Publishable Article: How technology is helping organisations sustain competitive advantage through Strategic Purchasing

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1. Abstract

In order to achieve and sustain competitive advantage organisations need to ensure they have an effective strategy in place. Over the past decade purchasing has witnessed a shift in strategic focus that is now enabling businesses to make substantial improvements in their ability to achieve and maintain a competitive advantage. This paper identifies how technological improvements in the purchasing process are enabling this shift in strategic focus. Examples of technological improvements made in purchasing will be given and the impact these improvements have had on the varying levels of a firm's strategy will be outlined.

2. Introduction

This article will outline how technology is being used in organisations today to help them sustain their competitive advantage. Specifically I will analyse how technology is being used within the procurement function to enable organisations to achieve their strategic goals within the different levels of a business. Certainly there is no doubt that as we have moved into the 21st century new and wonderful technologies are becoming available that will enhance our ability to successfully run businesses and organisations. However, technology should not be seen as the driver but rather as an enabler. In other words, technology and its role in supporting the other functional areas of an organisation should be part of an overall strategic plan for an entities direction. Much has been written on increasing adoption of technology in helping organisations to achieve their strategic goals. This article will be take a unique look at the interdependencies between technology, purchasing and strategy and how these three elements enable an organisation to attain and sustain the levels of competitiveness required by organisations today.

Initially I will provide a brief industry and literature review which will outline changes in the procurement arena over the past few decades as well as summarise the literature on strategic purchasing. Secondly, a discussion of purchasing and its relationship with strategy will ensue. Next, an analysis of the various changes in purchasing technology will then be provided, followed by an explanation of how technology usage in the procurement process is helping organisations sustain their competitive advantage. In conclusion, the future direction of procurement and related technology initiatives will be suggested!

3. Industry and Literature Review

Pressure on companies to maintain profit in an increasingly complex and competitive global marketplace has seen a focus by management on the purchasing process. Superior performance by purchasing is considered a key element in the success and contribution to meeting an organisations strategic objectives (Kekre, 1995).

The changing character of purchasing is accentuated in existing literature. In the 1960s through to the 1970s, the need for active supplier development was discussed. In the 1980s, single sourcing was suggested but debate centred on the dangers of reliance on one supplier (Biemans and Brand, 1995). The 1990s discussion on purchasing is characterised by terminology like reverse marketing (Biemans and Brand, 1995), an aggressive type of purchasing described as actively identifying potential suppliers and offering suitable suppliers proposals for long-term collaboration. Other descriptors are proactive procurement and market-driven procurement (Burt, 1989). Competitive advantage is the basic driver for corporate strategies in the 1990s. Savings on procurement are recognised as going straight to the bottom line of corporate profit, up to 5 per cent increase on return on sales over average performers and 5-15 per cent in total spend over a three-year period (Keough, 1994). Purchased products and services account for more than 60% of the average company's total costs. For steel companies, that number goes up to 75%; it's 90% in the petrochemical industry. Even at service companies, the figure is typically a hefty 35%. A 5% cut [in these costs can translate into a 30% jump in profits[1]. Major organisations have turned to purchasing to improve profits. This pressure being felt on costs in all industries is clearly illustrated in Figure 1. The term "concurrent purchasing" (Hines, 1996) is used to describe a new paradigm where purchasing is repositioned as a key strategic and operational process rather than a stand alone function. Contributions by purchasing to organisational performance improvement in quality, cost and design processes are the proposed outcomes (Brookshaw and Terziovski, 1997)

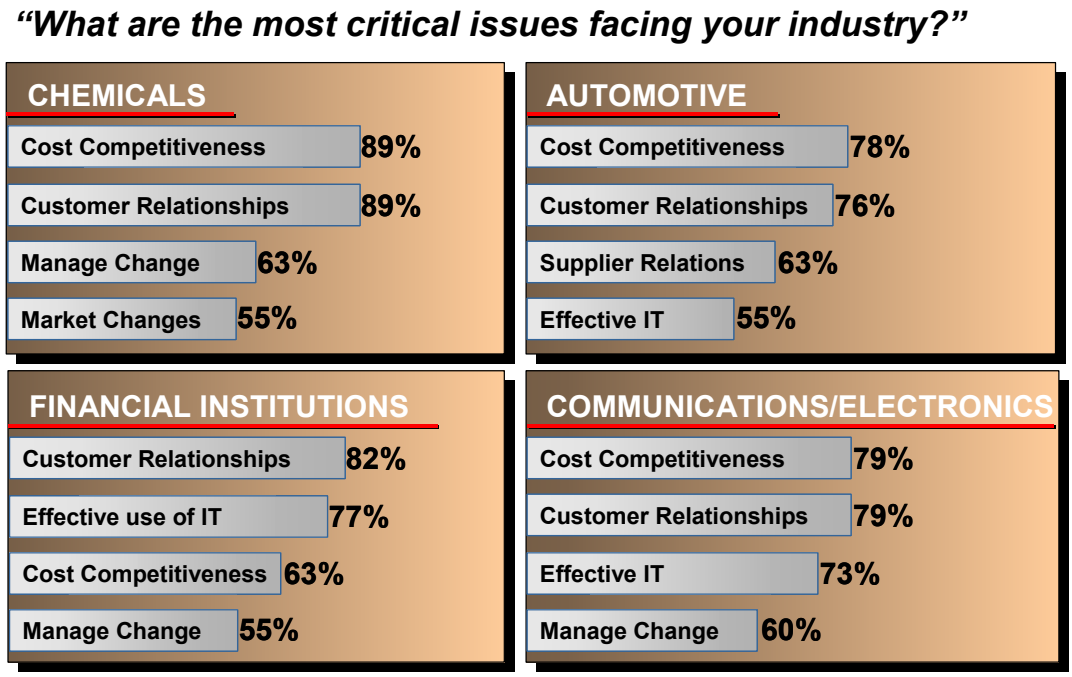

Figure 1: Cost as a leading concern in today's industry (Source: AR Kearney)

Analysis of the Profit Impact of Market Strategy (PIMS) database (Carter and Narasimhan, 1994) shows that the long term critical factor impacting business units performance and share of the market is the quality of it's product compared to competitors. The implications for the purchasing role are significant. Changes in the processes and measurements employed in managing the supply market to achieve the end quality required to compete must be identified.

The transition and evolution of the purchasing process is a trend to move from purchasing as a tactical decision to one of strategic sourcing. The need for strategic sourcing is a response to emerging dynamics of competition in the global environment. A major aspect of the impact on manufacturing companies and their strategy is the need for identification and development of global sources for procurement of raw materials and parts components (Palaniswami and Lingaraj, 1994). The implication to the purchasing process and the emerging new roles requires interdisciplinary efforts which could include marketing, manufacturing, engineering, purchasing and human resource development (Chen, 1994)

[1] June 2001. *"A Smarter Way to Buy."* Harvard Business Review

Many researchers and practitioners have been calling for a more cross-functional view of the management of business (Bregman, 1995). Value is expected to result from globally optimised systems through linking diverse functional areas and aggregating purchase volume (Stuart and Mueller, 1994). Improvement in purchasing's effectiveness by reducing the cost of materials, improving the quality and delivery or cycle time reduction can translate to greater profitability for a firm (Hult, 1996; Stanley, 1995). New product design and development and early supplier involvement result in higher performance levels (Stanley, 1995). There are five purchasing variables that are proposed to represent strategic purchasing activity: -

1. Suppliers work closely with the customer in product development.
2. The customer works closely with their suppliers to improve each other's processes.
3. Suppliers have an effective system for measuring the quality of the materials sent to the customer.
4. Relative to domestic and international competitors, the customer has an advantage in the relationship with suppliers.
5. Relative to domestic and international competitors, the customer has an advantage in access to raw materials.

What comes across clearly in these five variables is that information sharing and communication will become an important part of strategic procurement initiatives. Information sharing and communication capabilities have been significantly enhanced in the past decade via technological advances. These technological advances will, to a large extent, enable a number of the changes required for procurement to attain strategic objectives being initialised by organisations today. The internet (including intranet, extranet and internet technology) and the World Wide Web will have a powerful impact on how organisations procure. Organisations that successfully harness the power of new technologies now becoming available will be able to significantly enhance their procurement processes.

