

# Performance Management Models and Purchasing: Relevance Still Lost \*

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## Summary

Measurement of purchasing performance has been a hot topic for centuries and it still is. Like several other functions, such as marketing, purchasing needs to increase its accountability in order to strengthen its position at the board of directors. Purchasing professionals are searching for tools to measure purchasing performance and link it to business strategy. In this work-in-progress paper, we review five existing performance measurement systems and assess their suitability for performance measurement in purchasing. Each system has its own specific strength, but they all need a specific translation to the purchasing domain in order to be useful.

**Keywords:** Purchasing, Performance measurement systems, Scorecards

## Educator and practitioner summary

This paper reviews five different performance measurement systems - the Balanced Scorecard, the Tableau de Bord, The Performance Prism, The Performance Pyramid, and the ProMES system, and assesses their suitability for performance measurement in purchasing.

## Introduction

Measurement of purchasing performance has been a hot topic for centuries and it still is. Already in 1931, the National Association of Purchasing Agents (NAPA) in the USA organised a best paper contest on the subject. A landmark contribution was made in 1962, funded by the American Management Association (AMA), when a survey was held among 201 companies to assess performance measurement practices in purchasing (Hayes, Renard, 1962). The topic gained renewed interest through the work of Monczka et al. (1979) and Van Weele (1984) who both independently found a score of performance measures to be used in American and Dutch business.

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Over the last two decades, the subject of performance measurement (PM) has gained increasing interest and recognition in the general management literature, leading Neely (1999), when referring to the many contributions on the subject, to talk about the Performance Measurement Revolution. He demonstrated that between 1994 and 1996 a mere 3615 articles on performance measurement were published. During that period, there has been a sustained attention for PM within purchasing, although it would be too far-fetched to speak of a performance measurement revolution in the field of purchasing.

Overlooking the contributions in the purchasing area, performance measurement can mean a number of different things. A number of publications focus on the measurement of supplier performance (e.g., Trent & Monczka, 1998). Other contributions have a particular focus on the measurement of buyer performance (e.g., Hendrick & Ruch, 1988). In this paper, we are interested in performance measurement and performance management systems for the total purchasing function, akin to concepts like the purchasing audit (e.g., Van Weele, 2005).

This paper intends to make a contribution to the purchasing literature by explicitly considering a variety of performance measurement systems (PMSs) against purchasing-related criteria. We look at existing systems for measuring overall business performance, and look how they could be used in purchasing. First of all, performance measurement will be defined. This is followed by a discussion of the functions and elements of an effective PMS. Then, we present five PMSs: the Balanced Scorecard, the Tableau de Bord, the Performance Prism, the Performance Pyramid, and the Productivity Measurement and Enhancement System.

These five PMSs will then be assessed on the basis of a set of criteria that were specifically developed for performance measurement in purchasing. We conclude that none of the systems fits the purchasing situation particularly well, and we therefore bring the paper to a close with a six step development approach for purchasing performance measurement systems.

## **A definition of performance measurement**

Although often discussed in the literature, performance measurement (PM) is defined in many different ways. Neely et al. (1995) define PM as “the process of quantifying the efficiency and effectiveness of action”. They defined a PMS as “the set of metrics used to quantify both the efficiency and effectiveness of actions”. Rouse and Putterill (2003) define PM as “the comparison of results against expectations with the implied objective of learning to do better”. In their view, the main reason for setting up a PMS is the objective of becoming better. This is supported by Dumond (1994), who considers “performance measures to be established to support the achievement of goals with the intent to motivate, guide and improve an individual’s decision making”.

That is the reason why many authors refer to a Performance *Management* System rather than a Performance *Measurement* System. In the eyes of Amaratunga and Baldry (2002), measurement is not an end in itself, but a tool for more effective management. Results of performance measurement indicated what happened, not why it happened, or what to do about it. In order for an organisation to make effective use of its performance measurement outcomes, it must be able to make the transition from measurement to management. Within the literature however, the term ‘performance measurement’ is used most frequently, which is why we also adopt this terminology in this paper. We acknowledge the importance of using PM as a tool for management, and define performance measurement as “the process of quantifying the efficiency and effectiveness of actions, in order to compare results against expectations, with the intent to motivate, guide and improve decision making”. We define a performance measurement system as “the set of metrics used to quantify the efficiency and effectiveness of ac-

tions, and the corresponding guidelines for linking these metrics to strategy and improvement". In this paper, we will review performance measurement systems for purchasing, which means we will focus on metrics that can be used to quantify the efficiency and effectiveness of purchasing actions, and the corresponding guidelines for linking these metrics to purchasing strategy and continuous improvement in purchasing.

