The impact of purchasing and supplier involvement on strategic purchasing and its impact on firm's performance

Amelia S. Carr
The Ohio State University, Fisher College of Business, Columbus, Ohio, USA and
John N. Pearson
College of Business, Arizona State University, Campus Box, Tempe, Arizona, USA

Abstract *The focus of this paper is on purchasing and supplier involvement in the firm. Using the resource-base view of the firm, hypotheses are developed concerning purchasing/supplier involvement, strategic purchasing and firm's financial performance. A model of the hypothesized relationships is offered and empirically tested using structural equation modeling. The model is tested using data collected in 1999. Each factor in the model is measured by a number of scale items. Based on the results of confirmatory factor analysis, an overall fit of the model to the data is achieved. Both convergent and discriminate validity is demonstrated. The research findings reveal that the hypotheses tested in the model are supported. Purchasing/supplier involvement has a positive impact on strategic purchasing, and strategic purchasing has a positive impact on firm's financial performance. The paper concludes with some research implications, limitations of the study and suggestions for future research.*

Introduction

Since the mid-1980s, the strategic role of the purchasing function has received considerable attention in academic and trade journals as well as in the popular press. As firms recognized the importance of purchased inputs to their products, the purchasing function's role in the area of strategic planning has increased in importance as well. Interest in purchasing activities increased dramatically in the USA as companies sought to gain a competitive advantage in the evolving global marketplace. The purchasing function was seen as a strategic resource for reaching high quality levels, fast delivery, and cost savings. Companies including General Motors, General Electric, and Black & Decker were able to achieve an improved competitive position through better management of their purchasing activities (Spekman, 1988).

Today, firms need to strategically acquire the materials and services that will enhance their ability to meet their customer's needs. Therefore, the purpose

of this paper is to examine the importance of purchasing and suppliers in the firm. There are two research questions addressed in this paper. First, what is the impact of purchasing/supplier involvement on strategic purchasing? Second, what is the impact of strategic purchasing on firm's financial performance? The answer to these questions will hopefully shed light on the role of purchasing/suppliers in the buying firm. For the purposes of this research the phrases "purchasing" and "purchasing function" may be used interchangeably.

The construct purchasing/supplier involvement refers to the act of integrating purchasing professionals and the firm's key suppliers in the firm's decision-making process with respect to sourcing decisions. An important area for purchasing and suppliers to be integrated is in the firm's product development process (Ansari and Modarress, 1994). The act of participating in cross-functional teams and providing proactive support for the product development process is an indication of purchasing and supplier involvement in the firm.

Strategic purchasing is defined as the process of planning, evaluating, implementing, and controlling highly important and routine sourcing decisions (Carr and Smeltzer, 1997). The purpose is to direct all activities of the purchasing function toward opportunities consistent with the firm's capabilities in order to achieve its long-term goals. Thus, a strategic purchasing function can help to increase the firm's ability to be competitive. The next section provides a review of the strategic purchasing literature.

Strategic purchasing literature

This paper is concerned with the decision process that purchasing is involved in and purchasing activities that impact the firm's achievement of its goals. The activities of the purchasing function should be based on strategies that are aligned with the firm's strategic plans. These strategies should be planned, evaluated, implemented and controlled in order to achieve the long-term goals of the firm (Aguilar, 1992). The goal of a strategic purchasing function is to support the firm's effort to achieve its long-term goals. If purchasing has an integrative role in the firm's strategic planning process, then the purchasing function can be characterized as a strategic function (Ammer, 1989; Reck and Long, 1988).

Nonstrategic compared to a strategic purchasing function

The purchasing function can vary in its contribution to the firm. The function can be described as nonstrategic or strategic. A nonstrategic purchasing function is clerical in nature, reactive to other functions, non-integrative and focuses on short-term issues. A purchasing function is strategic in nature when it is proactive with respect to the firm's goals, integrative and has a long-term focus. A firm's purchasing function may be operating at a nonstrategic level or a strategic or somewhere in between (Reck and Long, 1988).

A nonstrategic purchasing function's contribution to the long-term or strategic goals of the firm may be insignificant, for example, processing orders, or expediting purchase order requests from other departments. A nonstrategic function also implies that purchasing is not an important activity in the firm. When the firm has a nonstrategic purchasing function, purchasing has a low status relative to other major functions in the firm (Ammer, 1989), and conducts routine activities that require no more than a reaction by the purchasing staff to the demands of others in the firm. Furthermore, top management views purchasing activities as nonvalue-added. A nonstrategic purchasing function has low visibility and low relevant purchasing skills with respect to strategic planning and managing the firm's suppliers. Therefore, purchasing personnel provide minimal input to the firm's decision-making process. In general, purchasing is reactive rather than proactive in performing purchasing activities (Keough, 1994).

In a nonstrategic purchasing function, little to no professional development training is offered to increase the skills of purchasing personnel. Purchasing is evaluated on the clerical tasks it performs such as number of orders processed and actual versus projected costs (Reck and Long, 1988). The use of computerized purchasing systems is limited as well. This further minimizes purchasing's ability to perform at a strategic level (Pearson and Gritzmacher, 1990). While an in-depth discussion of why firms choose to have a nonstrategic purchasing function is beyond the scope of this research, some firms may choose to have a nonstrategic purchasing function due to the relatively low dollar value of purchased inputs to their business operations. These firms may even outsource their entire purchasing function or assign it as an additional duty to a staff person.

A strategic purchasing function, in contrast to a nonstrategic purchasing function, is viewed by top management as an important resource of the firm (Keough, 1994). The purchasing function is involved in the firm's strategic planning process. Also, purchasing is treated as an equal to other major functions in the firm (Freeman and Cavinato, 1990), and purchasing proactively seeks opportunities to provide inputs that will have a significantly positive impact on the quality of a firm's product and future growth of the firm. In a strategic purchasing function, purchasing professionals possess the knowledge and skills to perform at a strategic level. They receive professional development training to enhance their skill level. Purchasing performance evaluation measures are qualitative as well as quantitative. For example, purchasing is evaluated on their knowledge of supplier markets, innovation in strategic planning, communication with other functions, and general management skills (Reck and Long, 1988).

In addition, the purchasing function must have access to vital information to make purchasing decisions that are aligned with the firm's strategic goals. In sum, a strategic purchasing function conducts activities that require more proaction on the part of the purchasing staff as it interacts with others within and outside of the firm. Firms may elevate the purchasing function to a

strategic level due to the relatively critical and high dollar value of materials and/or services procured by the firm. In many industries, purchasing spends more than 50 percent of the sales dollars (Leenders *et al.*, 1989). A firm may have unique capabilities in its purchasing function. The purchasing professionals employed in a strategic purchasing function are considered resources of the firm. From a theoretical perspective, a firm's resources can be used to support its capabilities so the firm can achieve a competitive advantage. The next section introduces the resource-based view to highlight the importance of the firm's resources.

