
- time framed project management.

In addition to identifying the features of an effective PM development process, it is also vital to conceptualise the content of such a process in terms of performance measure characteristics and appropriate dimensions of performance. This is important because a development process needs both structure and relevant content to deliver value effectively to businesses.

Characteristics of performance measures

Globerson (1985) and Maskell (1989) present sets of guidelines detailing the characteristics of performance measures, which have often been reiterated in more recent literature (Dixon *et al.*, 1990; Lynch and Cross, 1991; Neely *et al.*, 1996a). A comprehensive review of this literature was undertaken by Neely *et al.* (1997), and a set of 22 characteristics was identified. However, a review of these sets revealed that many of the characteristics are duplicated or are deemed to be desirable. The removal of duplication and a focus on critical characteristics resulted in the following set (Table I).

Dimensions of performance

The dimensions of performance for which measures, within a strategically aligned PM system, should be developed have been defined using a variety of terms in the literature. This has caused a degree of replication. Time, quality

Characteristics	Reference
Derived from strategy	Globerson, 1985; Maskell, 1989; Dixon *et al.*, 1990; Lynch and Cross, 1991; Neely *et al.*, 1996a
Clearly defined with an explicit purpose	Globerson, 1985; Neely *et al.*, 1996a
Relevant and easy to maintain	Maskell, 1989; Lynch and Cross, 1991
Simple to understand and use	Maskell, 1989; Lynch and Cross, 1991; Neely *et al.*, 1996a
Provide fast and accurate feedback	Globerson, 1985; Dixon *et al.*, 1990; Maskell, 1989; Neely *et al.*, 1996a
Link operations to strategic goals	Lynch and Cross, 1991
Stimulate continuous improvement	Lynch and Cross, 1991; Maskell, 1989; Neely *et al.*, 1996a

Table I.
Critical characteristics of performance measures

and flexibility are commonly cited as the main operational dimensions which should be measured (Kaplan, 1983; Lynch and Cross, 1991; Schmenner and Vollmann, 1994; Neely *et al.*, 1995; Collier, 1995; White, 1996; Laitinen, 1996; Slack *et al.*, 1998; Medori and Steeple, 2000). Finance, in various different forms, is also considered to be a critical dimension of performance (Keegan *et al.*, 1989; Sink and Tuttle, 1989; Jones *et al.*, 1993; Meyer, 1994; Bititci, 1994; Ghalayini *et al.*, 1997). In addition, customer satisfaction and human resources are repeatedly cited as critical measurement areas (Eccles, 1991; Kaplan and Norton, 1992; Fitzgerald and Moon, 1996). Table II illustrates the grouping of the terms found within the literature into six general dimensions.

These six dimensions can be seen to cover all aspects of business: the financial results, the operating performance (through the dimensions of time, quality and flexibility), the way the company is perceived externally (through its customers) and the cultural aspects of the working environment (through the human resource dimension). It is, however, important to note that these dimensions are not prescriptive. Instead, they are intended to encourage the holistic consideration of these areas when developing measures to support the company strategy.

Analysis of current PM development processes

The synthesis of the requirements of effective development processes, the characteristics of performance measures and the dimensions of performance, provide a typology that may be used to evaluate current approaches for the development of strategic PM systems (Table III).

Using the typology as a basis for analysis, ten PM development approaches, as described in the available literature (see Table IV), were evaluated. The objective of this analysis was to identify the completeness of existing approaches with respect to the theoretically derived framework. Table IV illustrates the outcomes of this activity and shows that while the majority of

Quality	Time	Flexibility	Finance	Customer satisfaction	Human resources
Product performance	Lead time	Manufacturing effectiveness	Cash flow	Market share	Employee relationships
Delivery reliability	Delivery reliability	Resource utilisation	Market share	Service	Employee involvement
Waste	Process throughput time	Volume flexibility	Overhead cost reduction	Image	Workforce
Dependability	Process time	New product introduction	Inventory performance	Integration with customers	Employee skills
Innovation	Productivity	Computer systems	Cost control	Competitiveness	Learning
	Cycle time	Future growth	Sales	Innovation	Labour efficiency
	Delivery speed	Product innovation	Profitability	Delivery reliability	Quality of work life
	Labour efficiency		Efficiency		Resource utilisation
	Resource utilisation		Product cost reduction		Productivity