### **Functions and elements of effective performance measurement systems**

Depending on the organisational context, the organisational culture and managerial intentions, performance measurement systems can fulfil different functions. There are, however, five main functions, which all PMSs should address:

1. Assessing, managing and improving performance, on all relevant factors (financial and non-financial) that drive profitability (Butler et al., 1997).
2. Strategy formulation and clarification (Kaplan, Norton, 1996; De Haas, Kleingeld, 1999).
3. Enhancing strategic dialogue (De Haas, Kleingeld, 1999; Bessire, Baker, 2004; Neely, 1999).
4. Improving decision making and prioritising (Kennerley, Neely, 2002).
5. Stimulating motivation and learning (Dumond, 1994; Rouse, Putterill, 2003).

Besides these functions, a wide range of factors have been developed that distinguish effective performance measurement systems from less effective PMSs. First of all, the performance measures on which the system is based, should be relevant, balanced, and related to the company's strategy. Performance measurement should be based on financial as well as non-financial PI's, because quality or other non-financial goals are often part of a company's strategy. According to Evans (2004), one of the limitations of traditional accounting measures is that they are often not able to translate strategy into measures that uniquely communicate an organisation's vision. Measures need to be related directly to the organisation's mission and objectives in order to reflect the company's external competitive environment, customer requirements and internal objectives (Kennerley, Neely, 2002). Performance measures need to be balanced in terms of financial and non-financial measures, related to internal and external stakeholders, and consisting of leading and lagging indicators (Evans, 2004).

In order to ensure that PMSs remain relevant, they should be reviewed periodically (Lynch, Cross, 1991). Yet few organisations appear to have systematic processes in place for managing the evolution of their measurement systems (Kennerley, Neely, 2002). Bititci et al. (2000) propose audit tools that enable organisations to identify whether their existing measurement systems are appropriate given their environment and objectives.

Many authors point out that a proper organisational and information system structure is a prerequisite for an effective PMS. According to Amaratunga and Baldry (2002), a proper organisation structure includes involved leadership, open communication, and a reward system that is linked to performance measures. A highly developed information system is also an important part of the organisation structure. Bourne et al. (2000) show that performance measurement systems requiring regular reporting are best automated. Bititci et al. (2000) point out that the main benefit of using an IT platform for managing the PMS within an organisation is that the maintenance of the information contained within the systems becomes much simpler. They also set up some requirements for an IT platform, which is suitable in such a situation.

Finally, effective PMSs are linked to elements of human resource management, such as competence management; goal setting and sharing; feedback; and reward (Neely, 1999). Especially reward has been a hot topic recently and there is considerable debate as to whether performance measures should be linked to reward. According to Dumond (1994), providing

feedback to individuals with regard to where they stand on the performance measures is essential. This can enhance performance by providing motivation or information about the correctness and adequacy of work behaviour, and can also provide workers with a sense of accomplishment, competence and control.

## **Five performance measurement systems in practice**

During the Performance Measurement Revolution, many Performance Measurement Systems have been developed to overcome the drawbacks of traditional performance measurements systems, described earlier in this paper. Survey data suggest that between 40 and 60 percent of companies significantly changed their measurement systems between 1995 and 2000 (Frigo, Krumwiede, 1999). In this paper, we review five influential PMSs, and assess their suitability as performance measurement system for purchasing: the Balanced Scorecard, the Tableau de Bord, the Performance Prism, the Performance Pyramid, and the Productivity Measurement and Enhancement System.

### *The Balanced Scorecard (BSC)*

The best known performance measurement system is undoubtedly the balanced scorecard (BSC), developed by Kaplan and Norton. Kaplan and Norton (1996) define the BSC as “a multidimensional framework for describing, implementing and managing strategy at all levels of an enterprise by linking, through a logical structure, objectives, initiatives, and measures to an organisation’s strategy”. The balanced scorecard provides an enterprise view of an organization’s overall performance: it complements the traditional financial performance measures with key performance indicators (KPIs) in three non-financial areas. The four building blocks of the BSC are:

- *Financial Perspective.* This perspective answers the question: “*To succeed financially, how should we appear to our shareholders?*” and is typically related to profitability. It is measured, for example, by the Return on Investment (ROI), Return on Capital Employed (ROCE), and Economic Value Added (EVA).
- *Customer Perspective.* This perspective answers the question: “*To achieve our vision, how should we appear to our customers?*”. It includes several core or generic measures of successful outcomes from the company, like, customer satisfaction, and market share in targeted segments.
- *Internal Processes.* In this perspective, the following question is answered: “*To satisfy our shareholders and customers, what business processes must we excel at?*”. This perspective focuses on the internal processes that will have the greatest impact on customer satisfaction and on achieving the organisation’s financial perspectives.
- *Learning and Growth.* The question: “*To achieve our vision, how will we sustain our ability to change and improve?*” is answered in this perspective. The infrastructure the organization has to build and manage to create long-term growth and improvement through people, systems and organizational procedures, is identified in this perspective.