The resultant effect of the increased desire for profitability and shareholder value within organisations combined with new technologies now available should see an explosive growth in e-procurement applications and strategic sourcing initiatives as highlighted in the figures below: -

	2000	2001	2002	2003	2004	2005
New Installations	25	100	250	500	850	1,275
X Average Selling Price *(in 000's)*	$350	$400	$500	$500	$400	$400
= Market Size *(in 000's)*	$7,000	$40,000	$125,000	$250,000	$340,000	$510,000
Total Installations	**25**	**125**	**375**	**875**	**1,725**	**3,000**

Figure 2: Market Opportunity for Strategic Sourcing Applications (Alaniz, S and Shuffield, E. 2001. *Strategic Sourcing: Applications to Turn Direct Materials Procurement into Competitive Advantage*. Available from: **http://elc.freemarkets.com/cat2/Whitepapers/strategic_sourcing.pdf** Accessed [21 July 2002])

Online strategic sourcing — the negotiation of key direct and indirect materials and services — will reach annual levels of $440 billion within five years and increase at a compound annual growth rate (CAGR) of 93% in the United States between 2001 and 2005. This growth will be directly related to the growth of e-commerce in general as well as that of public e-marketplaces and private exchanges[2].

Certainly it is clear that strategic purchasing efforts that are driven by organisations desires to be more competitive will be enabled through more effective and increased use of technology. However, what is important to emphasise at this point is that technology is not the answer to achieving corporate goals, rather it is an “enabler” . Many organisations fall into the trap of believing that implementing some new software or system will solve their problems, this could be nothing further from the truth. What is important to ensure is that implementation of new technology has at the forefront of it some business or strategic initiative. In order for businesses to succeed in technological implementations, a holistic view should be taken, in that changes in people and processes will also need to be considered.

[2] From IDC's "Online Strategic Sourcing: A Definition and Forecast" (Jul 2001)

4. Purchasing and Strategy

Strategy can be defined as the link between a firm and it's business or external environment. The firm embodies three sets of key characteristics:

1. It's goals
2. It's resources and capabilities
3. It's organisational structure and systems

The external environment of the firm comprises the whole range of economic, social, political and technological factors that influence a firms decisions and it's performance. However, for most strategy decisions, the core of the firms external environment is it's *industry*, which is defined by the firm's relationships with customers, competitors and suppliers. (Grant, 1998)

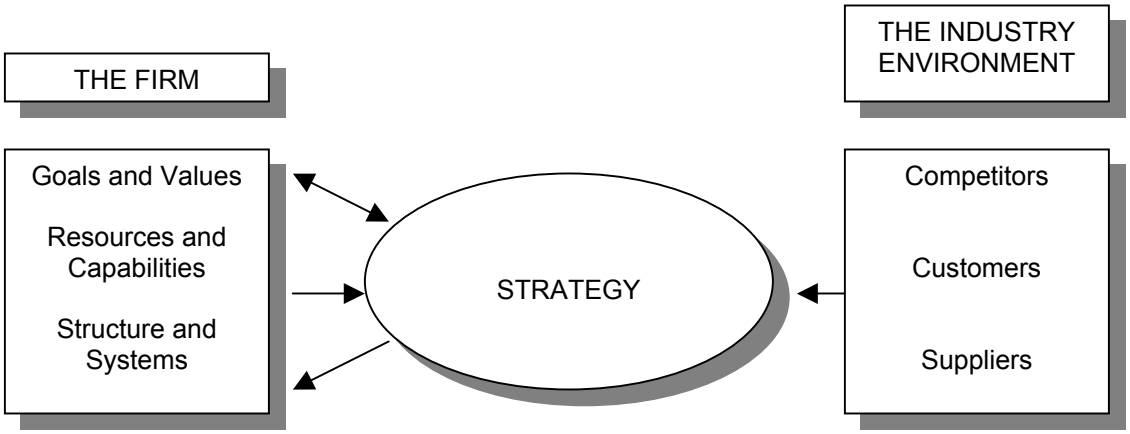

Figure 3: The Basic Framework: Strategy as a Link between the firm and it's environment (*Source* Grant, R.M. 1998. "Contemporary Strategy Analysis". Blackwell Publishers Inc, pp12.)

For a strategy to be successful, it must be consistent with the firm's goals and values, with it's external environment, with its resources and capabilities and with it's organisations and systems. Lack of consistency between the strategy pursued by a firm and it's external environment and internal environments is a common source of failure. (Grant, 1998). Each organisation has different levels of strategy determine to a large extent by the structures within an organisation. Each of these strategies needs to support each other in order for the organisation to achieve it's goals. Corporate Strategy defines the scope of the firm in terms of the industries and markets in

which it competes. **Corporate strategy** decisions include investment in diversification, vertical integration, acquisitions and new ventures; the allocation of resources between the different businesses of the firm; and divestments. **Business Strategy** is concerned with how the firm competes within a particular industry or market. **Functional or tactical strategies** are the elaboration and implementation of business strategies through individual functions such as production, R&D, marketing, human resources, procurement, IT and finance. They are primarily the responsibility of the functional departments. In single business firms there is no distinction between corporate and business strategy. (Grant, 1998)

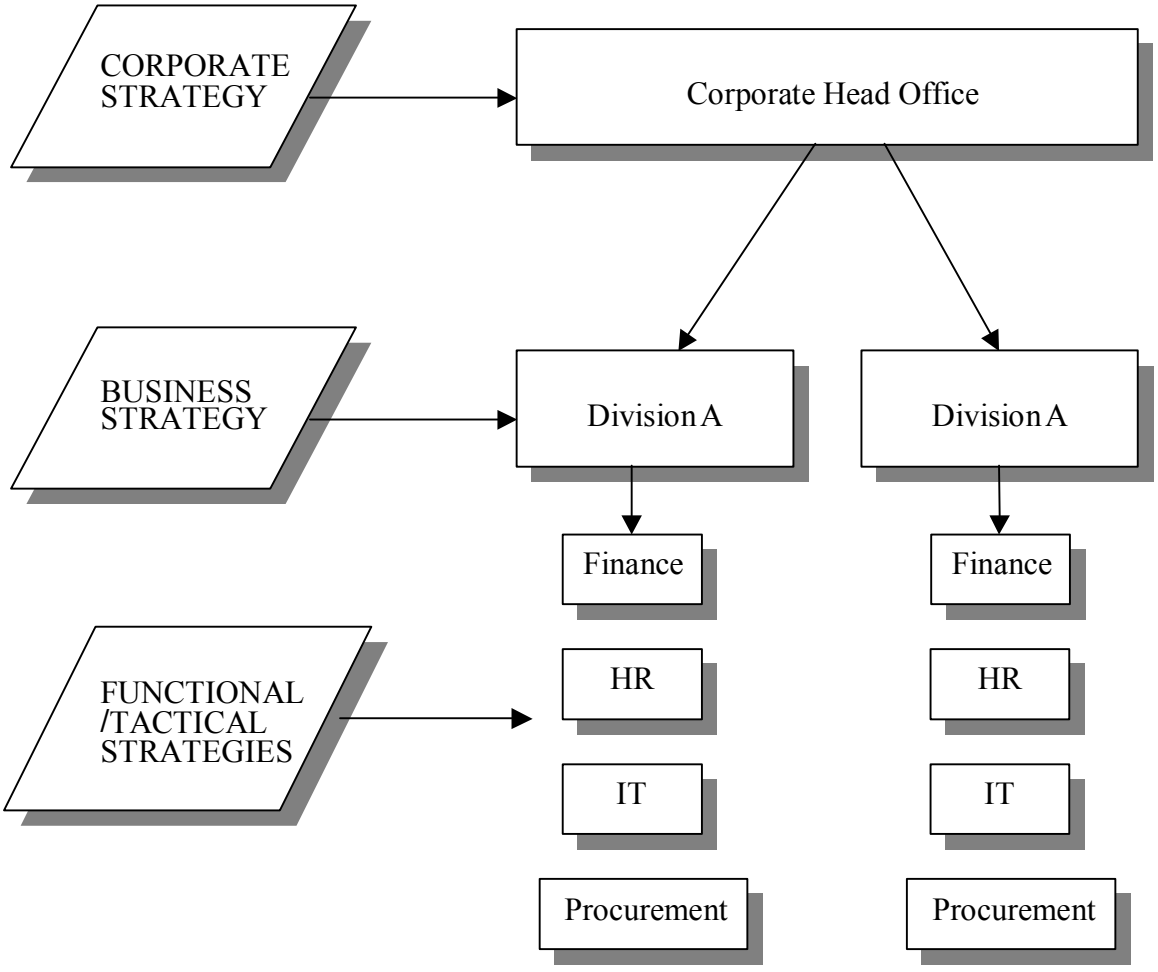

Figure 4: Levels of Strategy and Organisation Structure (*Source* Grant, R.M. 1998. "Contemporary Strategy Analysis". Blackwell Publishers Inc, pp20.)

