# SPECIFIC PERFORMANCE MEASUREMENT INSTRUMENTS FOR SOURCING STRATEGY

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## Abstract

*Sourcing has become quite a popular topic in both research and practise of modern business management. It brings a revolutionary philosophy and approach today's management because of technology, globalization and the never ending pursuance of competitive advantage. However, present performance measurement instruments have nor been able to provide the necessary support in strategic decisions and performance improvement. This paper attempts to propose and test an innovative performance measurement by introducing new parameters on the existing financial and non-financial performance measurements specifically in the development of strategic sourcing management. Basically the research is based on the Industrial Organization (I0) Theory, the Transaction Cost Theory and the Resource Based View (RBV). Meanwhile, Questionnaires were sent via mail survey to 1300 firms and 314 of them responded. In sum the findings suggest that the use of the proposed measurement instruments reflect better performance of the organizations in this sourcing study (make or buy).*

**Keywords**: Sourcing, Make, Buy, Financial, Non-Financial, Performance

## Introduction

One of the key issues to have emerged in a manufacturing strategy has been the growing importance of Make or Buy decision (Mclvor & Humphreys, 2000). The interest to conduct research on sourcing decisions can be traced back to the era of 1930s (Park, Reddy & Sarkar, 2000). It is known that inappropriate make or buy

decisions can result in co st overruns, project delays or a solution that does not fit business needs (Murthi, 2002). The sourcing decision can often be a major determinant of profit making and a signnificant contribution to the financial health of the firm (Yoon & Naadimuthu, 1994; Melvor & Humphreys, 2000; Zeng, 2000; Cousins, Lawson & Squire, 2006).

Business performance measurement is certainly on the management agenda. lt has long been recognized that performance measures are an integral part of the planning and control cycle (Barnard, 1962) and managers must have been planning and controlling the deployment of resources since the first organization was established. Indeed, Chandler (1990) argues that most of the basic methods used to manage big businesses today were in place by 1910.

However, traditional financial measures are criticized because they: (a) encourage short-termism, for example the delay of capital investment (Hayes & Abernathy, 1980), (b) lack strategic focus and fail to provide data on quality, responsiveness and flexibility (Skinner, 1974), (c) encourage local optimization, for example "manufacturing" inventory to keep people and machines busy (Goldratt & Cox, 198; Hall, 1983), (d) encourage managers to minimize the variances from standard rather than seek to improve continually (Turney & Andersen, 1989) and (e) fail to provide information on what customers want and how competitors are performing (Camp, 1989; Kaplan & Norton, 1992). These measures are also criticized for being historically focused (Dixon, Nanni & Vollmann, 1990).

**Theoretical Background for Sourcing Decisions**

The conceptual basis for ‘make’ or ‘buy’ decision is based on Williamson’s (1975) theory of transaction cost analysis and theory of resource based view (RBV) (Penrose, 1959; Wernerfelt, 1984; Ettlie & Sethuraman, 2002). Transaction cost analysis. in reality i combination of economic theory and management theory that determine best relationships for a firm to develop in the marketplace. These theories have laid the foundations for the purchasing discipline to use (Williamson, 1975).

**The Transaction Cost Based View of Sourcing**

Williamson (1975), inspired by Coase (1937) and Arrow (1962) argued that depending upon conditions, either markets or organizational hierarchy minimized costs and this view has become known as transaction cost economics (TCE). A transaction is the exchange of goods or services between technologically separate units (Williamson, 1975)

The objective of the analysis of the transaction is to achieve efficiency in their administration. TCE often reduces the organizing transaction while knowing that the

firm is facing human-bounded rationality on the one hand (hierarchy) and the tendency at least some opportunism of human agents (markets) on the other. The central question of transaction cost theory is whether a transaction is more efficiently performed within a firm (vertical integration) or outside it by autonomous contractors (market governance) (Geykens, Steenkamp, & Kumar, 2006). Transaction cost theory is very much concern about boundary choice as increasing asset specificity leads to the diminishing effectiveness of market governance and promotes the choice of internal organization.