Table II.
Critical dimensions of performance

Development process requirements	Performance measure characteristics	Dimensions of performance
Need evaluation/existing PM audit	Derived from strategy	Quality
Key user involvement	Clearly defined/explicit purpose	Flexibility
Strategic objective identification	Relevant and easy to maintain	Time
Performance measure development	Simple to understand and use	Finance
Periodic maintenance structure	Provide fast, accurate feedback	Customer satisfaction
Top management support	Link operations to strategic goals	Human resources
Full employee support	Stimulate continuous improvement	
Clear and explicit objectives		
Set timescales		

Table III.
Typology for the evaluation of strategic PM development approaches

the sample covered all the dimensions of performance, few exhibited properties that also mapped to the characteristics of performance measures and to the requirements of an effective development process.

The balanced scorecard (Kaplan and Norton, 1992) has good coverage of the dimensions of performance, but provides no mechanism for maintaining the relevance of defined measures. An additional deficiency of this approach is the lack of integration between the top level, strategic scorecard, and operational-level measures (Ballantyne and Brignall, 1994) potentially making execution of strategy problematic. Furthermore, it fails to specify a user-centred development process. In contrast, the performance pyramid (Lynch and Cross, 1991) provides an explicit link between strategy and operations, and also encourages a user-centred design. The key problem with this approach, however, is that it fails to specify, in any detail, either the form of the measures or the process for developing them.

Theoretical model	BSC	PP	R&DM	IDPMS	IPMF	IPMS	CPMP	IMM	CPMS	FSBPM
A strategic PM development process should:										
Evaluate existing PM system		✓		✓	✓	✓	✓	✓		
Enable strategic objective identification	✓		✓	✓	✓	✓	✓	✓		
Enable performance measure development	✓		✓	✓	✓	✓	✓	✓	✓	
Provide a maintenance structure				✓	✓	✓	✓	✓	✓	✓
Involve key users		✓				✓	✓	✓	✓	✓
Have top management support	✓	✓	✓			✓	✓	✓	✓	✓
Have full employee support	✓	✓	✓			✓	✓	✓	✓	✓
Have clear and explicit objectives	✓		✓	✓	✓	✓	✓			
Have set timescales	✓			✓			✓			
The measures in a strategic PM system should be:										
Derived from strategy	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Link operations to strategic goals		✓	✓	✓	✓	✓	✓	✓	✓	
Stimulate continuous improvement	✓		✓	✓	✓	✓	✓	✓	✓	✓
Provide fast, accurate feedback			✓	✓	✓	✓	✓	✓		✓
Clearly defined/explicit purpose	✓		✓	✓	✓	✓	✓	✓	✓	✓
Relevant and easy to maintain				✓	✓	✓	✓	✓	✓	✓
Simple to understand and use	✓	✓	✓		✓	✓	✓	✓	✓	✓
A strategic PM system should measure:										
Quality	✓	✓	✓	✓	✓	✓	✓	✓		✓
Flexibility	✓	✓	✓	✓	✓	✓	✓	✓		✓
Time	✓	✓	✓	✓	✓	✓	✓	✓		✓
Finance	✓	✓	✓	✓	✓	✓	✓	✓		✓
Customer satisfaction	✓	✓		✓	✓	✓	✓	✓		✓
Human resources	✓	✓		✓		✓	✓	✓		✓

Notes: BSC = balanced scorecard (Kaplan and Norton, 1992, 1993, 1996); PP = performance pyramid (Lynch and Cross, 1991); R&DM = results and determinants matrix (Fitzgerald *et al.*, 1991; Fitzgerald and Moon, 1996); IDPMS = integrated dynamic PM systems (Ghalayini *et al.*, 1997); IPMF = integrated PM framework (Medori, 1998a, 1998b, Medori and Steeple, 2000); IPMS = integrated PM systems (Bititci, 1994, 1995; Bititci *et al.*, 1997, 1998); CPMP = Cambridge PM process (Neely *et al.*, 1996a, 1996b, 1997, Bourne and Wilcox, 1998; Bourne *et al.*, 1998); IMM = integrated measurement model (Oliver and Palmer 1998); CPMS = consistent PM systems (Flapper *et al.*, 1996); FSBPM = framework for small business PM (Laitinen, 1996)