At the corporate level, the primary strategic concern is, what business should we be in? At the divisional level the question is redefined as, how should we compete in any given business? Finally, at the department or functional level, purchasing should focus it's attention on

1. Integrating the various activities into the total corporate scheme and
2. Designating strategic programs that are aligned closely with current and anticipated environmental changes. (Rajagopal and Bernard: 1995)

The ultimate purpose of all corporate and functional level strategies, including purchasing, is the development of sustainable competitive advantage. Therefore the relevant issue is not whether functional level strategies exist, but whether they contribute to the development of competitive advantage and superior corporate performance over time. Research has shown that firms operating in the same market while following similar strategies can have dramatically different levels of performance. How can these differences exist? Further research has suggested that such varying levels of firm performance result from differences in functional level capabilities and strategies.

During the 1980s the linkage between purchasing strategy and firm performance began to be established. Firms began to realise the impact the purchasing function can have on their competitive position, and they gradually shifted the role of purchasing from tactical to strategic. As summarised in Table 1, many researchers believe that the purchasing function can contribute to the success of the firm by supporting the firm's strategy. In order to support the firm's strategy, the purchasing function must understand the strategy – and become involved in the firm's strategic planning process. As strategic support and involvement develop, purchasing has the opportunity to move from an operational to strategic function within the firm.

Author(s)	Methodology	Major Findings
Caddick and Dale (1987)	Empirical – case study	Purchasing must develop strategies and link purchasing to corporate strategy
Spekman (1981)	Conceptual	Purchasing needs to be integrated into corporate strategy. First, purchasing must think and develop strategically.
Browning et al. (1983)	Conceptual	Purchasing is linked to corporate strategy because it supports corporate strategy in terms of monitoring and interpreting supply trends, identifying

Author(s)	Methodology	Major Findings
		way to support strategy and developing supply options.
Burt and Soukup (1985)	Conceptual	Purchasing can have an impact on achieving success in new product development if purchasing is involved early in the new product development process.
Landeros and Monczka (1989)	Empirical - interviews	Purchasing can support the firm's strategic positioning using cooperative buyer-supplier relationships.
Carlson (1990)	Empirical – case study	Purchasing strategy is important to product development and long-term goals of the firm.
Reid (1990)	Conceptual	Purchasing should be involved early in the firm's development of strategy in order to develop strategies that are compatible with the firm's strategic plan.
St. John and Young (1991)	Empirical – survey questionnaire	Purchasing, production and production planning managers agree on long-range strategy. However, their daily activities are inconsistent with the long-range strategic plan

Table 1: Summary of Literature addressing purchasing's role in supporting the strategies of the firm. (Source: Ellram, L. and Carr, A. 1994. *Strategic Purchasing: A History and Review of the Literature*. International Journal of Purchasing and Materials Management. 1994 30(2): pp14)

Clearly if purchasing is to sustain the move from a tactical to strategic role, there must be a shift in focus by purchasing personnel from efficiency to effectiveness. Purchasing personnel must think in terms of the potential strategic implications of their actions and routinely interact with other functional managers to develop coherent and integrated strategies.

Also, purchasing must integrate its strategic plans with other functions within the overall corporate planning process. A firm's efforts at purchasing strategy development can be successful, if five basic principles are followed: -

1. Closely link specific purchasing management goals with firm level strategies
2. Emphasise human resource management effectiveness.
3. Foster a close relationship with Key Suppliers
4. Actively Integrate Purchasing with other functions
5. Create the atmosphere within purchasing.

5. The effect of technology on purchasing

We have seen that since the 1980's there has been a shift in purchasing strategy from a tactical level to a more strategic level. My belief is that this will continue to happen and that Information Technology (IT) is helping organisations achieve this shift. As mentioned earlier IT has improved our ability to share and communicate information. The dream of Microsoft's Bill Gates to give people "Information at their fingertips" has truly become a reality. This information is allowing organisations to make significant enhancements in their corporate strategies, which in turn is enhancing their competitive positions. This change is illustrated in Figure 5 which shows the roadmap to organisational empowerment. Technology has allowed significant amounts of data to become available, however that data does not become "information" until we structure it in a certain way. When we apply the human element of knowledge to the data and structure it, it becomes information. Once we have information at our fingertips we can then empower our organisations by applying timely decisions to the information we obtain. Empowering our organisation would essentially entail developing strategies that enable businesses to attain and sustain competitive advantage.

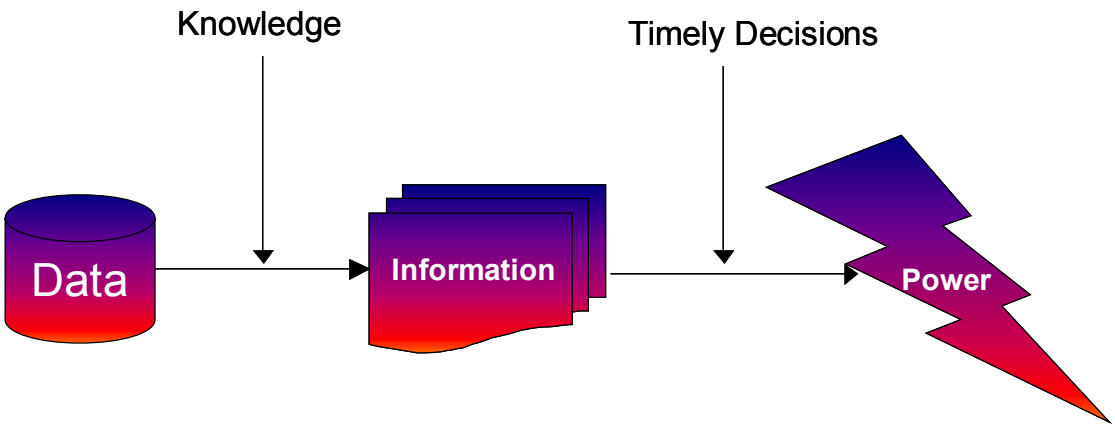

Figure 5: How to empower your organisation

Essentially, technology and the systems it uses provide us with information that allows us to make better decisions. The human element of the process should not be underestimated. Yes, Information Technology (IT) gives us access to better information, however, humans have to take

appropriate decisions upon that information. Those decisions can also be made easier by using technology to evaluate the different alternatives. However, at the end of the day, the final decision is a human one – unless of course the computer is programmed to take a final decision based on certain criteria. Successful implementation of business systems relies on ensuring an appropriate combination of the right technology, people and processes – good technology alone is not the answer. The example which will now be outlined relates specifically to purchasing. Purchasing is an area of the business that relies heavily on data collection and used of benchmarking and performance indicators. Here I will outline how the use of technology and automated systems in purchasing allows for a number of improvements to the business process. The analysis below identifies the technological advances that have been made within the context of E-procurement and Strategic Sourcing. Subsequent to this analysis I will highlight how such technological advances are enabling businesses to formulate better strategies that enable them to become more competitive.

E-Procurement

What is E-procurement?

1. Private Web-enabled procurement markets for automating communications, transactions, and collaboration between trading partners.
2. Three key areas:
   a. Indirect e-Procurement

   Indirect goods and services are products or projects that an organisation needs to be in business, but are not used in a manufactured or resold product. These include office supplies; maintenance, repair, and operations (MRO) materials; Information Technology (IT) systems; travel and entertainment (T&E) expenditures; telecommunication services, print projects, marketing collateral, contract labour and consulting projects, and services and more.

   b. Direct e-Procurement/e-SCM (Supply Chain Management)

   The process of purchasing raw materials, components, subassemblies, and outsourced capacity required to manufacture goods.

c. e-Sourcing - See Definition under Strategic Sourcing[3]

For purposes of this paper the changes in indirect procurement as a result of technological advances will be analysed as this is the area in which most benefit is derived from computerisation efforts. An analysis of the spend in a typical manufacturing organisation as shown in Figure 6 below illustrates that indirect procurement is responsible for large percentage of corporate spend. Hence savings potential from making the process more efficient and reducing levels of maverick spend is incredibly high.