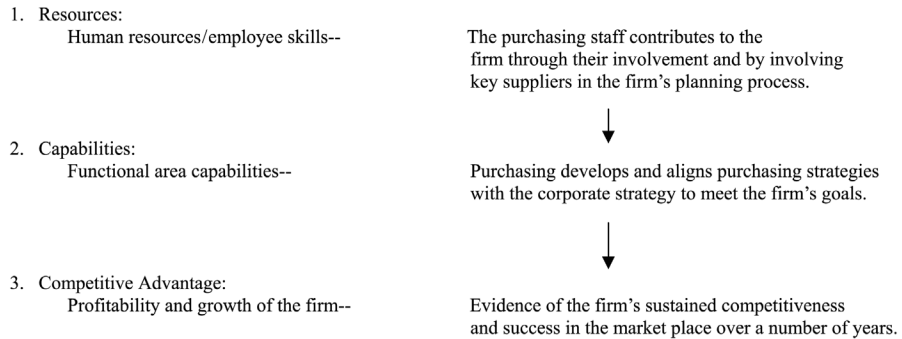## Theory and research hypotheses
This section focuses on the resource-based view theory in an effort to place the role of the purchasing function in the firm in a theoretical context. The resource-based view emphasizes the strategic importance of a firm's resources and capabilities. The resources are defined in terms of physical and human resources including the knowledge and experience of the management team (Penrose, 1959). Firms can earn profits by capitalizing on the unique attributes of their resources. However, a firm's resources must be strategically managed for a firm to maintain its competitive advantage (Aaker, 1995).

Porter (1990) noted that resources are valuable because they permit the firm to conduct business activities that lead to competitive advantages in specific markets. Prahalad and Hamel (1990) argue that a competitive advantage begins by building core competencies that are superior to the competitor's core competencies, and Barney (1991) notes that a firm must achieve a sustainable competitive advantage that competitors cannot simply copy. According to Barney (1991), resources are skill based and people intensive. By defining firms in terms of their resources, the resource-based perspective emphasizes the fact that there are some capabilities that can only be developed within the firm (Oliver, 1997).

Hart (1995) presents a framework supported by the strategy and resource-based view literature. Hart's (1995) model of the resource-based view shows that procurement, technology, design, production, distribution and service are capabilities of the firm. Further, Hart (1995) refers to Porter's (1980) model of competitive advantage. In Porter's (1980) model, buyers and suppliers are two of the driving forces of competitiveness in an industry. Thus, the model by Hart (1995) alludes to the notion that the purchasing function can be an important capability of the firm.

Figure 1 was adapted from Hart's (1995) framework to show how strategic purchasing fits within the resource-based view theory. Under the heading resources, all human resources of the firm are included to represent the employees of the firm. Purchasing employees are a part of this category as well. The more skills each employee possesses, the more valuable the employees are as a resource to the firm. Under the heading capabilities, the purchasing function's capabilities are included to indicate that the activities performed by purchasing, as well as the other functional areas, contribute to a firm's total

1. Resources:
   Human resources/employee skills--

   The purchasing staff contributes to the
   firm through their involvement and by involving
   key suppliers in the firm's planning process.

2. Capabilities:
   Functional area capabilities--

   Purchasing develops and aligns purchasing strategies
   with the corporate strategy to meet the firm's goals.

3. Competitive Advantage:
   Profitability and growth of the firm--

   Evidence of the firm's sustained competitiveness
   and success in the market place over a number of years.

Source: Adapted from Hart (1995)

capabilities. A firm can sustain its competitive advantage as long as it has unique capabilities that exceed its competitors. Unique purchasing activities, that are strategically oriented toward accomplishment of the firm's goals, help the firm to sustain its competitive advantage (Ramsey, 2001). Many of these strategically oriented purchasing activities pertain to supply management and cost management efforts. Under the heading competitive advantage, measures of firm's financial performance, such as profitability and growth, are included because a competitive advantage can be sustained if it is successful over the long term.

A strategic purchasing function can help a firm to sustain its competitive advantage in a number of ways. First, it provides value in the area of cost management. Effective management of the cost of inputs to production saves the firm dollars that go straight to the firm's bottom line profits. Second, it provides the firm valuable information concerning supply trends that will enable the firm to make better decisions and achieve its goals. Third, it establishes close relationships where appropriate with suppliers to improve the efficient quality and delivery of materials (Hogan and Armstrong, 2001). Thus, a strategic purchasing function is one that fits the needs of the firm and strives for consistency between its capabilities and the competitive advantage being sought by the firm (Rajagopal and Bernard, 1993).

While work to date has considered several aspects of the resource-performance relationship (Morash and Lynch, 2002), further investigation is needed concerning the role of purchasing/supplier involvement in the planning process. More specifically, there is a need to better understand how purchasing/supplier involvement impacts strategic purchasing. This study will use structural equation modeling to examine the relationships between purchasing/supplier involvement and strategic purchasing. This is the first study to examine this relationship in a structural equation model along with firm's financial performance. The next section addresses the research hypotheses.

The research hypotheses
The first research question concerns the relationship between purchasing/
supplier involvement (PSI) and strategic purchasing (SP). Previous research
explored ways in which both top management and other organizational
members can play roles that increase the capabilities of the firm (Hart and
Banbury, 1994). Firms that can combine top management leadership with deep
employee involvement in strategic decision making appear to be more effective
than firms lacking this ability. Thus, purchasing professionals should be
involved in the firm's development of strategy (Reid, 1990). Farmer (1981) notes
that few organizations allow the purchasing function to make significant
contributions to strategy development. The main reason for the lack of
strategic contribution emanated from the belief that, in many companies,
purchasing personnel should perform clerically oriented jobs. It is noted in the
literature that purchasing can strategically contribute to the firm; but, when
purchasing is not involved in decision making, it may adversely affect their
ability to perform (Ellram and Pearson, 1993). During a workshop concerning
the failure of new product development, Farmer (1981) found that the top
managers overlooked the importance of involving the purchasing function.
Farmer noted that top management changed the role of purchasing to mirror
that of marketing to avoid future sourcing problems with respect to new
product development. This action by management elevated the purchasing
function to a more strategic level.

Purchasing's participation on a new product development team provides
early access to new product information. This allows purchasing an
opportunity to identify qualified suppliers for the new product (Ellram and
Pearson, 1993). Cross-functional teams can increase purchasing's effectiveness.
Cross-functional teams include the use of a committee, task force, or a group of
people from a variety of functional areas to achieve a common goal. Interaction
between purchasing and marketing often occurs as part of new product
development teams. Increasing the interaction between marketing and
purchasing should improve purchasing's ability to strategically plan based on
projected sales forecasts (Williams *et al.*, 1994). Also, McGinnis and Vallopora
(1999a) found that purchasing and supplier involvement may help to improve
manufacturing processes as well.