Furthermore, the central argument of transaction cost economies is that firms prefer Make Strategy instead of trading in capabilities when transaction is subject to high transaction costs, whether *ex ante* costs of search and negotiation or *ex post* costs to execute and enforce contract, because such transaction place firms at risk of opportunistic behaviour by external agents (Williamson, 1975).

The literature also shows numerous empirical studies support this prediction (Monteverde & Teece, 1982; Anderson & Schmittlein, 1984; Joskow, 1985; Mowery & Rosenberg, 1989; Pisano 1990). For example, Mowery and Rosenberg (1989) find that R&D contracting is more for gencric or non-firm specific R&D. Pisano (1990) in his study on biotech projects of pharmaceuticals firms found the small number of hazard problem as a main driver for the 'Make' Strategy. Two important factors underlying the transaction costs are: (a) Properties of the transaction - which refer so asset specificity that has a particularly strong impact on governance choices and (b) Contractual Hazards — which refer to sourcing new capabilities from external partners that create friction due to the presence of contractual hazards (Capron & Mitchell. 2004).

**The Resource-Based View of Sourcing**

Kogut and Zander (1996) argue that the choice of organizational mode between market contracting and firm production goes beyond avoidance of opportunism. The firm is distinct from a market because coordination, communication, and learning are situated not only physically in locality but also mentally in an identity (Kogut & Zander, 1996).

Prahalad and Hamel (1990) tackle the same fundamental questions of why firms exist and begin by concluding that the resource-based view of the firm has essentially become the knowledge-based view of the firm. When the probability of apportunism is high or when the firm provides more valuable opportunism-independent knowledge then the firm mode is favored. However, when the chance of opportunistic behavior is real but low then market contracting is preferred under the opportunistic-based view (Prahalad & Hamel, 1990).

Basically, the resource-based view seeks for unique or otherwise costly-to-copy inputs (Barney, 1986). Firms may invest more in building technical capabilities and sourcing is more likely to be based on technical criteria. For example, Boeing and BMW are two technological oriented firms that invest more than their rivals in R & D and use innovation as the major criterion in selecting suppliers.

Furthermore, the resource-based view logic predicts activities will be outsourced when suppliers possess superior knowledge (Kogut & Zander, 1996). Anand and Kogut (1997) found that technological rivalry is the primary driver for foreign direct investment in the US while technological sourcing is "at best" a secondary motivation, at least among three of its most dominant investor; the UK, Germany and Japan.

**Sourcing strategies**

Capron and Mitchell (2004) define 'Make' as when a firm recombine its existing resources or develop new resources on its own; and 'Buy' as when a firm trade its activities that are held in a strategic capability and which stems from external sources. The sourcing decision can often be a major determinant of profitability, hence making a significant contribution to the financial health of the firm (Yoon & Naadimuthu, 1994; McIvor *et al.,1997).*

**Sourcing: Make Strategy**

Firms may opt for the Make Strategy when targeted capabilities do not exist outside the firm or even if they do exist, they cannot be traded through markets or across firm (Capron & Mitchell, 2004) or when suppliers do not want to trade unique and valuable resources (Dierickx & Cool, 1989). To remain competitive require firms to develop the ability to recombine its internal capabilities into new configurations of capabilities (Henderson & Clark, 1990; Galunic & Rodan, 1998).

Consistent with the Resource-Based View, knowledge-based theorists and institutional theorists, the targeted and existing capabilities of the 'Make Strategy' are narrow (Capron & Mitchell,2004 ). This means it is suitable only for firms with product development that do not depart significantly from their routines and social values. Furthermore, owing to rapid changes in the market, this strategy makes firms less flexible (Hayes & Abernathy, 1980).

Due to the gap in the literature and with regards to the relationship between 'Cost Leadership Strategy' and 'Make Strategy', these attributes indirectly indicate that the nature of the 'Make Strategy' is consistent with the 'Cost Leadership Strategy' of Porter's generic strategies which is highly associated with internal development, low cost, learning curve benefits, and economies of scale (Porter, 1980; Malburg, 2000; Davidson, 2001; Allen, Helms, Takeda, White & White, 2006).