Table IV.
Analysis of current PM approaches

The main strength of the results and determinants matrix (Fitzgerald *et al.*, 1991) is that it specifies, in reasonable detail, what the measures should look like and provides a useful development process. However, it does not include customers or human resources as dimensions of performance and cannot, therefore, give a truly balanced view of performance. Ghalayini *et al.* (1997), in their framework for integrated dynamic PM, build on several different concepts to develop a system which has an explicit process for maintenance and for ensuring fast and accurate feedback. The use of the PM questionnaire (Dixon *et al.*, 1990) as an initial audit tool, also ensures that all the dimensions of performance are adequately covered. However, as this approach consists of several different tools it is potentially complicated to understand and use. In addition, it also fails to provide an explicit process for developing the PM system and is inadequate with respect to the human resource dimension (Medori, 1998).

The integrated PM system methodology (Bititci *et al.*, 1997) covers many of the criteria required for a comprehensive PM system. However, the method fails to provide a structured process that specifies objectives and timescales for development and implementation. The Cambridge PM process (Neely *et al.*, 1996a) fulfils all the criteria in the typology and is, therefore, a comprehensive process for the development of strategic PM systems. The development of operational measures, however, is described as an optional process. For it to be classified as comprehensive, both strategic and operational measures need to be developed. The integrated measurement model (Oliver and Palmer, 1998) is also a comprehensive approach, defining the dimensions of performance and providing a mechanism for designing the measures. The unsatisfactory aspect of this approach is the lack of a structured process for overall development. In contrast to this, the consistent PM system (Flapper *et al.*, 1996) gives a very detailed process for developing and implementing PM systems, but fails to specify a balanced approach for critical dimensions of performance. Finally, the framework for small business PM (Laitinen, 1996), differs from all the other approaches in that it adopts a purely bottom-up perspective on performance. This means that although the framework is very capable of measuring and improving performance, it is not based on any form of strategy.

Most of the frameworks and processes within this analysis provide explicit guidance about what to measure, and provide some information about how to design the PMs. However, only the Cambridge PM process offers explicit guidance on how to develop and implement a strategic PM system effectively. While this process emerges from the analysis as the most complete, further evidence is required to establish its appropriateness in a SME context. The remainder of the paper describes this context and provides empirical evidence of current PM practice in SMEs. A case study describing the application of the Cambridge process in a SME is also provided.

Theoretical relevance of strategic PM for SMEs

Current literature suggests that SMEs may be differentiated from larger companies by a number of key characteristics. These are generally described (Addy *et al.*, 1994; Burns and Dewhurst, 1996; Ghobadian and Gallear, 1997; Appiah-Adu and Singh, 1998; Berry, 1998; Marri *et al.*, 1998; O'Regan *et al.*, 1998; Haywood, 1999) as:

- personalised management, with little devolution of authority;
- severe resource limitations in terms of management and manpower, as well as finance;
- reliance on a small number of customers, and operating in limited markets;
- flat, flexible structures;
- high innovatory potential;
- reactive, fire-fighting mentality;
- informal, dynamic strategies.

The significant differences in the structure and philosophy of SMEs indicate a need to assess the relevance of the strategic PM development process, as described in the typology, for use in this context.

To illustrate the importance of an effective development process for introducing new systems into SMEs, a case study on the development of TQM in SMEs was studied (Ghobadian and Gallear, 1997). This case study highlighted the critical issues when developing a new system within a SME. The main finding was that resource implications – particularly that of management time – means that the implementation process is markedly more taxing for SMEs than larger companies. Therefore, a well designed development process, with a clear focus and effective project management, would improve efficiency and increase the likelihood of success.

The resource limitations associated with SMEs indicate that the dimensions of quality and time are critical to ensure that waste levels are kept low, and that a high level of productivity performance is attained. Similarly, the reliance on a small number of customers suggests that to remain competitive, SMEs must ensure that customer satisfaction remains high and that they can be flexible enough to respond rapidly to changes in the market. The financial dimension of performance is critical for both large and small companies, but given the lack of a monetary safety net to absorb the impact of short term fluctuations resulting from change, this dimension is paramount in SMEs. Finally, the flatter structure of SMEs means that employees often have a greater number of job roles and more responsibility. In these circumstances, a well trained and motivated workforce is also paramount and necessitates effective monitoring of the human resource dimension.