Purchasing's role in new product development allows purchasing to
strategically research sources that yield quality parts and services during the
production process (Murphy, 1997). Purchasing's involvement in the new
product development process must begin at the time a new product idea has
been identified as worthy of consideration, and continue until the product
reaches the market (Mendez and Pearson, 1994). Purchasing's involvement in
product development earlier in the design stage increases procurability of
materials to make the product. According to General Motors, 70 percent of the
cost associated with manufacturing a truck is determined in the design stage.
Thus, the effect of purchasing in overall product design with respect to costs,
quality and availability of parts and materials is significant (Dowlatshahi,

1992). However, Handfield *et al.* (1999) caution that supplier integration is most successful when there is a formalized process that evaluates supplier capabilities.

Purchasing usually leads the concurrent engineering team in the screening and evaluation phase of supplier selection, and choosing the supplier as a team member (O'Neal, 1992). Suppliers are critical team members who assist through initial product design suggestions, technology contributions and quality assurance considerations (Mendez and Pearson, 1994). However, some firms do not include suppliers in product development. These firms may not desire to share information with suppliers about the products they plan to produce. They may believe that involving suppliers early in product development obligates them to purchase from the supplier. While an in-depth discussion concerning why firms do not involve suppliers in their product development is beyond the scope of this paper, it is important to note that leading edge firms, such as Harley Davidson and Chrysler, do involve suppliers early in their new product development process (Fitzgerald, 1997; *Electronic Business*, 1993). The suppliers help these companies speed up the product development cycle and offer valuable insights on the design of the new product. In sum, allowing purchasing professionals and suppliers to work together from product conception to final design can elevate the strategic role of purchasing in the firm. Thus, the first research question relates to the following hypothesis:

> *H1*. Purchasing/supplier involvement has a positive impact on strategic purchasing in the firm.

The second research question concerns the relationship between strategic purchasing (SP) and firm's financial performance (FP). As previously mentioned, the resource-based view of the firm articulates the relationships among a firm's resources, capabilities, and competitive advantage. Hamel and Prahalad (1989, 1994) emphasize the importance of "competing for the future" as a neglected dimension of competitive advantage. According to this view, the firm must be concerned not only with profitability in the present and growth in the medium term, but also with its future position and source of competitive advantage. This view requires a strategic plan to determine how the firm will compete when its current strategy configuration is either copied or made obsolete.

Bracker *et al.* (1988) found that strategic planning processes that are well developed, properly implemented, and controlled contribute to a firm's success, with regard to overall financial performance. Strategic purchasing is derived from the concept of strategic management. Once the purchasing function is aware of the firm's strategic goals, then it can begin the process of developing purchasing strategies. Further, strategic purchasing implies that the purchasing strategies are aligned with the firm's strategic plans. When a purchasing function is elevated to a strategic level, it is in a better position to contribute to the firm's performance (Carr and Pearson, 1999; Reck and Long, 1988). The second research question relates to the following hypothesis:

H2. Strategic purchasing has a positive impact on firm's financial
performance.

There are three constructs in the model shown in Figure 2. The model shows
that purchasing/supplier involvement has a positive impact on strategic
purchasing; and strategic purchasing has a positive impact on firm's financial
performance.

Research methodology

The data collection took place in 1999. The data collection employed a random
sample of purchasing executives across various industries to achieve a general
understanding of the factors in the model. A survey methodology was used to
gather data pertaining to the research questions and hypotheses described in
the previous section. The unit of analysis was the firm. This section describes
the survey questionnaire and the samples.

Survey

In an effort to increase the response rate, a modified Dillman's (1978) Total
Design Method was used. All mailings were sent via first class mail. The initial
mailing included individual cover letters, surveys, and postage-paid return
envelopes. Reminder postcards were sent to all potential respondents one week
after the initial mailing. For those who did not respond three weeks after the
initial mailing, a second cover letter and survey was mailed. Due to funding
and time constraints, only three mailings were sent.

The survey questionnaire used scales from previous literature (Carter and
Narasimhan, 1993; Bracker and Pearson, 1986; Hendrick and Ellram, 1993;
Carr, 1996). The survey included multiple scale items for each of the factors. A
total of 800 surveys were mailed and 14 of them were returned undelivered.
From the remaining 786 surveys mailed, a total of 175 usable responses were
received which represents a response rate of 22 percent. A test for nonresponse
bias was performed at the conclusion of the data collection. A comparison was
made between those respondents who responded immediately with those who
responded after follow-up steps were implemented (Armstrong and Overton,
1977). Univariate *t*-tests were performed on randomly selected survey items.
The univariate *t*-tests yielded no statistically significant difference among the
early and late respondents.

+0.6089
t=6.151

+0.2857
t=3.179

Purchasing/Supplier
Involvement (PSI)

Strategic
Purchasing (SP)

Firm's Financial
Performance (FP)

Figure 2.
Model of the impact of
purchasing/supplier
involvement on strategic
purchasing and its
impact on firm's
financial performance

Sample

The sampling frame consisted of US firms included in the National Association of Purchasing Management (NAPM) membership database. This membership is made up of over 33,000 members with over 6,000 at the Vice President/ Director level. NAPM is a professional development organization for purchasing professionals. The individual members represent small, medium, and large companies across service and manufacturing industries. The sample for this study consists of randomly selected firms represented by purchasing professionals with titles such as purchasing manager, director of purchasing, vice president of purchasing, and vice president of materials management. Each of these purchasing professionals served as a key informant. These individuals were chosen as the respondent group because they are informed about the subject matter in the survey instrument, especially strategic purchasing and the firm's financial performance.

In an effort to control for industry effect regarding the factor strategic purchasing, a one-way analysis of variance (ANOVA) was conducted to compare nine industries. Each industry included in the comparison was represented by a minimum of six firms. The analysis tested if there was a significant difference between the industries for the factor strategic purchasing (SP). The factor SP was selected because it was expected that some industries emphasized strategic purchasing more than others did. The results of the test reveal no significant difference for the industries tested ($F(8, 61) = 1.30$, $p = 0.26$).

The data set of 175 firms was used to conduct statistical analysis and test the hypothesized relationships in the model (see Figure 2). Objective data for firm's financial performance (FP) was obtained from a published financial database (Computstat) to compare to the subjective data provided by the respondents to the survey. The respondents were asked about their firm's performance over the past three years on the survey. Thus, the objective data for US firms was obtained for three consecutive years (1998, 1997, and 1996) to establish an increasing or decreasing trend in firm's performance from the objective data. The variables return on investment (ROI) and net income before taxes were used to measure firm's financial performance. Objective data was available for 41 of the firms. The objective data was compared to the subjective survey data. The subjective data matched the objective data at least 71 percent (29 firms) of the time for both variables. In general, objective data and subjective data are difficult to match exactly. Based on previous studies that attempt to compare objective data and subjective data, a 71 percent match between the two types of data is within reason.