**Sourcing: Buy Strategy**

The 'Buy Strategy' or outsourcing can be defined as an act of moving some of a firm's internal activities and decision responsibilities to outside providers (Lankford & Parsa, 1999; Chase, Jacobs & Aquilano, 2004). Firms nowadays tend to contract out more manufacturing and service activities than they did a decade ago (Fuller, 2002). This trend has been driven by changes in the business environment and the pursuit of lean operations (Hui & Tsang, 2004).

Through the buy strategy, firms could secure advantages such as significant cost reduction, better quality, improve organizational focus, greater product flexibility and higher chances to exploit change facilitation provided by external suppliers (McIvor, Humphreys, McAleer, 1997; Fan, 2000; Zeng, 2000; Hui & Tsang, 2004;Kakabadse & Kakabadse. 2000; Jennings, 2002: Hui & Tsang, 2004; Gilbert, Xia & Yu, 2006).

The literature clearly indicates the characteristics of the 'Buy Strategy' and 'Differentiation Strategy' but very little empirical evidence relating to the association between the two. However, their respective characteristics are very much similar as the differentiation strategy favors unique product (Porter, 1980; Cross, 1999; Hyatt, 2001; Bauer & Colgan, 2001; Hlavacka, Ljuba, Viera & Robert, 2001), greater product flexibility, greater compatibility, and more features (Porter, 1980; Davidson, 2001; McCracken, 2002; Allen *er al.*, 2006). Furthermore both strategies yield high margins through the mitigation of buyer power since buyers lack comparable alternatives and thereby allow firms to charge a higher price for their products (Porter, 1980; Hlavacka *et al*., 2001).

**Sourcing and Performance Link**

Most scholars agree that core activities should stay in-house, whilst non-core activities can be outsourced (Prahalad & Hamel, 1990; Quinn & Hilmer, 1994; Lacity, Willcocks, & Feeny, 1995; Mullin, 1996). However, recent development shows outsourcing (Buy) is not for support services or non-core activities only but activities "closer to core" as well (Harland, Lamming & Walker, 2005).

Firms that opt for the 'Buy Strategy' rather than the 'Make Strategy' are mostly driven by reasons which are; (a) to secure short-term gains of cost reduction capacity (Mclvor et al, 1997; Humphreys, Lo & Melvor, 2000; Canez, Platts & Probert., 2000), (b) to lock-in profit as costs of production are transferred to suppliers, (c) to expand product line without spending money on new equipment (Goodridge, 2005) and (d) the capability of suppliers to deliver supplies at lower cost and faster availability (Fine & Whitney, 1996). These can be summarized as to exploit suppliers' investments, innovations and capabilities (McCarthy & Anagnostou, 2004; Jin, 2004).

Despite the trend to opt for the 'Buy Strategy', firms have had considerable difficulties to pursue the strategy as it requires substantial judgment to assess the wide range of trade-offs present, to recognize all the alternatives available and to make a decision that balance both the short and long-term needs. To reduce potential risks of the 'Buy Strategy' may lead some firms to form partnerships or strategic sourcing with suppliers. This strategy works best when all parties involve recognize the opportunity to secure mutual benefit besides building long-term relationships (McIvor & Humphreys 2000).

**Performance Measurements**

Ghalayini and Noble (1996) differentiate between two stages of performance measurement in literature. The first stage, which they set between the 1880s and the 1980s, put the emphasis on financial measures, such as profit, returns on investment and productivity. The second stage, which began at the end of the 1980s, put the emphasis on both financial and non financial measure as a result of the changes that world markets underwent such as the implementation of new manufacturing technologies and new production management philosophies. Examples of non-financial measures are technologies, plant's productive capacity, customer satisfaction, delivery times and time for new product development.