Research has shown that SMEs which link operations to their business strategies outperform the competition (Argument *et al.*, 1997). The implication

of this for PM development is that the measures should be strategically aligned and should provide an explicit link back to operations (Greatbanks and Boaden, 1998). An advantage of this is that the PM system would provide data that could input directly into the strategy formulation process. In addition, given the resource and time constraints imposed on SMEs, performance measures should be clearly defined, have an explicit purpose, be relevant and easy to maintain and be simple to understand and use.

PM practice in SMEs

The general characteristics of SMEs that have been described suggest that an effective process for strategic PM development is imperative for the competitiveness of the smaller firm. However, little empirical evidence currently exists which describes current PM practice in SMEs or which evaluates the appropriateness of current processes within this context. The following sections describe phase two of the research approach and focus explicitly on these issues. A survey of eight companies is described to establish whether these SMEs currently measure performance strategically. A case study describing the application of the selected PM process (the Cambridge process) is also provided. The empirical data from both the survey and the case study is evaluated using the typology criteria: requirements of PM development processes, performance measure characteristics, and dimensions of performance.

Survey analysis

The survey data was collected from managers of eight SMEs using semi-structured interviews. Each of the SMEs had recently undertaken a programme of strategic improvement. Transcripts from the taped interviews were analysed using coding techniques. An example of the type of codes that were developed is illustrated below:

Codes	Transcript (excerpt)
lead times delivery date process efficiency feedback/ improvement	"When we receive an order we quote a delivery date. The customer gives a date that they would like it by and we give a realistic date that might be better or it might be worse. Then when we don't reach that delivery date we have statistics that tell us how efficient we have been. So we can say 'well 10% of what we have done has been delivered late'. Then we can look back and see what the cause was. Design new processes so it doesn't happen again. That works best and that is as and when – that is not taken every month."

The codes were then grouped into appropriate categories using the areas for analysis already identified (Table V).

The results from this survey were used to build a picture of the use of PM within SMEs. It is interesting to note that none of the companies had measures covering all the areas identified in the typology. The only common attribute in this area was that all of the companies had a plethora of financial measures. None of the companies attempted to measure flexibility, and while three of the

	PM development process	Performance measure characteristics	What is measured
Codes and categories	*How*	*Scope*	*Quality*
	through brainstorming	department specific	product quality
	through experience	lack of company-wide measures	process quality
	Who	not strategic	defects
	managers, some staff and customers design measures	*Type*	scrap
	staff action measures	historically focused	suppliers
	Issues	some out-of-date measures	*Time*
	lack of understanding of new measures	*Format*	work in progress
	blame culture	simple	output
	explanation essential to ensure support	small number	lead times
	management support essential	practical	delivery time
	Internal triggers	flexible measurement	*Finance*
	problem recurrence prevention	too much info	inventory
	for visibility	complex data	orders/receipts
	to gain control	untimely data	profit
	for planning purposes	unclear data	turnover
	External triggers	*Use*	costs
	customer requirements	managerial use	cash flow
	government legislation	no formal feedback	sales/value added
	national standards/awards requirements	non-specific informal feedback	quotes converted
		reviews to act on data	income
			productivity
			expenditure
			Customer satisfaction
			user problems
			product usage
			service
			returns
			complaints
			Human resource
			safety
			staff turnover
			personnel

Table V.
Results of coding and categorising the survey data

companies had human resource measures, these were very rudimentary and only covered, for example, staff turnover.

Many of the measures in use in each company were acknowledged to have significant flaws by all the interviewees. The most significant of these flaws was a lack of reference to strategy. The measures differed from company to company, with some maintaining a small number of simple and practical measures, and others having a majority of measures which were either obsolete or designed essentially for monitoring historical data. Interestingly, all the interviewees complained that the measures produced an overload of data which was either too complex or outdated and therefore unusable. Even where the data was usable, only one SME reported a formal feedback system, via monthly review meetings.