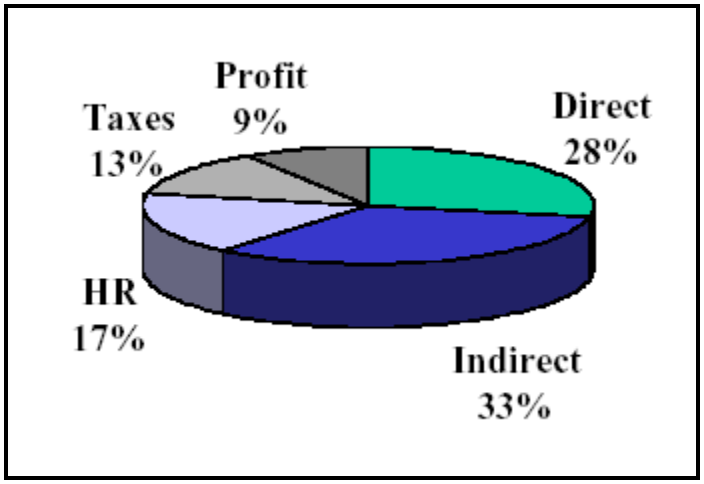

Figure 6: Division of Corporate Spend (Typical Manufacturer) (*Source*: Centre for Advanced Purchasing Studies, 1999)

In order to understand the advances that have been made in procurement technologies a side by side comparison of the old and new processes will be performed followed by an analysis of the key benefits that have been attained through an e-procurement implementation.

[3] Minahan, T. 2000. *E-sourcing: Negotiating Value in a Volatile Economy [online].* Aberdeen Group Research. www.freemarkets.com. Available from: http://www.freemarkets.com/feature/whitepaper/04012469.pdf Accessed [21 July 2002].

Old Process (Indirect Procurement)

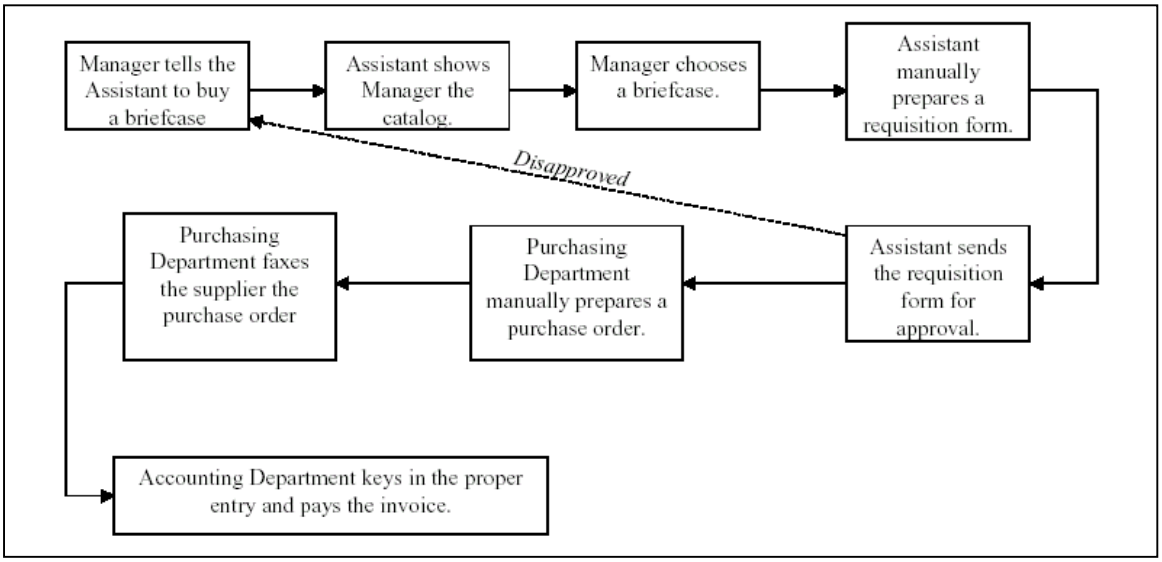

Figure 7: Old Buying Process (Source: Alaniz, S. Roberts, R. *E-procurement: A Guide to Buy-Side applications [online].* Stephens Incorporated. Available from: **http://www.line56.com/research/contributor.asp?ID=11** Accessed [29 July 2002])

1. A Manager needs a new briefcase. He/she tells the Assistant or a dedicated requisitioner to order a briefcase of certain size, colour, and style.
2. The Assistant goes through the office supply catalogue (the print version) from the designated supplier and finds several choices of briefcases. Not sure exactly which briefcase the manager likes, he/she shows the Manager the catalogue.
3. The Manager chooses a briefcase.
4. The Assistant copies down the product name and number into the requisition form.
5. The Assistant sends the requisition form to the Office Manager and/or Purchasing Manager for approval.
6. The requisition is approved. (If it is not approved, then it goes back to step 1). The Purchasing Department copies down the product information and types out a purchase order.
7. The Purchasing Department sends the purchase order to the supplier via fax.
8. The Accounting Department keys in the entry related to the purchase order and pays the invoice.

New Process (Indirect Procurement)

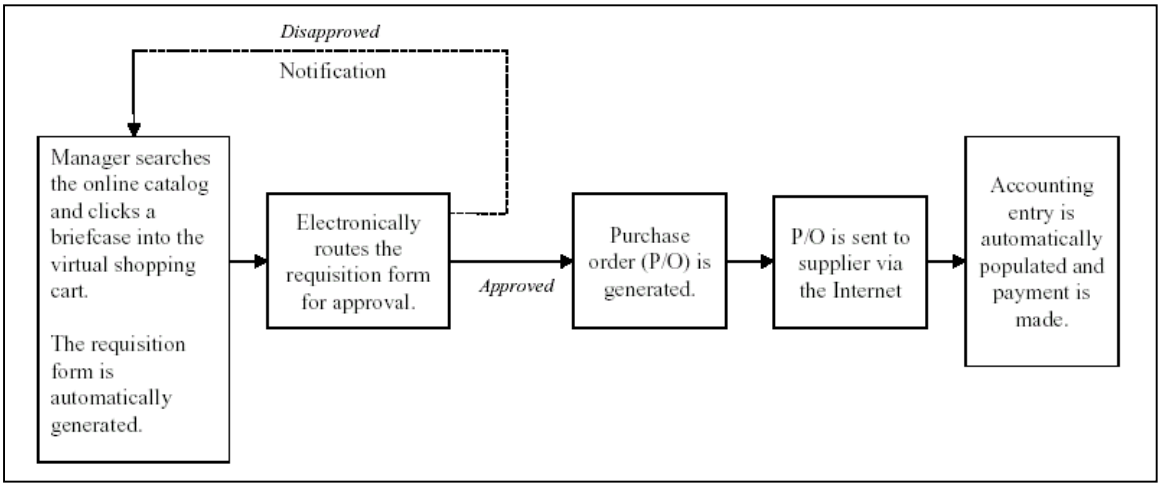

Figure 8: Buy-Side solution enabled purchasing process (Source: Alaniz, S. Roberts, R. *E-procurement: A Guide to Buy-Side applications [online].* Stephens Incorporated. Available from: **http://www.line56.com/research/contributor.asp?ID=11** Accessed [29 July 2002])

1. The Manager needs a new briefcase. He/she logs onto the internal procurement Web site and chooses a briefcase from the online catalogue. With the click of a button, the briefcase is put in the virtual "shopping cart," and the information related to the product is automatically populated to the requisition form.
2. The requisition form is electronically routed for approval.
3. If the requisition is not approved, the Manager is notified. If it is approved, it is aggregated with other similar requisitions generated around the same time within the company. One purchase order is automatically populated, extracting the needed information from the requisition orders.
4. The purchase order is sent to the supplier via the Internet.
5. The related accounting entry is automatically populated into the accounting system and the invoice is paid electronically using a corporate purchase card or an electronic fund transfer account.

Where is the improvement?

The differences between the old and new procurement processes as well as the cost benefits are summarised in Tables 2 and 3.

Description	Old Process	New Process
Amount of "Maverick Buying"	High	Low
Volume discount	Low	High
Administrative Process	Paper-intensive	Electronic (Paper-less)
Employee efficiency	Low	High
Order Cycle Time	Long	Short
Amount of Error	High	Low

Table 2: Difference Between the Old Purchase Process and New Internet Purchase Process

	Traditional/Manual	Internet Procurement
Price of Material and Services	--	5%- 10% reduction
Purchase and Fulfillment Cycles	7.3 days	2 days
Administration Cost	$107 per order requisition	$30 per order requisition
Inventory	--	25% to 50% reduction in inventory costs [b]

(a) Data was collected in a sample of companies implementing procurement solutions focused on MRO purchasing requirements—not direct material purchase requirements.
(b) The percentage is average for sites that recognized inventory reduction at time of survey.

Table 3: The Cost Savings created by Buy Side solutions (*Source*: Aberdeen Group, June 1999)

Additional benefits are as follows: -

- Better sharing of information between applications – for example, many e-procurement systems offer the functionality to create a purchase order automatically based on the information contained in a requisition once a requisition has been approved. This same information can subsequently be used in invoicing.
- Improved management of hierarchies and security rules – e-procurement systems provide a variety of features that ensure document routing as well as approval of documents are performed in with certain security rules.
- Improved cataloguing and stocking of items. Reduced catalogue search time.
- Aggregation of spend enhanced visibility to global spend though advanced reporting and access to information.
- Reduction in Procurement staff – e-procurement systems are easy enough to operate that each department can be made responsible for ordering it's own items, this enables employees in purchasing to perform more strategic functions rather than run a department.