Over the last ten years many authors have suggested that performance measurement should comprise both financial and non-financial measurement tests (Kaplan & Norton, 1992; Bititci, Carrie & McDevitt, 1997; MacDougall & Pike, 2003). To focus solely on costs is insufficient as such performance assessment might lead managers to ignore other strategic objectives (Brown & Laverick, 1994; Ghalayini & Noble, 1996; Bititci, Suwignjo & Carrie, 2001; Karsak & Tolga, 2001; Morgan & Daniels, 2001).

**Financial and Non-Financial Performance**

More and more studies have revealed the advisability of supplementing conventional financial indicators with other indicators which are non-financial and are better suited to rating the performance of firms on the basis of its' competitive priorities (Kaplan & Norton, 1992, 1996; Bititci *et al.,* 1997; MacDougall & Pike, 2003).

More firms have considered intangible factors when they realize the importance of factors like technologies, the plant's productive capacity, customer satisfaction, delivery times, development of new products and ability which have a bearing on market characteristics in the long term (Kaplan, 1986; Mercdith & Suresh, 1986; Shank & Govindarajan, 1992;Talluri & Yoon, 2000).

The literature also clearly indicates some relevant characteristics of performance measures and measurement systems.All the characteristics suggested are centered either on financial and non-financial measures, integrate both inputs such as must meet the needs of specific situations in relevant manufacturing operations and should be as long-term oriented well as simple to understand and implement (Santori & Anderson, 1987), align the financial and non-financial measures within a strategic framework (McNair & Mosconi, 1987; Drucker, 1990), used as means of articulating strategy and monitoring organization results (Grady, 1991), change dynamically with the strategy (Bhimani, 1993), rellect relevant non-financial information are based on key success factors of each organization, are clearly defined and have a very explicit purpose (Flapper, Fortuin, & Stoop, 1996; Neely *et al*., 1997).

Due to difficulties to develop an idle performance measurement that fits all situations as discussed above, this study adapts a performance measurement used by many studies on business strategies which consists of indicators for both financial and strategic performance (Roth & Morrison, 1990; Murray, Kotabe & Kutneret, 1995; Lee & Miller, 1996; Kaplan & Norton, 1996). The dimensions which represent the organizational performance (dependent variable) of this study on both financial and non-financial perspectives are: (a) return on sales (ROS), (b) return on investment (ROI), (c) market share, (d) sales growth rate, (f) innovation and learning perspective, (g) customer perspective, and (h) internal business perspective. This performance measurement addresses the relationship between sourcing strategy and organizational performance from both perspectives: (a) financial and (b) non-financial.

**Research Methodology**

The data for this study were collected between May 2008 and July 2008 using a mail survey approach. A set of questionnaires was sent to 1300 respondents (total population) and 314 or 24% of them responded, of which 153 exercised the ‘Make Strategy’ while 161 of them opted for the ‘Buy Strategy’. Specifically, the questionnaires were sent to individual holding senior posts (e.g. CEO, Managing Director, and General Manager) and all firms are members of the Federation of Malaysian Manufacturers (FMM) 2008.

This study adapted the previous researchers’ questionnaires. For sourcing strategies, the instruments contain twelve questions which were developed by Kotabe and Omura (1989). Meanwhile, for the organizational performance, the instruments are a combination of both financial and non-financial measurement instruments. Specifically, it consists of seven questionnaires which were developed and tested by Venkatraman and Ramanujam, (1986); Dess and Robinson, (1994); Lee and Miller, (1996); and Kaplan and Norton (1996). Specifically this study addresses the following questions:

(1) How significantly does the ‘Make’ and ‘Buy’ strategies affect the financial and non-financial performance of a firm?

 *ISSN 1985-2126*

(2) Which of the sourcing strategies effects the financial or non-financial performance most?

**Findings**

The Cronbach Alpha was computed for reliability testing. For 153 firms that opted for the 'Make Strategy' which consists of twelve items was 0.80 and the organizational performance of seven items was of 0.75. Meanwhile, the Cronbach Alpha for 16I firms that opted for the 'Buy Strategy' which also consists twelve items was 0.90 and the organizational performance of seven items was 0.79.