Many authors, including Kaplan and Norton (1996), assume the following causal relationship: improvements in organizational learning and growth precede improvements in internal business processes, which precede improvements in the customer perspective, which in turn precede improvements in financial measures. The measures of organizational learning and growth are therefore the drivers of the measures of the internal business processes. This al-

lows the measurements in non-financial areas to be used to predict future financial performance.

From a purchasing perspective, a supplier, or organisational input, perspective is noticeably lacking in the BSC. In practice, this has led many purchasing organisations to adding a fifth, supplier perspective to the BSC in order to make it useable for purchasing.

### *The Tableau de Bord (TdB)*

The Tableau de Bord (TdB) was introduced in France in the 1930s and was described as “being similar to a “dashboard” (i.e. the literal translation of “tableau de bord”) used by “pilots” (i.e. managers) to guide organisations to their destinations” (Bessire, Baker, 2004). It was first developed by process engineers who were looking for ways to improve their production process by better understanding cause-and-effect relationships (the relationships between actions and process performance). The same principle was then applied at the top management level, to give senior managers a set of indicators allowing them to monitor the progress of business, compare it to the goals that had been set, and take corrective actions.

According to Epstein and Manzoni (1998), this initial objective - giving managers a brief and to the point overview of key parameters to support decision making - has two important implications: First, the TdB cannot be a single document applying equally well to the whole firm; because each sub-unit, and in fact each manager, has different responsibilities and objectives, there should be one TdB for each sub-unit. These “dashboards” should be integrated in a nested structure.

Secondly, the various TdBs used within the firm should not be limited to financial indicators. Operational measures often give better information on the impact of local events and decisions, and thus on cause-and-effect relationships, than overall financial indicators. From its origin, the TdB was conceived of as a “balanced” combination of financial and non-financial indicators and many authors have emphasized the need to use non-financial indicators (e.g., Epstein, Manzoni, 1998).

The TdB is mainly used in France, the country where it has originated. Although there are clear similarities between the TdB and the BSC, there is a considerable French reluctance to the BSC. They state that the practice of the TdB has been far more developed in 60 years than the BSC, which only exists for 10 years. Also, reluctance is created by translation problems, caused by the French translation of BSC into Tableau de Bord Prospectif, which likely creates confusion (Bourguignon et al., 2004).

The biggest drawback perhaps of the TdB is its undefined structure. Because of its lack of predefined performance areas, there is a risk of managers implementing the TdB with a set of performance indicators that is not balanced in terms of financial and non-financial, lead and lag, strategic and operational, and related to effectiveness and efficiency.

### *The Performance Prism (PPR)*

The Performance Prism (PPR), developed by Neely and Adams (2000), is a PMS organised around five distinct but linked perspectives of performance: stakeholder satisfaction, strategies, processes, capabilities, and stakeholder contributions (see also Kennerley, Neely, 2002). These perspectives are visualised by a three dimensional model in the shape of a prism.

The top and bottom facets are stakeholder satisfaction and stakeholder contribution respectively and the three side facets are strategies, processes and capabilities. These five distinct, but logically interlinked, perspectives on performance have been identified by Neely and Adams (2000) together with five key questions for measurement design.

- *Stakeholder Satisfaction.* The key question in this perspective is: who are the key stakeholders and what do they want and need? This perspective is deliberately broader than the

balanced scorecard view of stakeholders, which encompasses only shareholders and customers (Neely et al., 2001).

- *Strategies*. The key question here is: what strategies do we have to put in place to satisfy the wants and needs of these key stakeholders?
- *Processes*. What critical processes do we require if we are to execute these strategies?
- *Capabilities*. The main question in this perspective is: what capabilities do we need to operate and enhance these processes?
- *Stakeholder contribution*. What contributions do we require from our stakeholders, if we are to maintain and develop these capabilities?

The PPR distinguishes itself from other PMSs by not only taking into account shareholders like customers and employees, but also suppliers, regulators, local communities or pressure groups, who are nowadays essential stakeholder groups to consider. Especially suppliers are important because companies become more and more dependent on their suppliers since they outsource non-core business.