Strategic Sourcing

What is strategic sourcing?

The process of identifying opportunities, evaluating potential sources, negotiating contracts and continually managing supplier relationships to achieve corporate goals[4]

What is e-sourcing

1. e-Sourcing involves the use of Web-based technologies and services for the identification, evaluation, negotiation, and configuration of new products/suppliers.
2. Primarily used for the negotiation of blanket contracts and long-term trading agreements.[5]

Existing processes

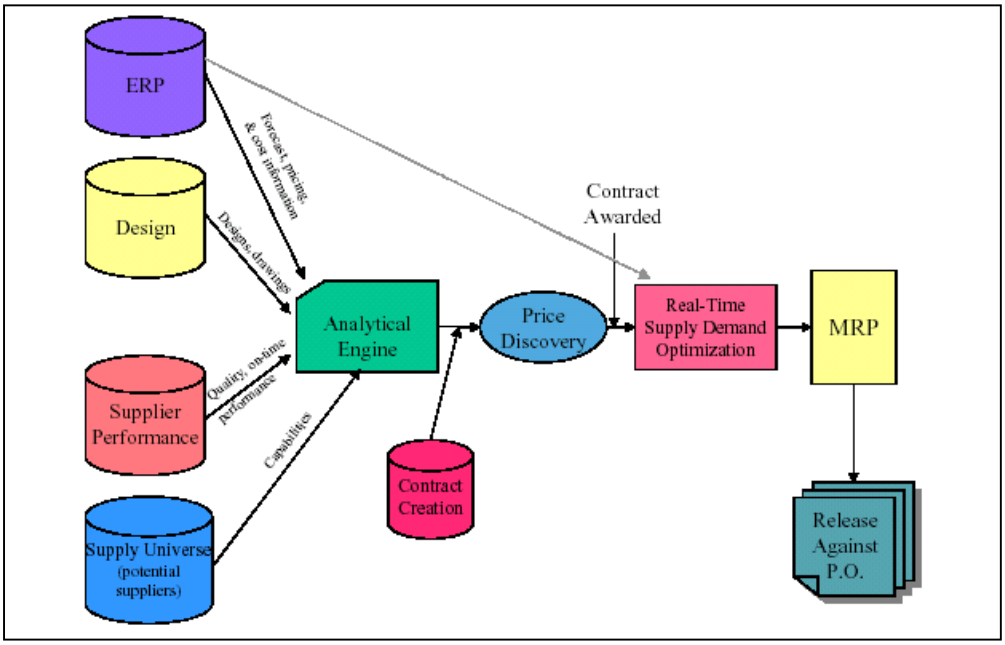

Figure 9: Strategic Sourcing Data Model (Source: Alaniz, S and Shuffield, E. 2001. *Strategic Sourcing: Applications to Turn Direct Materials Procurement into Competitive Advantage.* Available from: **http://elc.freemarkets.com/cat2/Whitepapers/strategic_sourcing.pdf** Accessed [21 July 2002])

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[4] No Author. No Date. *Strategic Sourcing is the next step [online]*. www.sas.com. Available from: http://www.sas.com/subscriptions/sascom/mayjune01/strategic_sourcing.html Accessed [30 November 2002].
[5] Minahan, T. 2000. *E-sourcing: Negotiating Value in a Volatile Economy [online].* Aberdeen Group Research. www.freemarkets.com. Available from: http://www.freemarkets.com/feature/whitepaper/04012469.pdf Accessed [21 July 2002].

This model essentially involves data aggregation into one database which can be used to analyse spend information. Once spend information is analysed decisions are then made as to how contracts should be set up with suppliers. After contracts have been negotiated with suppliers these can be enforced by ensuring that when each purchase order is generated the amount is taken out of a contractual agreement set up in the system.

Where is the improvement?

Before the arrival or internet technologies and computerised systems there was inadequate aggregation of spend information to provide the organisation with enough bargaining power over their suppliers. In many instances data aggregation was difficult as a result of it coming from multiple sources. Even with computerised systems in place data aggregation has always been a difficult exercise. However, more organisations are beginning to place their information in a single repository/database so as to facilitate the aggregation effort.

Secondly, most new systems allow contractual information between the organisation and suppliers to be captured so that any goods received can be allocated against the contract.

The key functionality provided by strategic sourcing applications is as follows: -

Content

Applications/databases that combine information about components, suppliers, designs and processes are referred to as content applications. This includes component libraries, supplier and ordering information, part classification schemes and search engines to find components quickly. These databases are used to maximise discounts by finding commonly purchased items across divisions of a company, for design re-use and for finding an equivalent item if a part is out-of stock.

Analytics

Analytical solutions comprises several components with the following functionalities:

1. Sourcing Strategy Planning

These applications provide the starting point for sourcing planning. Company strategic goals are defined and form the basis for sourcing strategy. These applications synchronise sourcing goals with Company objectives.

2. Spending Analysis.

These applications form the building blocks for purchasing negotiation and decisions. Spending across and within categories is measured, manipulated and reviewed. Quotes from prospective suppliers are compared to determine economic order quantities, volume discounts, and projected quantity discounts on future volumes. These applications enable the calculation of supplier breakeven points, tabulate the total cost of ownership (tooling, expediting, rework, additional R&D, international shipping and customs charges, etc.), and project supplier production and cost learning curves.

3. Supply Risk Analysis.

The ability to create and run plans and develop a strategy beforehand for the risk of possible supply chain interruptions or parts shortages is valuable. These applications enable companies to determine and minimise risk. They also create optimal sourcing plans in the face of rapidly changing supply and demand.

4. Supply Allocation Analysis.

Allocation has historically been determined based on negotiation or a purchasing manager's "feel" for the market. Supply allocation analysis applications allow purchasing professionals to support decisions based on quantitative data. A company's economic order quantity can be compared and matched with suppliers' economic production quantities to find cost savings opportunities. The impact of allocating more volume to a supplier with longer lead times or better quality can be calculated quickly. These applications enable professionals to determine how much volume to allocate to suppliers, based on constraints such as lead-time, quality and price.

5. Raw Material/Component Optimisation.

There is a need to optimise the usage of components within and across organisations. Using database technology purchasing professionals can identify commonly purchased components.

The results can be utilised to negotiate better pricing, reduce the supplier base and standardise design and production on common components.

6. Contract Administration.

For a complete strategic sourcing solution, a central repository must be established for supply contracts. All key contract terms must be input and be available to be drawn from this central repository to support sourcing decisions. Strategic sourcing applications greatly reduce the time it takes to develop and execute contracts. These applications help manage the entire contract lifecycle and the risks associated with non-compliance or changes in contract terminology.

7. Supplier Performance Analysis.

Traditional supplier performance tracking and monitoring solutions are bundled into packaged software applications, providing corporations the ability to measure things like supplier performance against plan, responsiveness, lead-times, early/late deliveries, and non-price improvements. Additionally, these applications offer the ability to rate suppliers based on custom weighted variables and house this information in a central repository instead of in various legacy systems, filing cabinets, and minds of purchasing professionals.

Pre-Negotiation Interaction Tools.

These tools referred to as electronic RFI and RFQ. These tools allow buyers to prepare, package and send out RFQs to prospective bidders. The RFI/RFQ can be sent to multiple suppliers simultaneously over the Internet, and these suppliers can respond electronically. Then all the quotes or proposals are automatically aggregated and presented to the buyer over the Internet. Compared with the traditional phone and fax-intensive process, we think that these tools can save buyers time by reducing their time spent on these administrative tasks. Creating and issuing RFIs/RFQs is a manual, time-consuming process. However, little technology is required to develop these “fat e-mails.” These electronic RFI/RFQs are a good additional service to provide to buyers but should not be an application provider’s core technology.

Price-Clearing Tools Auctions/Reverse Auctions.

There are two predominant online price-finding technologies: reverse auctions and dynamic bidding (exchanges). Reverse auctions are downward price applications where bidders compete

against each other with progressively lower bids. Reverse Auctions are based on game theory—people don't always behave rationally in bidding situations. This sometimes results in the winner's curse - whereby the winner of an auction may find out later that the bid too low to win the business. Dynamic bidding is a technology whereby buyers bid and sellers offer prices in an online dynamic framework.