According to Hair, Anderson & Tatham (1995), acceptable ranges of reliability of most instruments are from 0.7 to 0.9. The closer the alpha to 1, the better the instruments are. Kline (1998) suggested that α value of above 0.50 is considered reliable. Based on the pre-testing exercise, all the items for each construct post a Cronbach α value of as low as 0.65 to as high as 0.99. Meanwhile, based on Nunally (1967) and George and Mallery (2003), the items for each construct in the questionmaire are reliable and have internal consistency. The results for the reliability tests in this study are highly positive.

**Make Strategy**

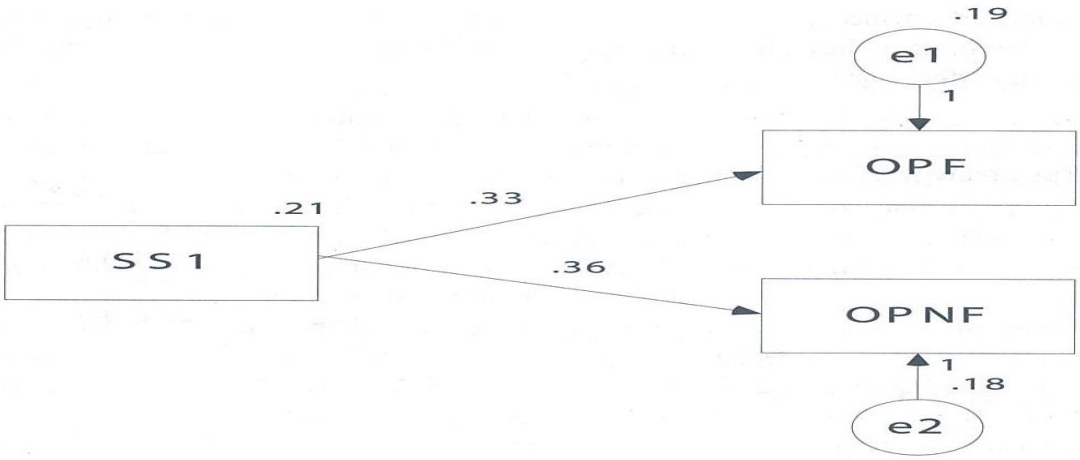


Figure 1: Strategic Equation modelling (SEM) for Make Strategy

Table 1: Unstandaridized estimate, standardized estimate and p-value for make strategy

| Path | | Unstandardized Estimate | Standardized Estimate | *p* |
|---|---|---|---|---|
| OPF ← | Make (SS1) | 0.33 | 0.33 | 0.001 |
| OPNF ← | Make (SS1) | 0.36 | 0.36 | 0.001 |

Path analysis was performed to describe the effect of the independent variable on dependent variables. Table 1 and Figure I show that all regression coefficients in the model are significantly different from zero and beyond the 0.01 level. The results indicate that a positive relationship exists between the 'Make strategy' and the Financial Performance (OPF→Make) as well as the Non-Financial Performance (OPNF→SS1) of organizations.

The standardized estimates show the relative contributions of each predictor variable to each outcome variable. When the 'Make Strategy' goes up by one standard deviation than the Financial Performance goes up by 0.33 of standard deviation. Meanwhile when the 'Make Strategy' goes up by one standard deviation then the Non-Financial Performance goes up by 0.36 of standard deviation. Therefore this model shows the 'Make Strategy' has a higher impact on Non-Financial performance if compared to Financial Performance.