Demographics

The respondents to the survey consisted primarily of executives at the director and vice president level. The sample included 94 directors of purchasing (54 percent), 24 vice presidents of purchasing (14 percent), 10 vice presidents of materials management (6 percent), 17 directors of materials management (10 percent) and 27 others (15 percent). Three firms did not report this information.

On average, 14 percent of the purchasing employees in the participating firms have technical backgrounds, 15 percent have graduate degrees, and 46 percent have at least a bachelor's degree.

The respondents worked for companies from a variety of industries. Industries most frequently represented were miscellaneous manufacturing with 13 responses (7.4 percent), food with 11 responses (6.2 percent), financial with eight responses (4.5 percent), electronics with seven responses (4 percent), pharmaceutical with 7 responses (4 percent), health care with seven responses (4 percent), and telecommunications with seven responses (4 percent). The combined industries represented 84 manufacturing and 85 non-manufacturing firms (six firms did not report this information).

Firm's size was measured in terms of gross sales dollars. On average, firms in the sample had $100 million gross sales. The distribution of gross sales per firm revealed that 62 firms (35.4 percent) had gross sales below $100 million, 33 firms (18.9 percent) had gross sales between $100 million and $500 million, and 75 firms (42.9 percent) had gross sales over $500 million. Five respondents (2.8 percent) did not provide their firms' gross sales dollars. The majority of the firms were small to medium in size based on gross sales dollars.

On average, firms in the sample spent 44 percent of their sales dollars on materials and services. On average, 70 percent of the purchase dollars were spent on goods and 28 percent were spent on services. On average, 75 percent of the firm's purchase dollars were handled by the purchasing function. The next section presents the data analysis.

Data analysis
The data analysis begins with confirmatory factor analysis to demonstrate adequate model fit and establish convergent and discriminant validity for the underlying variables and their respective factors in the model. Next, structural equation modeling is used to test the hypothesized relationships in the model.

Confirmatory factor analysis
Confirmatory factor analysis was conducted using the measurement portion of the model. The SAS® statistical procedure PROC Calis was used to analyze the data. The measurement portion of the model allowed all of the factors in the model to covary. A number of indices were used to determine if the fit of the data to the model is adequate. The chi-square to degrees of freedom ratio needed to be less than 2.0. Bentler's (1989) Comparative Fit Index (CFI), Bentler and Bonett's (1980) Non-normed Index (NNFI), and Goodness of Fit Index (GFI) needed to be 0.90 or above. In addition, all of the indicator variables (scale items) for each factor in the measurement model needed to have a *t*-statistic of 2.0 or greater. Also, it was important that no standard errors associated with the *t*-statistics are near zero (such as 0.0003).

For this study, the initial scales for the factors in the model included six variables for PSI, ten variables for SP and five variables for FP. During the confirmatory factor analysis it was expected that some of the variables would

be dropped. It was desired to maintain at least three variables per factor. A total of 13 out of the 21 variables were kept in the final model. This resulted in at least four variables for each factor in the model and an adequate fit of the model. The factors and underlying variables included in the model are shown in Table I. The correlation matrix for the indicator variables that were included in the model is shown in Table II.

An adequate fit of the data was achieved for the measurement portion of the model. The chi-square to degrees of freedom ratio = 1.69, the CFI = 0.9519, NNFI = 0.9395, GFI= 0.9099, all of the $t$statistics for the indicator variables were greater than 3.291, significant at $p < 0.001$, and no standard errors were near zero. Table III shows the factor loading, standard error, $t$statistic, and R-squared for each manifest variable in the model. The paths in the model are all significant with a $t$statistic greater than 2.00, and p-values less than 0.05. The R-squared indicates how much of each variable's variance is explained by its respective underlying factor. The R-squared of the manifest variables range for the model is from 0.23 to 0.87. The R-square values are acceptable based on the R-square values of previous research studies in this area. The coefficient alpha level for each factor was between 0.73 and 0.87 as shown in Table III.

In the measurement portion of the model, all of the factors are allowed to covary. The factors PSI, SP and FP are all significantly related with each other at $p < 0.05$. A test is conducted for convergent and discriminant validity. Convergent validity is when different variables are used to measure the same construct and the variables are strongly correlated to each other, while discriminant validity is when different variables are used to measure different constructs, and the correlations between the variables of different constructs are relatively weak. The fit of the model to the data is supported by evidence of convergent and discriminant validity for the factors in the model. Convergent validity is important to the discussion of model fit because it establishes that the constructs in the model can be adequately measured. If a construct can be measured, then a relationship can be established between it and another construct. Convergent validity is measured by reviewing the t-values of the factor loads. If all t-values are significant, this shows that all indicators are effectively measuring the same construct (Anderson and Gerbing, 1988).

Discriminant validity is important to the discussion of model fit because it establishes that two or more constructs are separate and distinct from one another. If constructs are separate and distinct from one another, then it can be established whether or not a predictive or causal relationship exists between them. Discriminant validity is shown by the confidence interval of 2 standard errors around the correlation between each respective pair of factors in the model shown in Table IV. If the confidence interval does not include 1.0, then discriminant validity is demonstrated (Anderson and Gerbing, 1988). Based on the information in Table IV, none of the confidence intervals include 1.0. Since none of the confidence intervals include 1.0, there is discriminant validity among the factors in the model.

Factors	Underlying variables			Scale		
Strategic purchasing (SP)		Strongly disagree				Strongly agree
	Var 1 – Purchasing's long-range plan is reviewed and adjusted to match changes in the company's strategic plans on a regular basis	1	2	3	4	5
	Var 2 – Comprehensive purchasing strategies have been developed to support the company's strategies	1	2	3	4	5
	Var 3 – Purchasing consistently provides input to top management on future supply needs and constraints	1	2	3	4	5
	Var 4 – My company has a formal business planning process	1	2	3	4	5
Purchasing/supplier involvement (PSI)		Strongly disagree				Strongly agree
	Var 5 – Key suppliers are involved in the design process of our products	1	2	3	4	5
	Var 6 – Purchasing develops innovative strategies to support new product development	1	2	3	4	5
	Var 7 – Purchasing is involved in new product development	1	2	3	4	5
	Var 8 – Purchasing participates on cross-functional teams	1	2	3	4	5
	Var 9 – Our key suppliers are involved in our strategic planning process	Never	Sometimes			Always
		1	2	3	4	5
Firm's financial performance (FP) over the past three years		Decreased significantly		Remained constant		Increased significantly
	Var 10 – Return on investment	1	2	3	4	5
	Var 11 – Profits as a percent of sales	1	2	3	4	5
	Var 12 – The firm's market share	1	2	3	4	5
	Var 13 – The firm's net income before taxes	1	2	3	4	5