Strategic sourcing applications provide economic benefits by: -

- Allowing the organisation to leverage volume by awarding more business to certain suppliers.
- Increasing the number of items purchased under contracts.
- Rationalising the supplier base.
- Forging supply partnerships to reduce inventory levels.
- Improving purchasing processes.
- Designing and sourcing for manufacturing and supply chain.
- Improving and optimising inbound supply chain configuration. (Alaniz and Shuffield, 2001)

Although strategic sourcing and e-procurement can be implemented as completely separate initiatives, combining an e-procurement application with strategic sourcing is the best way to maximise your realized savings on an ongoing basis. E-procurement systems provide the data needed to rationalise your supply base and negotiate pricing, quality and services. With strategic sourcing, organisations can consolidate their supplier base and focus on preferred suppliers. This increases the organisation's buying power and provides the foundation to collaborate in driving down costs in the supply chain. Ideally, strategic sourcing initiatives should be completed prior to an implementation of an e-procurement system. With a prioritised, iterative approach focused on major national suppliers or even tapping into buying consortia, companies can begin capturing savings almost immediately. The synergies derived by appropriately integrating e-procurement with strategic sourcing are outlined in Table 4 below.

How Sourcing Aids e-procurement	How e-procurement Aids sourcing
• Reduces number and complexity of catalogues • Reduces maintenance cost and complexity of catalogue and system • Focuses Development work with preferred suppliers • Prioritises roll-out based on benefits • Develops Strategic Capabilities in personnel freed up by e-procurement • Addresses the necessary business process issues that can make e-procurement difficult to accomplish.	• Encourages use of supplier agreements by eliminating "maverick" buying. • Allows for increased volume estimates in negotiations by capturing more data on purchases • Frees up procurement resources to focus on strategic efforts • Takes advantage of potential cost incentives available from supplier for use of e-business • Aids in measuring performance

Table 4: The e-Procurement/Strategic Sourcing Synergy (Source: Corini, J. 2000. *Integrating E-procurement and Strategic Sourcing [online]*. Retrieved July 21, 2002. From InfoTrac database. Available from: **http://infotrac.galegroup.com** Accessed [21 July 2002]).

The improvements outlined in the area of e-procurement and strategic sourcing certainly enable an organisation to become more competitive. To understand how these different approaches to purchasing strategy impact on competitive advantage, it is necessary to study how the practical application of strategic sourcing and e-procurement relates to the theoretical elements of what enables an organisation to attain and sustain competitive advantage.

6. Applications to Competitive Advantage

Theoretical principals of competitive advantage

By developing a purchasing strategy that focuses on the character of its competitive strength, a firm can enhance it's market position. One study of competitive strategies suggests that the best option for a given firm is ultimately a unique combination that reflects its particular circumstances. Given the diversity of available strategies, an effective purchasing system is not necessarily one that promises maximum efficiency or least total cost, but rather one that fits the needs of the business and strives for consistency between its capabilities and the competitive advantage being sought. In essence, purchasing activities take on the very nature of the competitive strategy and thus are able to make a direct contribution to the marketing effectiveness of the firm (Rajagopal and Bernard, 1993). In order to implement effective purchasing strategies and make use of the technological tools that enhance our capability in this area, each person responsible for strategy in the organisation needs to understand what makes their particular organisation competitive and how the elements that make an organisation competitive can be combined to achieve superior strategies. Theoretically an organisation can attain competitive advantage through a resource-based approach or through positioning itself in a certain way in the industry (see Figure 10).

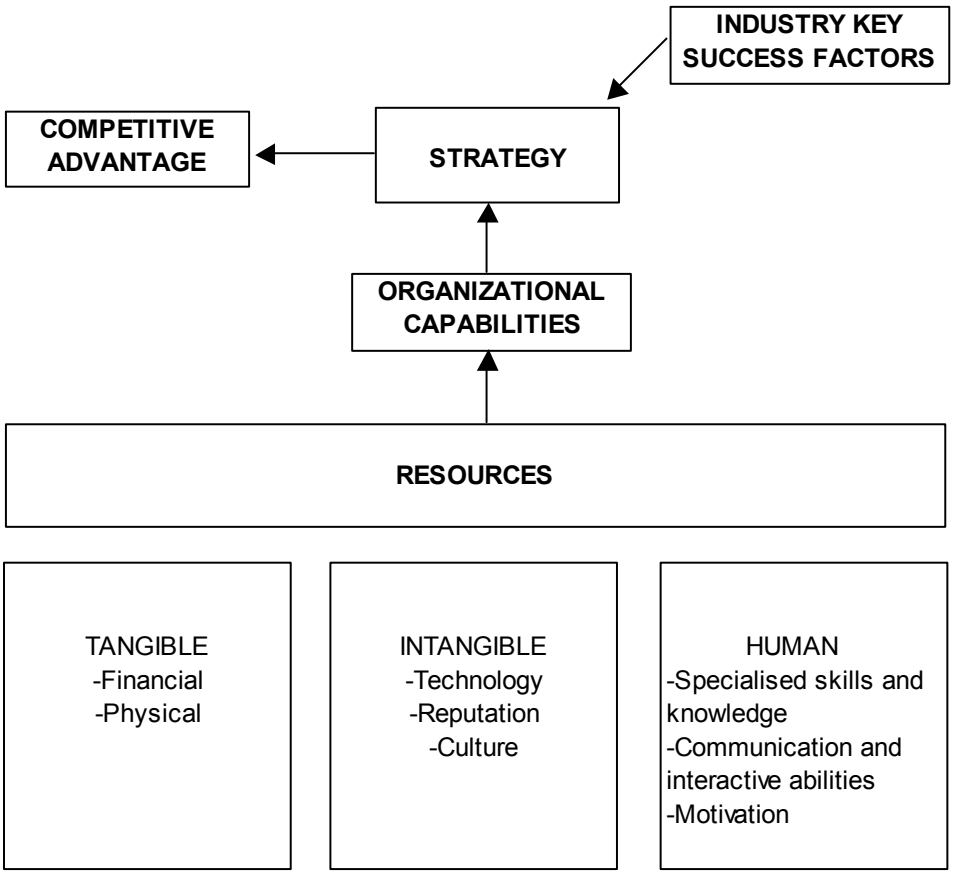

Figure 10: The relationships among resources, capabilities and competitive advantage. (Source: Grant, R.M. 1998. *Contemporary Strategy Analysis*. Blackwell Publishers Inc.)

Therefore, success for an organisation occurs firstly because of a firm's strategic posture, which permits it to cope with competitive forces in its industry. Secondly, success is also partly due to the tactics used by functional managers to carry out their daily activities. To attain success while coping with its competitive forces of (1) threats of new entrants, (2) threats of substitute products, (3) bargaining power of consumers, (4) rivalry among competitors, and (5) bargaining power of suppliers, a firm will choose one or a combination of the following strategic postures: overall cost leadership, product differentiation, or market-segment focusing. Overall cost leadership allows a firm to position itself as the low cost producer in its industry. In contrast, a firm choosing a strategic posture of product differentiation, will offer products or services unique to its industry. Alternatively, by choosing a strategic posture of market-segment focusing, a firm copes with its competitive forces by serving only a narrow market-segment. The chosen strategic posture,

however, only provides a guideline for the actions and the procedures employed by functional managers in their work. In other words, the strategic posture of a firm does not designate specific functional tactics. Accordingly, purchasing managers should understand and interpret their firms' strategic posture before deciding on the specific tactics to use in acquiring intermediate-products from suppliers (Landeros and Monczka, 1989).

Impact of e-procurement on factors influencing competitive advantage

When analysing the impact of e-procurement on the factors influencing competitive advantage I believe that it's primary impact can be felt in the area of resources or organisational capabilities as outlined in figure 10. This is due to the effect e-procurement has on reorganising the resources located in the value chain. Procurement has always been a support activity to the primary activities of the firm as outlined in the value chain diagram below.