**4.2 Buy Strategy**

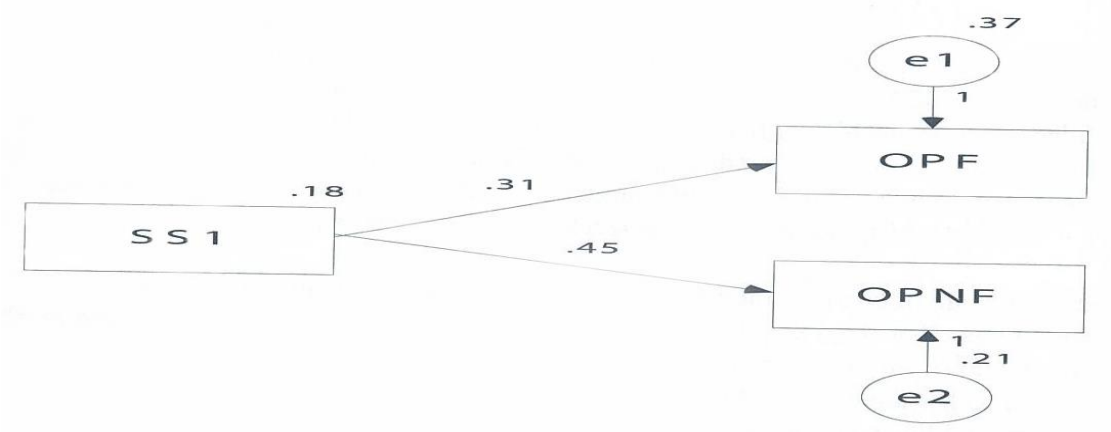


Figure 2: Strategic Equation Modelling (SEM) for Buy Strategy

| Path | | | Unstandardized Estimate | Standardized Estimate | *p* |
|---|---|---|---|---|---|
| OPF | ← | Buy(SS1) | 0.31 | 0.21 | 0.007 |
| OPNF | ← | Make(SS1) | 0.45 | 0.39 | 0.001 |

Meanwhile Table 2 and Figure 2 show that all of the regression coefficients in this model are significantly different from zero and beyond the 0.01 level. The results indicate that a positive relationship exists between the 'Buy Strategy'and the Financial Performance (OPF→SS1) as well as the Non-Financial Performance (OPNP→SS1). The standardized estimates show the relative contributions of each predictor variable to each outcome variable. When the 'Buy Strategy' goes up by one standard deviation then the Financial Performance goes up by 0.21 of standard deviation. Meanwhile when the 'Buy Strategy' goes up by one standard deviation then the Non-Financial Performance goes up by 0.39 of standard deviation. Therefore the 'Buy Strategy' has a higher impact on the Non-Financial Performance compared to the Financial Performance.

**Discussion and Conclusions**

The findings of this study confirm the role of the sourcing strategy to Malaysia's manufacturing firms. Sourcing certainly has become another strategic issue in modern business management. It brings a revolutionary philosophy and approach in today's management because of technology' globalization and the never ending pursuance competitive advantage. With appropriate performance measurement instruments that combined both financial and non-financial perspective should be able to provide its necessary support in strategic decisions and performance improvement. The evidence suggests that not only are those specific sourcing strategies important but the types of performance measurement tools being used are important too.

This investigation highlights the fact that firms in Malaysia apply the practice of make-or-buy decision-making on consistent basis, with a predetermined plan that tailors to intended performance. Based on well established theories like the Industrial Organization (IO) Theory, the Transaction Cost Theory, and the Resource Based View (RBV), a set of questionnaires was sent via mail survey to 1300 firms and 314 of them responded. As mentioned earlier this study intends to address two questions: (a) How significant does the Make and Buy strategies affect the financial and non-financial performance of a firm? and (b) Which one of the sourcing strategies affects the financial or non-financial performance most?

As based on the Path analysis which was performed to describe the effect of the independent variable on dependent variables, the findings clearly indicate that a positive relationship that exists between the 'Make Strategy' and the Financial Performance as well as between the 'Make Strategy' and the Non-Financial

Performance. Similar findings were recorded for a relationship exists between the 'Buy Strategy' and the Financial Performance and between the 'Buy Strategy' and the Non-Financial Performance. However, both models indicate the 'Make' and 'Buy' Strategies affect non-financial performance more than the financial performance.

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