Table I.
Factors, variables and
scales items

Var	Var 1	Var 2	Var 3	Var 4	Var 5	Var 6	Var 7	Var 8	Var 9	Var 10	Var 11	Var 12	Var 13
Var 1	1.00												
Var 2	0.501	1.00											
Var 3	0.385	0.490	1.00										
Var 4	0.389	0.430	0.310	1.00									
Var 5	0.345	0.247	0.202	0.303	1.00								
Var 6	0.358	0.240	0.344	0.205	0.504	1.00							
Var 7	0.267	0.258	0.311	0.387	0.546	0.673	1.00						
Var 8	0.280	0.405	0.381	0.314	0.291	0.377	0.358	1.00					
Var 9	0.294	0.299	0.287	0.326	0.510	0.509	0.548	0.309	1.00				
Var 10	0.158	0.129*	0.228	0.256	0.229	0.118*	0.133*	0.262	0.182	1.00			
Var 11	0.085*	0.124*	0.210	0.228	0.212	0.166	0.217	0.261	0.175	0.756	1.00		
Var 12	0.171	0.085*	0.098*	0.190	0.107*	0.042*	0.130*	0.153*	0.117*	0.438	0.499	1.00	
Var 13	0.117*	0.152*	0.175	0.241	0.226	0.035*	0.142*	0.158	0.181	0.795	0.826	0.549	1.00
Mean	2.79	3.37	3.53	3.66	3.15	3.09	3.15	3.79	2.61	3.62	3.62	3.64	3.55
S.D.	1.40	1.19	1.24	1.25	1.12	1.10	1.22	1.13	1.04	1.04	1.01	1.01	1.07

Notes: $n = 159$, 16 observations dropped from the analysis due to missing data; *Indicates the correlation is not significant at $p < 0.05$

Table II.
Means, standard
deviation and
correlation for manifest
variables

Indicator variables and their underlying factors	Factor loads	Standard error	t-value	R-squared	Standardized Cronbach coefficient alpha
Strategic purchasing					0.7399
Var 1	0.9330	0.1131	8.2527	0.4397	
Var 2	0.8677	0.0947	9.1579	0.5237	
Var 3	0.7798	0.1013	7.6974	0.3911	
Var 4	0.7440	0.1027	7.2450	0.3531	
Purchasing/supplier involvement					0.7997
Var 5	0.7627	0.0848	8.9971	0.4561	
Var 6	0.8610	0.0792	10.8645	0.6050	
Var 7	1.0029	0.0863	11.6218	0.6666	
Var 8	0.5507	0.0914	6.0221	0.2347	
Var 9	0.7142	0.0779	9.1660	0.4694	
Firm's financial performance					0.8768
Var 10	0.8901	0.0684	13.0210	0.7211	
Var 11	0.8993	0.0648	13.8858	0.7833	
Var 12	0.5767	0.0762	7.5629	0.3226	
Var 13	1.0026	0.0659	15.2217	0.8765	

Notes: $n = 159$, all t-values are significant at $p < 0.001$.

Table III.
Factor loading, standard errors, t-values, R-squared

Correlated factors	t-value	Confidence interval: 2 standard errors around the correlation
PSI SP	8.55	$0.7530 \leq 0.6104 \leq 0.4678$
PSI FP	2.84	$0.4111 \leq 0.2413 \leq 0.0715$
SP FP	3.16	$0.4586 \leq 0.2812 \leq 0.1038$

Note: All t-values are significant at $p < 0.05$. Discriminant validity does exist for each combination of factors shown in the table

Table IV.
Discriminant validity

Structural equation modeling

The structural portion of the model differs from the measurement portion because only exogenous factors in the model are allowed to covary. Also, the variances are estimated for the exogenous factors but not for the endogenous factors. The same indices are used to determine if the fit of the data to the model is adequate. For the structural portion of the model, an adequate fit is achieved. The chi-square to degrees of freedom ratio = 1.69, the CFI = 0.9502, NNFI = 0.9393, GFI = 0.9065, the indicator variables are the same as in the measurement model. The paths in the theoretical model are reviewed next.

In the structural portion of the model, each path with a single headed arrow is estimated by a structural equation. Path coefficients for each path between two factors in the model are shown in Figure 2. Note that the t-values for the path coefficients between the factors PSI and SP, and SP and FP are greater than 2.00. Therefore, these paths in the model are positive and significant at $p < 0.05$.

	Chi-square	df	Chi-square/df ratio < 2.0***	Probability level	CFI****	NNFI****	GFI****
Measurement model							
Null model	964	78	No	0.0000			
Maintained factor analysis model	104	62	Yes	0.0006	0.9519	0.9395	0.9099
Structural analysis model							
Null model	964	78	No	0.0000			
Full maintained model	108	64	Yes	0.0005	0.9502	0.9393	0.9065
H1 path deleted	151	66	No	0.0001	0.9038	0.8864	0.8853
H2 path deleted	120	66	Yes	0.0001	0.9384	0.9271	0.8958
*Path added – PSI FP	107	63	Yes	0.0004	0.9498	0.9379	0.9071

Table V.
Measures of goodness of fit for measurement and structural model

Notes: $n = 159$; *The path added was not significant at $p < 0.05$; ***Chi-square/df ratio < 2.0 (James, Mulaik and Brett, 1982); ****Incremental fit indices for CFI, NFFI, GFI values > 0.90 indicate an adequate fit of the data to the model (Bentler, 1989; Bentler and Bonett, 1980)

The difference between the chi-square for the measurement model and the structural model is 4 and the difference between the degrees of freedom for both models is 2. Thus, the chi-square difference test reveals that there is no significant difference between the fit provided by the measurement model and the structural model since a difference of 4 is less than the critical value 13.81 ($p < 0.001$). The results of the chi-square difference test supports the structural model's predictions concerning the hypothesized relationships in this study (Hatcher, 1994). Goodness of fit is determined by comparing the structural model (full maintained model) to alternative models. One examines alternative models by sequentially deleting or adding paths in the structural model. The measures of goodness-of-fit for the structural model are shown in Table V. In comparing the structural model to the alternative models with deleted paths, the structural model is a significantly better fit than the models with the paths for *H1* or *H2* deleted ($p = 0.001$). It is important to note that the additional path in the alternative model is not significant.