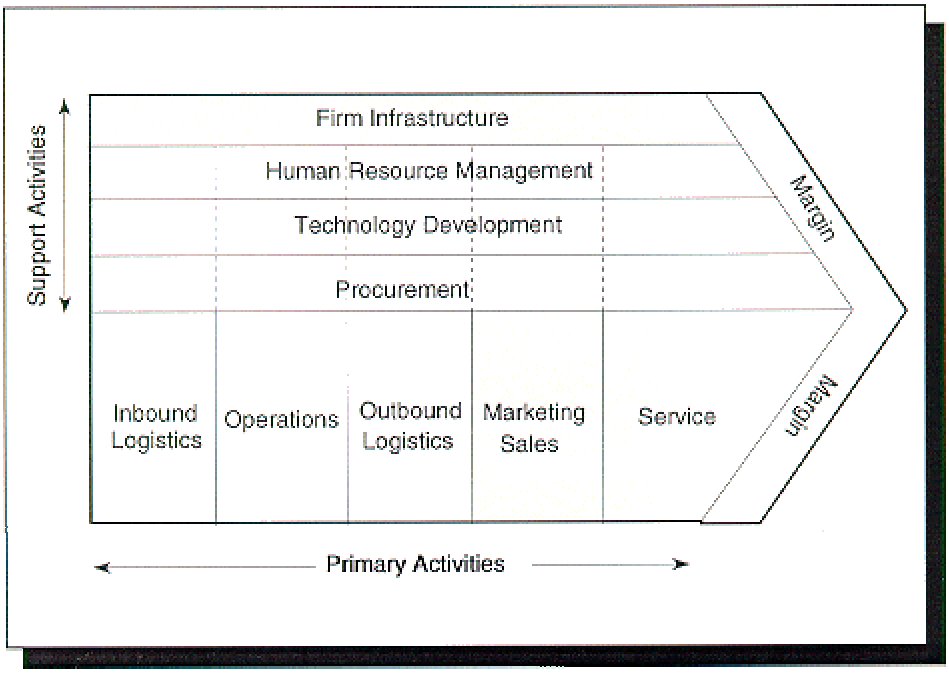

Figure 11: The Porter Value Chain (Source: M.E.Porter, 1985. *Competitive Advantage*. New York: Free Press.)

As the demand's for firms to become more competitive have increased companies have realised the need to focus on their core competencies or primary activities. Prahalad and Hamel (1990), define core competencies as "the collective learning in an organisation especially how to

coordinate diverse production skills and integrate multiple streams of technologies". Stalk, Evans and Shulman distinguish core competencies from a firms strategic capabilities (secondary activities): "whereas core competence emphasises technological and production expertise at specific points along the value chain, capabilities are more broadly based, encompassing the entire value chain". They define a capability as "a set of business processes strategically understood".

E-procurement enables an organisation to realign it's resources to develop it's core competencies. Typically the type of activity we are seeing today is that the purchasing function is outsourced or the entire department is reassigned to become involved in more strategic procurement functions such as sitting on cross functional teams involved in the primary activities of the organisation. As soon as e-procurement is implemented it enables an organisations departments to take care of their own purchasing activities rather than having one department manage all the purchasing activities for an entire organisation.

Hamel and Prahalad emphasise the need for an organisation to leverage its resources and capabilities in order to attain competitive advantage. There are two key ways in which e-procurement does this

1. **Concentrating resources** through the process of: *converging* resources upon a few clearly define and consistent goals; *focusing* the efforts of each group, department and business unit on individual priorities in a sequential fashion; and *targeting* those activities that have the biggest impact on customer's perceived value (Grant, 1998: 126) – sounds very much like focusing on core competencies to me!
2. **Complementing resources** involves increasing their effectiveness through linking them with complementary resources and capabilities. This may involve *blending* product design capabilities with the marketing capabilities needed to communicate these to the market and *balancing* to ensure that limited resources and capabilities in one area do not hold back the effectiveness of resources and capabilities in another area (Grant, 1998: 126)– sounds like freeing up staff to become more involved in strategic aspects of purchasing or to become involved on cross functional teams.

Although I have mentioned e-procurements impact on giving the organisation the ability to focus on their core competencies by redirection of resources I would like to point out that e-procurement did not make this happen but rather enabled it. In other words the realignment of resources was a business decision supported by effective use of technology.

Impact of strategic sourcing on factors influencing competitive advantage

The primary impact strategic sourcing has on the factors that ensure competitiveness can be felt in the area of industry key success factors as outlined in Figure 10. In performing a theoretical assessment of the industry key success factors Porters five forces which have been previously mentioned are often used. My assessment of the impact of strategic sourcing is that it's most significant impact is found on the bargaining power of suppliers. A strategic sourcing will significantly enhance an organisations ability to bargain with suppliers. The desired outcome of any strategic sourcing implementation is to put the organisation in a position where they can improve their bargaining power over suppliers through having useful and relevant information. The end result should be a significant cost savings by procuring materials at a lower cost. Strategic sourcing also rationalises the supplier base and this should also have a positive impact on cost. Once again leveraging information to attain a stronger position with suppliers is a business goal which is supported by technology.

Lastly by effectively integrating the e-procurement and strategic sourcing initiatives (as highlighted in Table 4) the firm will realise the benefit of being able to utilise both a resource based approach and a positioning approach to helping it attain it's competitive advantage.

Ability to sustain competitive advantage

Strategies for attaining a competitive advantage through strategic purchasing initiatives have been outlined. However, it is also appropriate to assess what possibilities e-procurement and strategic sourcing provide for sustaining the competitive advantage gained by firms. Theoretically there a number of ways that an organisation can sustain it's competitive advantage and these are outlined in figure 12.

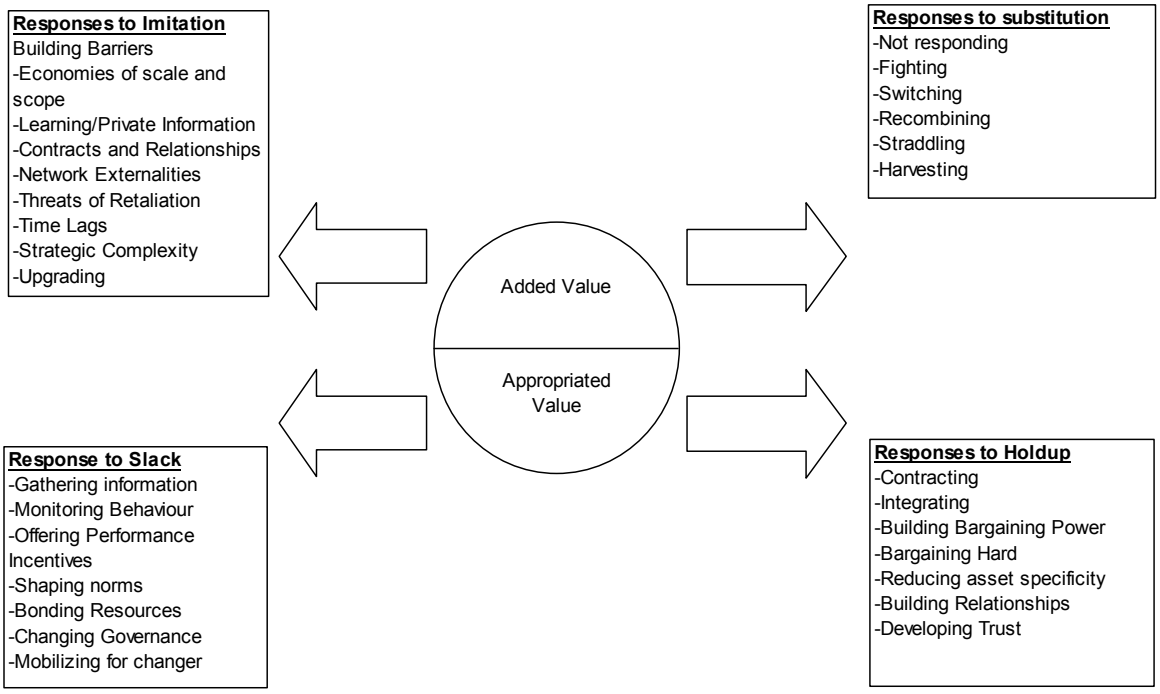

Figure 12: Responding to Threats to Sustainability (Ghemawat, P. 1999. "Strategy and the Business Landscape". Addison Wesley Longman Inc.)

Imitation refers to the ability of competitors to copy the strategy of your company through acquiring the resources and capabilities needed to build the competitive advantage. Although e-procurement can deliver significant benefits to the firm I do not believe it is a strategy that can be used to sustain competitive advantage. Rather, it is something that an organisation has to do just to stay in the game. My reasoning for this is that any organisation can implement e-procurement and obtain the same benefits. There are also very few barriers in place to prevent imitation by other competitors. The real key to obtaining sustainable benefits will be in contracting with suppliers as part of the organisations strategic sourcing initiatives thus resulting in an appropriate response to holdup. **Holdup** threatens to divert value to buyers, suppliers, complementors, or other players in the firm's network. When contracting with suppliers the organisation should focus firstly on ensuring that they obtain contracts that enable them to attain significant cost savings. Secondly, the organisation should try and ensure that they are the supplier first choice i.e. the supplier will supply to them first and competitors later. This will reduce raise barriers to entry for new organisations thinking of coming into the market and make it difficult for existing players to

compete. By rationalising the supply base and focusing on key suppliers the organisation will also have an opportunity to develop mutually beneficial relationships with it's key suppliers.