Regarding experience of companies with the PPR, there is only little evidence the PPR works in practice. Neely et al. (2001) present three case studies. They conclude that the feedback of the companies involved was overwhelmingly positive. It seemed that the PPR's principal appeal lies in the logical interrelationships between the five perspectives; its comprehensiveness and adaptability, allowing different entry points; and the fact that stakeholders are addressed in a wholly original and radical way (Neely et al., 2001).

#### *Performance Pyramid System (PPS)*

The Performance Pyramid System (PPS) was one of the first "new" PMSs, developed by Lynch and Cross (1991) during the Performance Measurement Revolution. In short, it is an interrelated system of different performance variables, which are controlled at different organisational levels. Strategic objectives flow down through the organisation with a reverse flow of information flowing upwards. Lynch and Cross use a pyramid-shaped "map" for understanding and defining the relevant objectives and measures for each level of the business organisation. The four levels of the PPS embody the corporate vision, accountability of the business units, competitive dimensions for business operating systems, and specific operational criteria.

According to Laitinen (2002), the purpose of the PPS is "to link an organisation's strategy to its operations by translating objectives from the top down (based on customer priorities) and measures from the bottom up". According to him, "the development of a firm's performance pyramid starts with the definition of an overall corporate vision (the highest or first level of objectives), which is then translated into individual business unit objectives at the second level. At the second level of objectives key market and financial measures are identified as ways of monitoring performance in achieving the vision. In order to attain these market and financial objectives, key measures of customer satisfaction, flexibility and productivity are also derived. These key measures at the third level are further converted into specific operational measures, which form the base of the pyramid. These measures (quality, delivery, cycle time and waste) relate to individual departments".

Stakeholders other than customers and shareholders do not feature prominently in the PPS. The user will have to make sure that measures at the different levels of the pyramid relate to other principal stakeholders, such as suppliers in the case of purchasing performance.

## *Productivity Measurement and Enhancement System (ProMES)*

ProMES is a participative development method for performance management systems, designed to be a practical method of measuring organisational productivity. In essence, ProMES is a formal, step-by-step process that identifies organisational objectives, develops a measurement system to assess how well the unit is meeting those objectives, and develops a feedback system which gives unit personnel and managers information on how well the unit is performing (Pritchard et al., 2002).

According to Pritchard et al. (2002), ProMES is based on the theory of work behaviour (see also Naylor et al., 1980). Motivation in this theory is seen as a resource allocation process where the resource is a person's time and energy, which is allocated across possible actions or tasks. Motivational force is defined as the degree to which a person believes that changes in the amount of personal resources in the form of time and energy (effort) devoted to different acts (tasks) over time will result in a change in anticipated need satisfaction (Pritchard et al., 2002).

The motivational force of a person is the result of his *acts, products, evaluations, outcomes* and *need satisfaction*. An *act* is the "doing" of something, for example running or talking, which is characterized by amplitude and direction. *Products* are the results of acts and form the person's output. When products are observed and evaluated, this results in *evaluations* where an evaluator places the measured product on a good to bad evaluative continuum. After evaluations are made, *outcomes* occur. These are intrinsic such as a feeling of accomplishment from writing a good paper, or extrinsic such as forms of recognition. Outcomes get their motivating power because of their ties to *need satisfaction*. Positive affect occurs when needs are satisfied and negative affect occurs when needs are not satisfied. Between each of these elements determining motivational force, relationships consist called *contingencies*. These contingencies can be linear as well as non-linear.

When performance indicators are defined on the basis of such an analysis of motivational force, PMSs can be constructed which are directly linked to motivation and improvement. ProMES systems are designed using a bottom-up approach, which means that operational purchasing is really involved in the design of the system. The risk of this bottom-up approach however is that vertical consistency can not be taken for granted (Algera, De Haas, 2002), which could result in a Business Unit's PMS being not in line with the company's PMS.

## **Evaluating these performance measurement systems for purchasing**

How do the above five existing performance measurement systems help develop a performance measurement system for purchasing? On a strategic level, purchasing performance is determined by the extent to which purchasing is able to contribute to the organisation's desired levels of innovation, quality, flexibility and cost. On an operational level, purchasing performance is determined by the extent to which purchasing achieves to secure the supply of goods according to the requirements of the internal customers against the best conditions. In its activities, purchasing needs to consider the demands and needs of three principal sets of stakeholders: internal customers, suppliers and senior management. Typical performance areas for purchasing are inbound delivery performance, quality of incoming goods, total cost of ownership of purchased goods, spend per employee, amount of non-contractual spend, and exposure to supply risks.