Control for size

Previous studies indicated that larger firms have more resources than smaller firms do (Boyer *et al.*, 1996), and it was believed that larger firms emphasized the strategic importance of purchasing more than smaller firms did (Carr and Pearson, 1999). Since this study included firms of various sizes, an attempt was made to control for firm's size. The firms' gross sales dollars were used to determine firm size. The sample was sorted based on gross sales and split into two groups. Of the 175 firms, 16 firms were dropped during the analysis due to missing data. This resulted in 77 larger firms and 82 smaller firms to conduct

the analysis. Using SAS Proc Calis, the model for each group was compared to examine the hypothesized relationships in the model.

The data from both the larger firms and the smaller firms do not actually achieve a good fit to the model. The results of the analysis reveal that three of the indices measured are at least 0.90. However, the GFI is at slightly less than 0.90. This may be due to the limited number of observations in each group to analyze the hypothesized relationships with respect to smaller and larger firms.

The indices for the smaller firms are chi-square/df = 1.41, CFI = 0.9401, NNFI = 0.9270, GFI = 0.8601. The indices for the larger firms are chi-square/df =1.39, CFI = 0.9454, NNFI = 0.9335, GFI = 0.8552. Also, the paths between PSI and SP, and SP and FP are significant for both the small and large firms. Figures 3(a) and 3(b) show the models for larger and smaller firms. Based on this analysis, it appears that involving suppliers and purchasing in strategic planning activities tends to help the purchasing function to become more strategic. The hypothesized relationships in this study may apply to both the smaller and larger firms. This is an interesting result because a prior study did not find support for the relationship between strategic purchasing and firm's financial performance in smaller firms (Carr and Pearson, 1999). A possible explanation could be that the purchasing organizations represented by firms in this study are more proactive and further developed than firms examined in prior research. Another explanation could be the fact that this study includes the factor PSI. PSI was found to have a direct influence on SP and an indirect influence on FP.

Discussion

The data supports all of the hypothesized relationships depicted in the model. All of the path coefficients are positive and significant and are shown in Figure 2. Each of the hypotheses is discussed below.
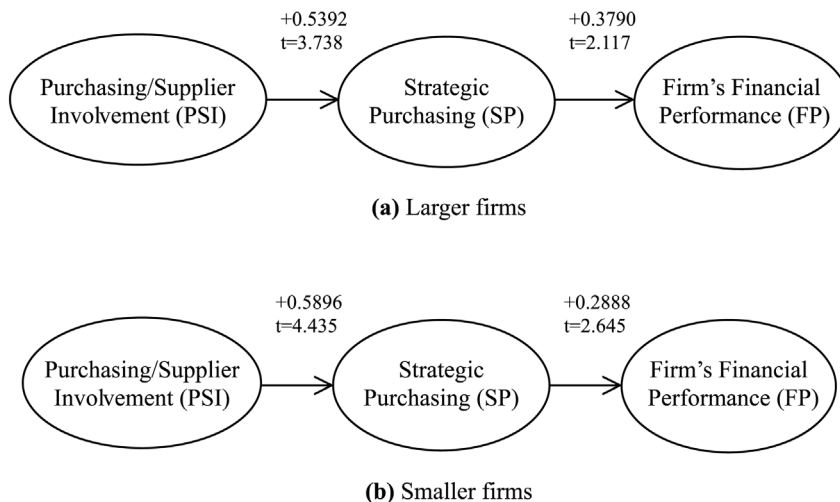

(a) Larger firms

(b) Smaller firms

Figure 3.
Model of the impact of purchasing/supplier involvement on strategic purchasing and its impact on firm's financial performance

H1

H1 indicates that purchasing/supplier involvement is positively related to strategic purchasing. The path in the model between PSI and SP is positive and significant (path coefficient = 0.6089, standard error = 0.0990, *t*-value = 6.1507). The *R*-square for the factor SP = 0.4070. Thus, about 41 percent of the variance is accounted for in the factor SP.

Carr and Smeltzer (1997) examined other factors that had a covariance relationship with SP but did not report the amount of variance accounted for in a path relationship as demonstrated in this study between PSI and SP. Based on the results of this study, as purchasing becomes involved in the company's strategic planning activities such as product development, it is more capable of making strategic purchasing decisions. Strategic purchasing involves having a formal business planning process, reviewing and adjusting purchasing's plans to match changes in company plans, consistently providing input to top management on future supply needs and constraints, and developing purchasing strategies to support company strategies. Strategic purchasing is extremely important when sourcing decisions are required for new products. Involvement allows purchasing to better understand what materials are required to make the product and when the materials will be needed. Moreover, it allows purchasing to involve the supplier early in the product development process. The results include quicker and better decisions with respect to supply options (Ansari and Modarress, 1994). Also, purchasing's involvement allows purchasing to ensure the suppliers are capable of designing and manufacturing the components for new products. Thus, purchasing's involvement enables it to play a more strategic role in the firm.

H2

H2 states that strategic purchasing is positively related to firm's financial performance. The path in the model between SP and FP is positive and significant (path coefficient = 0.2857, standard error = 0.0898, *t*-value = 3.1799). The *R*-square for the factor FP = 0.0918. Thus, about 9 percent of the variance is accounted for in the factor FP.

Based on this study, firm's financial performance is measured in terms of return on investment, profits as a percent of sales, firm's market share, and net income before taxes over a given time period. The factor strategic purchasing does have a significant relationship with the factor firm's financial performance. Therefore, this study demonstrates that strategic purchasing can add value to the firm. As a result of this study, purchasing professionals can further demonstrate that the strategic role of purchasing should not be ignored. Rather, increased emphasis on strategic purchasing in the firm can lead to some improvements in the firm's financial performance. Many firms recognize the value added of strategic purchasing to the firm. In these firms, purchasing is involved in the firm's strategic sourcing decisions with respect to product development, and the purchasing function is elevated to a strategic level. In addition, there is a positive but not significant causal path relationship between

PSI and FP. This was noted in Table V by the addition of a path between PSI and FP. Thus, it appears that SP mediates the relationship between PSI and FP. Firms may benefit by involving purchasing and suppliers in strategic planning activities to increase strategic purchasing.

In a study by Narasimhan and Das (2001), it was noted that purchasing integration could lead to higher performance. In their study, purchasing integration refers to the integration of strategic purchasing practices and goals with the firm's objectives. Their definition of purchasing integration is similar to how strategic purchasing is defined in this study. Therefore, this study supports previous research concerning the integration of purchasing and strategic purchasing as they are related to firm's performance.