Framework for development of a competitive purchasing strategy

In attempting to outline how competitive advantage can be attained through various purchasing strategies I believe it is appropriate to suggest a framework that organisations should adopt in order to ensure success in this area (see figure 13). Implementing this framework will ensure that organisations take into account all the factors which affect competitive advantage and then with this understanding will be able to build a purchasing strategy that ensures their success. At each stage of the implementation process technology can be used to enable the organisation to achieve it's desired objective. This framework to some extent reinforces and summarises the principles we have talked about in this section.

The development of an integrated procurement strategy can be divided into 3 major phases

Phase 1: Analyse Inputs

This can be viewed as the *information* gathering and appraisal stage. With technological advances giving us information at our fingertips this task is made all the more easier.

Phase 2: Initiate Activities

Essentially, take action!! This comprises the *identification* and *integration* stages of the strategic planning process. As outlined in Figure 5, information itself is not enough. We have to make timely decisions on the information obtained in order to empower our organisations.

Phase 3: Abolish or avoid inertia

This stage involves *communication* and *implementation* of the strategic purchasing intent, through and by all affected parties. To summarise, ensure that momentum in the efforts is maintained. Part of the framework is also ensuring that there is continuous feedback and then a re-entry back into the cycle, this will ensure continuous improvement which I believe is the essential ingredient to organisations maintaining their competitive advantage today.

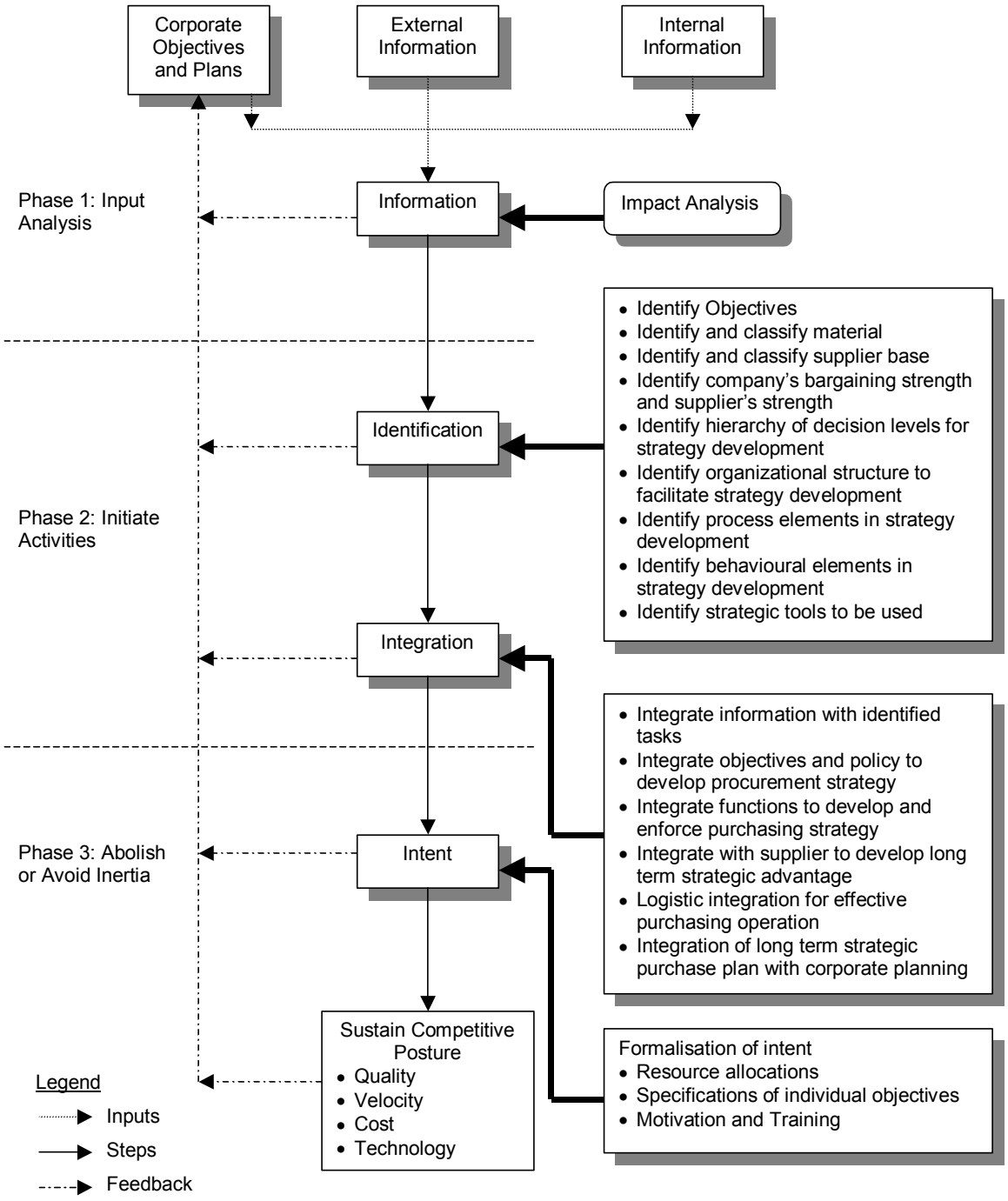

Figure 13: Conceptual Framework for development of a competitive purchasing strategy
(Source: Rajagopal, S. and Bernard, K.N. 1993. *Strategic Procurement and Competitive Advantage*. International Journal of Purchasing and Materials Management, 29(4): 15)

7. Conclusion

In order for organisations to succeed, they must have a strategy. This strategy must be developed and integrated throughout all levels of the company. Such strategies should be developed with knowledge of what it will take to make an organisation succeed within it's given environment and circumstances. In the future it is likely that there will be increasing linkages between supply chain and business unit/company wide strategy as supply chain strategies become more focused and formalised and as firms look for more innovative sources of competitive advantage. As supply chain management becomes more advanced, cost, technology, quality and time drivers throughout the supply chain will become better identified. Performance of the supply chain will be measured more effectively and executive performance will be linked to both internal and external supply chain performance.

To facilitate the integration of cross-enterprise supply chains, strategic purchasing personnel will be required to further develop strategic alliances with key supplier partners and key customers. Part of this work will drive toward full pull systems being deployed with reduced cycle times resulting in models where payments to suppliers throughout the supply chain are more closely linked to actual work performed or usage. Insourcing/outsourcing decisions will be regularly made as part of the strategic sourcing process. A single cross functional executive group will establish what work will be done internally and what will be done internally. This will be a regular fact driven decision process (Carter, Monczka and Swan, 2000)

Analysis of the supply base and coordinating highly skilled cross-functional teams will be critical activities. A highly competent strategic purchasing group, with little bureaucracy, will continue to be integral to the success of most firms.

Pressures on costs will continue to remain high. Competing firms will increasingly be forced to examine cost-cutting opportunities made possible by cooperation and process improvements, including identification and elimination of non-value added costs within and across firms. Achieving the magnitude of costs reductions required to maintain a competitive position will

require increasing cooperation between firms to establish cost drivers and individual/joint cost reductions strategies.

Strategic sourcing will drive supply chain management initiatives. First, supplier assessment metrics will become more detailed and precise as purchasing spends more and more time examining finer and finer levels of detail in performance. Second, the metrics will become more individualised as companies specialise the metrics for individual supplier performance. Companies will create supply strategies to achieve cost and technology advantages. These two trends will increase the level of complexity involved in managing supplier evaluation and assessment systems (Carter, Monczka and Swan, 2000).

Successful integration of technology into the corporate environment still has many challenges, namely security and integration. These challenges will need to addressed by development of standards that everyone at the party can adhere to and implement. Another important part of the equation is people. Technology cannot succeed without programmes to ensure that there is buy-in from the individuals implementing it and hence a balance in the people, technology and process equation.

Apart from large organisations leveraging their buying power I believe that in he future entire communities as well as small to medium size businesses will join the electronic market place. This will all be enabled by internet technologies which is passing power back to individuals. The development of electronic marketplaces will have a significant impact on how we do business and will have the tendency to drive down costs. Those companies and people that can make good use of such technologies will become very profitable in this new era.

8. About the Author

Richard Byrom is an Oracle Applications Consultant with RPC Data, an Oracle Certified Advantage Partner located in Botswana. He has spent the last 7 years consulting with various professional firms within the Southern Africa Region. He has also presented papers at numerous national and international conferences and contributes to leading journals. Richard can be contacted at richard@rpcdata.com

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