The introduction of new performance measures in these companies was initiated both internally and externally. The main internal trigger was as a reaction to problems that had occurred. This supports the reactive management style found in the majority of SMEs. Other internal triggers focused on attaining a greater level of control, particularly for resource planning. External triggers mainly originated from customers that requested or imposed specific measures. This conforms with the emergence of a number of supplier development programmes on the managerial agenda of large companies. Measures were usually developed in an ad hoc fashion, and difficulties were identified when staff were asked to start collecting data for which they could see no use. This would lead to poor quality data, or, in certain circumstances, a culture of blame would develop in an attempt to justify poor performance. All the interviewees who experienced these problems advocated better communication as a potential method for resolution.

A gap analysis was carried out to compare the identified SME PM characteristics against the typology. This clearly illustrated a lack of congruence between them (Table VI). A discrepancy between theory and practice was identified in the development processes employed. This included a lack of strategic forethought, a lack of communication between managers and the lack of a structured process for development. However, the majority of measures were developed by users. The characteristics of the PMs in use in the SMEs were dramatically different to those specified in the typology. The only commonalities were that the measures were both simple and practical. Two main gaps were identified in the dimensions of performance category; flexibility and human resources. Although there were human resource measurements identified, they were concerned only with the monitoring of safety or staff turnover.

Case study analysis

This stage of the research was undertaken to investigate whether the process identified as most complete, in respect to the typology, was appropriate within a SME context. The application of the Cambridge process in a SME, facilitated by a member of the original development team, was observed over a period of six months. The observations collected were coded and categorised using the same methods as for the survey data. In addition to the categorisation of the data the process was also analysed in terms of planned activities and actual activities undertaken. The results of this coding and categorisation are presented in Table VII.

The perception of PM as an under utilised management tool was the driving force behind the case company's participation in the development of a strategic PM system. The results of the coding and categorisation show that although the process was not completed, the draft measures that were produced were strategically aligned and covered all the dimensions of performance identified by the typology. The process used for developing the PM system led to some interesting observations that question its applicability for SMEs. The use of

Theoretical model	SME PM system characteristics	Gaps
The strategic PM development process should:	*Performance measures in SMEs are developed:*	
Evaluate existing PM system	With little reference to any existing measures in place	x
Enable strategic objective identification	With no reference to strategy	x
Enable performance measure development	In an ad hoc fashion by individual managers/staff	x
Provide a maintenance structure	Without deleting obsolete measures	x
Involve key users	By managers, occasionally staff and customers	
Have top management support	With management support	
Have full employee support	With a lack of employee understanding of new measures	x
Have clear and explicit objectives		x
Have set time-scales		x
Measures in a strategic PM system should be:	*SME performance measures are:*	
Derived from strategy	Not strategic	x
Clearly defined/explicit purpose	Often unclear with complex or obsolete data produced	x
Relevant and easy to maintain	Historically focused with some outdated measures	x
Simple to understand and use	Small numbers of simple practical measures	
Provide fast, accurate feedback	No formal feedback with non-specific informal feedback	x
Link operations to strategic goals		x
Stimulate continuous improvement		x
A strategic PM system should measure:	*SME PM systems measure:*	
Quality	Quality	
Flexibility		x
Time	Time	
Finance	Finance	
Customer satisfaction	Customer satisfaction	
Human resource	Human resource (v limited)	x

Table VI.
Gap analysis of SME PM against the typology

Table VII.
Results of case study analysis

Performance measure development process		Performance measures	Performance measure characteristics
Planned	Achieved		
Workshop 1 introduction to the process business needs for a new PM system identified	Workshop 1 completed 100 per cent	*Quality* scrap levels actual vs planned performance *Finance* sales growth fixed cost expenditure return on sales return on capital *Flexibility* production volume responsiveness production capability *Time* actual vs promised delivery times pre-emptive product development *Customers* products delivered on spec + on time contacts with outside companies service satisfaction *Stakeholders* employee/ manager satisfaction group contacts	*Strategic* developed from strategic objectives not operational *Balanced* finances customers internal/ops innovation *Practical* explicit purpose set targets explicit formula feedback mechanism
Interviews with general manager operations manager marketing manager manufacturing manager production manager quality assurance manager finance manager	All interviews completed successfully		
Workshop 2 ID product groups customer/stakeholder needs analysis carried out	Workshop 2 completed 100 per cent		
Workshop 3 ID strategic objectives ID PM developers PM development sessions	Workshop 3 completed 100 per cent Only five PM development sessions completed		
Workshop 4 agree PMs conflict analysis on new PMs	Workshop 4 cancelled		
Workshop 5 sign off PMs implement review mechanism	Workshop 5 cancelled Final PM development sessions held		
Interviews final interviews with all managers	Four final interviews held with available managers		