Managerial implications and summary

As a result of this study we have a better understanding of how purchasing and suppliers can impact strategic purchasing. The study is important to management because it provides management with some understanding of the impact of increasing purchasing's strategic role in the firm. The factors PSI, SP and FP are significantly ($p < 0.05$) related as shown by the measurement model. While PSI does not directly influence FP as shown in the structural model for this study, this study does show that there is an indirect influence of PSI on FP. This study is an extension of other studies that focus on supplier involvement in product development. One study indicated that supplier involvement is related to a perceived increase in contribution by the supplier; while another study indicated that purchasing and supplier involvement does affect new product success (McGinnis and Vallopora, 1999b; Hartley *et al.*, 1997). Thus, involving purchasing/suppliers in the planning process for product development is important and may help firms to increase their performance. Based on this study, the directed influence of strategic purchasing and indirect influence of purchasing/supplier involvement accounted for 9 percent of the variance associated with the factor firm's financial performance. This is a small percent of the variance associated with the factor FP, so management should recognize that involving purchasing and suppliers in strategic sourcing decisions and having a strategic purchasing function are not the only purchasing related factors that impact the firm's financial performance (Carr and Pearson, 1999). However, management should note that these factors do have some impact and should not be ignored.

This paper serves to fill a gap in the purchasing literature with respect to the areas of purchasing/supplier involvement, strategic purchasing, and firm's financial performance. While there is much written about these factors based on conceptual and case study research, this study is unique. It is the first attempt to test the relationships between PSI and SP in a structural equation model.

The boundaries of this study include many industries as shown by the test for industry effect. The result of this test indicates that no difference exists across the industries tested with respect to strategic purchasing. Also, the test

to control for firm size indicated that the factor strategic purchasing has an impact on firm's financial performance in both small and large firms.

From a manager's perspective, there are benefits associated with elevating the purchasing function from a nonstrategic to a strategic function. In many firms, these benefits include increased opportunities for the purchasing function to contribute to the long-term profitability of the firm. Leading edge firms seek to have purchasing functions that are strategic. These firms understand the link between strategic purchasing and achieving the firm's goals. Similar to the strategic involvement of marketing and manufacturing in decision making, purchasing must be involved in strategic planning as well. While there are some firms that do not emphasize strategic purchasing, this study does not explore the reasons. It is believed that most firms recognize the importance of strategic purchasing because they spend a large percentage of their sales dollars on purchased inputs. Also, some researchers indicate that uncertainty is a cause for firms to pay more attention to the role of their purchasing function in the firm. Whatever reason firms give for emphasizing strategic purchasing, this study supports the premise that purchasing/supplier involvement should be considered when attempting to elevate the purchasing function to a strategic level.

As with all studies, this research has some limitations. When a random sample is drawn from a single database, the research may not be generalized beyond that database. In an effort to overcome this limitation, the sample for this study was compared to the population of US firms reported by the 1990 Census Report (Bureau of the Census, 1989). The sample was found to be similar to the population of US firms with respect to the variety of industries and the distribution of firm's gross sales dollars. The limitation of response bias due to non-response is always a concern with mail surveys. For this research, a comparison was made between early and late respondents to assess non-response bias. No non-response bias was found for variables tested in this study. However, caution should be taken when attempting to generalize the results of this study beyond the sampling frame.

One may suggest that the respondents may have been biased in responding the survey questionnaire. However, a comparison was made with the objective data on firm's performance and the subjective data collected from the respondents. Based on the comparison of objective and subjective data, it was found that the data collected from the respondents was reasonably reliable. Another possible limitation is the fact that a number of survey items were dropped during the confirmatory factor analysis. The goal in scale development was to keep a minimum of three items per scale recognizing that some items would be eliminated. This goal was met. The factors in the model all had more than four scale items. One might consider it a limitation that more factors were not included in this study. It is recognized that there may be other factors that contribute to strategic purchasing and firm's performance, but it was beyond the scope of this paper to identify every factor that might directly or indirectly influence these two factors.

Future research could attempt to extend this study by seeking to understand why some firms do not include purchasing and suppliers in strategic sourcing decisions. A more in-depth study to better understand the role of strategic purchasing in small firms would be of interest since it appears from this study that some small firms do emphasize the strategic role of purchasing. Another area for future research is to examine the impact of supplier involvement in the buying firm from the supplier's perspective. In addition, this study did not examine the alignment of other functional areas' strategies with the purchasing function's strategy. Future research could examine the relationship between functional integration within the firm and firm's performance.

In sum, purchasing plays a vital and important role in the success of many firms. Based on this study, management should better understand the importance of purchasing/supplier involvement, strategic purchasing and its relationship with firm's financial performance. Through continued research in this area, more firms will better understand how to elevate the purchasing function and increase its role in the firm.

References

Aaker, D.A. (1995), *Developing Business Strategies*, 4th ed., John Wiley and Sons, New York, NY.

Aguilar, F.J. (1992), *General Managers in Action: Policies and Strategies*, Oxford University Press, New York, NY.

Ammer, D.S. (1989), "Top management's view of the purchasing function", *Journal of Purchasing and Materials Management*, Vol. 25 No. 3, pp. 16-21.

Anderson, J.C. and Gerbing, D.W. (1988), "Some methods for respecifying measurement models to obtain unidimensional construct measurement", *Journal of Marketing Research*, Vol. 19 No. 4, pp. 453-60.

Ansari, A. and Modarress, B. (1994), "Quality function deployment: the role of suppliers", *International Journal of Purchasing and Materials Management*, October, pp. 28-35.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail survey", *Journal of Marketing Research*, Vol. 14, pp. 396-402.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management Inquiry*, Vol. 4 No. 1, pp. 71-90.

Bentler, P.M. (1989), *EQS Structural Equations Program Manual*, BMDP Statistical Software, Los Angeles, CA.

Bentler, P.M. and Bonett, D.G. (1980), "Significance tests and goodness-of-fit in the analysis of covariance structures", *Psychological Bulletin*, Vol. 88, pp. 588-606.

Boyer, K.K., Ward, P.T. and Leong, G.K. (1996), "Approaches to the factory of the future an empirical taxonomy", *Journal of Operations Management*, Vol. 14 No. 4, pp. 297-313.

Bracker, J.S., Keats, B.W. and Pearson, J.N. (1988), "Planning and financial performance among small firms in growth industry", *Strategic Management Journal*, Vol. 9, pp. 591-603.

Bracker, J.S. and Pearson, J.N. (1986), "Planning and financial performance of small, mature firms", *Strategic Management Journal*, Vol. 7, pp. 503-22.

Bureau of the Census (1989), *Enterprise Statistics: December 1989-December 1990*, US Bureau of the Census, Washington, DC.

Carr, A.S. (1996), "Influencing factors of strategic purchasing and its impact on supplier market management", unpublished dissertation, Arizona State University, Tempe, AZ.

Carr, A.S. and Pearson, J.N. (1999), "Strategically managed buyer-supplier relationships and performance outcomes", *Journal of Operations Management*, Vol. 17, pp. 497-519.

Carr, A.S. and Smeltzer, L.R. (1997), "An empirically based operational definition of strategic purchasing", *European Journal of Purchasing and Supply Management*, Vol. 3 No. 4, pp. 199-207.