Like PM in general, PM within purchasing has received more attention over the last decade. One of the reasons for this is that more and more firms are acknowledging the value-added capabilities of the purchasing function. The purchasing function, however, has tradi-

tionally lagged behind other functions, in the development of sophisticated performance measurement and evaluation systems (Monczka et al., 2005). Therefore, a contribution to the purchasing literature will be made by comparing the PMSs, discussed in this section, against purchasing-related criteria. These criteria have been developed based on existing purchasing literature and the functions and elements of effective PMSs discussed earlier in this paper. The following assessment criteria were used:

- Coverage of both strategic and operational aspects of purchasing
- Possibility to include performance towards all three principal stakeholders in purchasing: internal customers, suppliers, and top management
- Inclusion of ‘lead’ and ‘lag’ indicators for purchasing
- Usefulness for individual-level performance measurement
- Inclusion of both effectiveness and efficiency measures of purchasing

The scores of the five performance measurement systems on these five dimensions are presented in Table 1.

**Table 1 - The five performance measurement systems assessed**

	BSC	TdB	PPR	PPS	ProMES
Strategic and operational measures	+	+	+	++	+
All stakeholders considered	-	+/-	+	-	+/-
Lead and lag indicators	++	+/-	++	+	+/-
Individual-level performance measured	+/-	+/-	-	+/-	++
Effectiveness and efficiency measures	+	+/-	+	+/-	+/-

All of the PMSs offer the possibility to include performance measures that range from the strategic to the operational level, but none provide the Performance Pyramid’s (PPS) explicit distinction between four levels of measures, ranging from highly strategic to operational. A purchasing manager can easily define performance measures on all levels and thus cover the total purchasing function.

The only PMS to explicitly recognise the existence of more stakeholders than customers and shareholders, is the Performance Prism (PPR). The supply side of the business is remarkably absent from the other PMSs, which is worrying, considering the potential impact of effective and efficient sourcing on the overall performance of the organisation.

Lead and lag indicators of performance are well-represented in the Balanced Scorecard (BSC) and the PPR. The Tableau de Bord (TdB) and the PPS do not specify these indicators explicitly, but they can be included in the system. With regard to ProMES, contingencies are harder to define for lead indicators than for lag indicators.

On the other hand, ProMES is the most advanced system of the five when it comes to measuring performance at the level of the individual, and using PM as a tool for motivation and learning. Other systems claim to be useable at the level of the individual, but they were not designed for that purpose originally. The performance measures of the other systems can be used at the level of the team at best.

All systems provide opportunities for including measures of effectiveness as well as efficiency. With the explicit focus on processes in the BSC and the PPR, the inclusion of efficiency measures may come more naturally with these two performance measurement systems.

The assessments do not show overall winners or losers among the PMSs. If the link between performance and individual-level feedback and motivation is key, then the ProMES



system appears the best fit. The BSC, Tableau de Bord and PPS fit best when strategic accountability of the purchasing function is the main reason for looking into PMSs. The PPR fits well in a situation in which purchasing seeks to legitimise its existence in relation to a multitude of stakeholders.

None of these PMSs was developed specifically for the purchasing function, however. The following approach can be used for developing a purchasing performance measurement system based on one of the systems reviewed in this paper:

1. Define the purpose(s) of the purchasing PMS. The purpose could be accountability to the board, motivation of individual purchasing employees, and/or a tool for continuous improvement.
2. Seek a close fit between the purchasing PMS and the organisation-wide PMS (if there already is one). Pursue opportunities to adapt the organisation-wide PMS to include suppliers and/or sourcing inputs as performance areas for total business performance measurement.
3. Purchasing performance indicators should be linked to the purchasing strategy, which in turn should be derived from overall organisation goals and strategy.
4. Ensure that the final list of performance indicators is balanced in terms of financial vs. non-financial indicators, lead vs. lag indicators, indicators of operational vs. strategic performance, and indicators related to effectiveness vs. indicators related to efficiency.
5. Involve purchasing personnel in developing the performance indicators and connect the performance indicators to the job descriptions of all employees.
6. Review the system and its purchasing performance indicators periodically to make sure it stays in line with changes in strategies and context in which the systems operates.

Using the above six steps, a purchasing manager can develop a purchasing performance measurement system that is well-connected to the rest of the organisation, is balanced in terms of measuring short-term and long-term performance, and which helps motivate and guide purchasing employees.

## **Conclusions**

In this paper, we have reviewed five existing performance measurement systems and we have assessed their value for performance measurement in purchasing. We hope to have shown that the Balanced Scorecard may be the most well-known PMS, it certainly is not the only one, nor the best system that can be used for measuring the performance of the purchasing function. All the existing systems we have reviewed in this paper need some fine-tuning in order to be useful for purchasing, and we believe our six step design approach can help achieve the development of useful performance measurement systems in purchasing.

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