workshops for group consensus building and debate was new for the company but was regarded as an invaluable exercise. As one manager commented "We have a group of very experienced managers who get involved in everything due to our fire-fighting approach – which works well, but doesn't allow us to get involved in anything else. We don't spend enough time looking to the future". In the early stages of the process the enthusiasm for the workshops contributed to their success with the key outcome being the identification of a balanced set of strategic objectives that provided a foundation for the development of specific measures. However, when individual managers were allocated responsibility for developing a preliminary set of performance measures difficulty was encountered in establishing specific, defined targets for the objectives. In addition, tasks allocated to individuals, which were to be completed between workshop sessions, were met with resistance. Severe resource constraints combined with a reactive management style left little room for additional developmental activities. One manager commented: "The meetings were great – but as soon as people get out, the fire-fighting begins again and everything is forgotten until next time."

Staff turnover and the re-allocation of management to new roles, resulting from a restructuring programme, provided an unstable environment for the development of the PM system. The restructuring programme eventually became a higher priority than the PM development process for all the managers concerned. The process had originally been championed by the operations manager. During his interview at the end of the process, he commented that it "needs customising to include day-to-day operations, rather than just the strategic stuff. We need to focus our attention on basics – how we can improve customer perceptions is the main one at the moment – we aren't quite at the stage for top-level PMs yet." The stage at which the process faltered was directly after the identification of the top-level objectives and it is apparent that it was at this stage that the operations manager regarded the process unsuitable to address the company's immediate needs.

The main benefits of the process were that it highlighted an imbalance in the current PM system, which was almost entirely financial. However, because the process was not completed, the company did not achieve the implementation of a more balanced system. The process of analysing the company's strategic position and the identification of strategic objectives were acknowledged by the participants to have fostered consensus and focused their improvement effort. However, the main drawbacks of the process from a SME perspective were that it was both resource intensive and time consuming, requiring resources which were not readily available. Furthermore, the emphasis on strategic measures and the exclusion of the development of operational measures led to a perception that the approach was a future planning activity rather than one which facilitated improvements in current performance.

Conclusion

The research presented in this paper has investigated the appropriateness of current strategic PM development processes, for SMEs. A typology was formulated which synthesises current theoretical developments with respect to strategic PM. This typology contributes to current theory and attempts to facilitate a convergence of theory and practice. A series of interviews with SME managers investigated current practice, illustrating that their PM systems shared few characteristics with those in the typology. A strategic PM development process that exhibited congruity to the typology was used to explore the issue of developing PM systems in SMEs, from which some conclusions may be drawn.

Although there was widespread acceptance of the value of strategic PM evident among the managers of the SMEs studied, none had taken steps to redesign or update their current PM systems. This suggests that there are substantial barriers to strategic PM system development in SMEs. The failure of the implementation in the case study was attributed primarily to the development process being: too resource intensive and too strategically oriented. This concurs with the limited resources and the more dynamic, emergent, strategy styles found in SMEs. These issues are acutely problematic because developing a strategic PM is necessarily long term and it explicitly requires the resulting measures to be strategically focused.

If these barriers are endemic in SMEs, then the requirements for a strategic PM development process for SMEs are clear: it must be very resource effective and produce notable short term, as well as long term benefits, to help maintain the momentum and enthusiasm of the development team. In addition, it must be dynamic and flexible enough to accommodate the strategic changes which are a feature of emergent strategies. In practical terms, this means that the process should be iterative, as an important feature would be the regular surfacing of current strategy, in order to maintain the strategic relevance of the performance measures.

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