Carter, J.R. and Narasimhan, R. (1993), *Purchasing and Materials Management's Role in Total Quality Management and Customer Satisfaction*, Center for Advanced Purchasing Studies/ National Association of Purchasing Management, Tempe, AZ.

Dillman, D.A. (1978), *Mail and Telephone Surveys: The Total Design Method*, John Wiley and Sons, New York, NY.

Dowlatshahi, S. (1992), "Purchasing's role in a concurrent engineering environment", *International Journal of Purchasing and Materials Management*, Vol. 28 No. 1, pp. 21-5.

Electronic Business (1993), "Chrysler tries the partnering route", *Electronic Business*, Vol. 19 No. 11, p. 7.

Ellram, L.M. and Pearson, J.N. (1993), "The role of the purchasing function: toward team participation", *International Journal of Purchasing and Materials Management*, Vol. 29 No. 3, pp. 3-9.

Farmer, D. (1981), "Seeking strategic involvement", *Journal of Purchasing and Materials Management*, Vol. 17 No. 4, pp. 20-4.

Fitzgerald, K.R. (1997), "Purchasing at Harley links supply with design", *Purchasing*, Vol. 122 No. 2, pp. 56-7.

Freeman, V.T. and Cavinato, J.L. (1990), "Fitting purchasing to the strategic firm: frameworks, processes, and values", *Journal of Purchasing and Materials Management*, Vol. 26 No. 1, pp. 15-20.

Hamel, G. and Prahalad, C.K. (1989), "Strategic intent", *Harvard Business Review*, Vol. 67 No. 3, pp. 63-76.

Hamel, G. and Prahalad, C.K. (1994), *Competing for the Future*, Harvard Business School Press, Boston, MA.

Handfield, R., Ragatz, G.L., Petersen, K.J. and Monczka, R.M. (1999), "Involving suppliers in new product development", *California Management Review*, Vol. 42 No. 1, pp. 59-82.

Hart, S. (1995), "A natural-resource-based view of the firm", *Academy of Management Review*, Vol. 20 No. 4, pp. 986-1014.

Hart, S. and Banbury, C. (1994), "How strategy-making processes can make a difference", *Strategic Management Journal*, Vol. 15, pp. 215-69.

Hartley, J.L., Meredith, J.R., McCutcheon, D. and Kamath, R.R. (1997), "Suppliers' contributions to product development: an exploratory survey", *IEEE Transactions on Engineering Management*, Vol. 44 No. 3, pp. 258-67.

Hatcher, L. (1994), *A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structural Equation Modeling*, SAS Institute, Inc, Cary, NC.

Hendrick, T. and Ellram, L. (1993), *Strategic Supplier Partnering: An International Study*, Center for Advanced Purchasing Studies/National Association of Purchasing Management, Tempe, AZ.

Hogan, J.E. and Armstrong, G. (2001), "Toward a resource-based theory of business exchange relationships: the role of relational asset value", *Journal of Business to Business Marketing*, Vol. 8 No. 4, pp. 3-28.

Keough, M. (1994), "Buying your way to the top", *Director*, April, pp. 72-5.

Leenders, M.R., Fearon, H.E. and England, W.B. (1989), *Purchasing and Materials Management*, Irwin, Boston, MA.

McGinnis, M.A. and Vallopora, R.M. (1999a), "Purchasing and supplier involvement: issues and insights regarding new products success", *Journal of Supply Chain Management*, Vol. 35 No. 3, pp. 4-15.

McGinnis, M.A. and Vallopora, R.M. (1999b), "Purchasing and supplier involvement in process improvement: a source of competitive advantage", *Journal of Supply Chain Management*, Vol. 35 No. 4, pp. 42-50.

Mendez, E.G. and Pearson, J.N. (1994), "Purchasing's role in product development: the case for time-based strategies", *International Journal of Purchasing and Materials Management*, Vol. 30 No. 1, pp. 3-12.

Morash, E.A. and Lynch, D.F. (2002), "Public policy and global supply chain capabilities and performance: a resource-based view", *Journal of International Marketing*, Vol. 10 No. 1, pp. 25-51.

Murphy, E.E. (1997), "Buyers perform vital role on product launch teams", *Purchasing*, Vol. 122 No. 10, pp. 18-19.

Narasimhan, R. and Das, A. (2001), "The impact of purchasing integration and practices on manufacturing performance", *Journal of Operations Management*, No. 19 No. 5, pp. 593-609.

Oliver, C. (1997), "Sustainable competitive advantage: combining institutional and resource-based views", *Strategic Management Journal*, Vol. 18 No. 9, pp. 697-713.

O'Neal, C. (1992), "Concurrent engineering with early supplier involvement: a cross-functional challenge with tremendous promise", *NAPM Academic Conference Proceedings*, pp. 315-38.

Pearson, J.N. and Gritzmacher, K.J. (1990), "Integrating purchasing into strategic management", *Long Range Planning*, Vol. 23 No. 3, pp. 91-9.

Penrose, E.T. (1959), *The Theory of the Growth of the Firm*, John Wiley and Sons, New York, NY.

Porter, M. (1980), *Competitive Strategy*, The Free Press, New York, NY.

Porter, M. (1990), *The Competitive Advantage of Nations*, The Free Press, New York, NY.

Prahalad, C.K. and Hamel, G. (1990), "The core competence of the corporation", *Harvard Business Review*, Vol. 68 No. 3, pp. 79-91.

Rajagopal, S. and Bernard, K.N. (1993), "Strategic procurement and competitive advantage", *International Journal of Purchasing and Materials Management*, Vol. 29 No. 4, pp. 13-20.

Ramsay, J. (2001), "The resource based perspective, rents, and purchasing's contribution to sustainable competitive advantage", *Journal of Supply Chain Management*, Vol. 37 No. 3, pp. 38-47.

Reck, R.F. and Long, B.G. (1988), "Purchasing a competitive weapon", *Journal of Purchasing and Materials Management*, Vol. 24 No. 4, pp. 3-6.

Reid, D. (1990), "Purchasing and manufacturing strategy", *Research Symposium*.

Spekman, R.E. (1988), "Strategic supplier selection: understanding long-term buyer relationships", *Business Horizon*, July-August, pp. 75-81.

Williams, A.J., Giunipero, L.C. and Henthorne, T.L. (1994), "The cross-functional imperative: the case of marketing and purchasing", *International Journal of Purchasing and Materials Management*, Vol. 30 No. 3, pp. 29-33.

Further reading

Cooper, M. and Ellram, L. (1993), "Characteristics of supply chain management and the implications for purchasing and logistics strategy", *International Journal of Logistics Management*, Vol. 4 No. 2, pp. 13-24.

Ellram, L.M. and Carr, A.S. (1994), "Strategic purchasing: a history and review of the literature", *International Journal of Purchasing and Materials Management*, Vol. 30 No. 2, pp. 10-18.