

Strategic Sourcing and Supplier Selection in the U.S. Textile—Apparel—Retail Supply Network

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Abstract:

This research investigates the key causal linkages in supply chain management—the impact of strategic sourcing and supplier selection on firm performance in the U.S. textile–apparel–retail supply network. A conceptual framework was developed and the empirical survey-based research methodology was used to gather data from the U.S. textile–apparel–retail complex. The data collection resulted in 181 responses, representing a 38.2% response rate. Structural equation modeling was used to assess the research model and test the research hypotheses. The research findings support that strategic sourcing has a significant and positive effect on business performance, and supplier selection has a significant and positive effect on the firm’s ability to gain competitive advantages. The research concludes with implications, limitations, and directions for future research.

Keywords: strategic sourcing | supplier selection | structural equation modeling | textile and apparel industry | the United States

Article:

Expanding global competition, rapidly changing markets and technology, and increasing complexity and uncertainty are creating a new competitive and dynamic global environment. More and more, suppliers and customers are inextricably linked throughout the entire sequence of events that brings raw material from its source of supply, through different value-adding activities to the ultimate customer. Success is no longer measured by a single transaction; competition is, in many instances, evaluated as a network of cooperating companies competing with other firms along the entire supply chain (Spekman, Kamauff, & Myhr, 1998). These changes are causing many industries to shift to strategic supply chain management. Supply chain management is a central and important area for academic research due to its impact on firms competing in today’s global economy, and supply chain management has become a significant strategic tool for firms striving to improve quality, customer service, and competitive success.

The textile–apparel–retail complex includes important basic and visible industries of the United States and world economies, and textile and apparel production is one of the most complex and diverse manufacturing activities in the world. Over the past two decades, the U.S. textile and apparel industries have experienced radical and continuous changes as a result of environmental turbulence. The U.S. textile and apparel industries are still in a state of rapid and dramatic transition that has resulted in many structural changes. Companies have had to adapt to changes by increasing their openness, and by developing new strategies, organizational structures, systems, and capabilities. During the last decade, interest in purchasing/sourcing activities has increased dramatically in the United States textile and apparel industries as companies sought to gain competitive advantages in the evolving global marketplace (Su, Gargeya, & Richter, 2005). The strategic reach of sourcing, its role in gaining competitive advantages, and its emergence as a core competence is underscored by the dependence of firms on sourcing for attaining differentiation advantages.

Recognizing the dynamic U.S. textile– apparel–retail supply network, this study describes a research effort driven by three objectives. The first purpose of the research is to investigate the application of supply chain management, especially strategic sourcing and supplier selection practices in the U.S. textile–apparel–retail complex. The second objective is to propose a conceptual framework of supply chain integration on the basis of previous research and theories. This study identifies the key strategic decisions in the form of two constructs—strategic sourcing and supplier selection; furthermore, it investigates how these strategic decisions affect a firm’s competitive advantages and business performance. The third objective is to examine the relationships among strategic sourcing, supplier selection, competitive advantage, and business performance using primary data gathered from the industries. To achieve the objectives, previous research and studies in areas such as operations management, decision sciences, supply chain management, and the textile and apparel industry were reviewed carefully and extensively; survey research was used to collect data from the firms in the U.S. textile and apparel industry; and structural equation modeling (SEM) was employed to examine the relationships in the model.

Theoretical Grounding and Hypotheses Development

Supply Chain Management Literature

Supply chain management (SCM) is recognized for achieving benefits of both operational and strategic natures. According to Gunasekaran, Patel, and McGaughey (2004), at the strategic level, SCM is a relatively new and rapidly expanding discipline that is transforming the way for improving organizational competitiveness in both manufacturing and services.

Mentzer et al. (2001) defined supply chain as a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products and/or services from a source to a customer. SCM represents a paradigm shift that extends one’s appreciation for the concepts of cooperation and competition. Under the new paradigm, SCM is defined as a process for designing, developing, optimizing, and managing the internal and external components of the supply system, including material supply, transforming materials, and distributing finished products or services to customers (Spekman et al., 1998). SCM takes a

value chain approach, in which all activities required to bring a product to the marketplace are considered part of the supply chain (Mabert & Venkataraman, 1998; Porter, 1985). Such a holistic approach is consistent with the integrated way in which today's business managers are globally planning and controlling the flow of goods and services to the marketplace.

Although ideally SCM emphasizes total integration of all the business entities within the supply chain, a practical approach is to consider only the strategic suppliers and customers because most supply chains are too complex to achieve full integration of all the supply chain members (Tan, 2002; Tan et al., 2002). Effective SCM can result in competitive advantages. The short-term objective of SCM is primarily to increase productivity and reduce inventory and cycle time, and the long-term objective is to increase customer satisfaction, market share, and profits for all members of the supply chain (Tan, 2002; Tan, Kannan, & Handfield, 1998). To realize these objectives, all strategic partners must recognize that purchasing/sourcing is the crucial link between the suppliers and the customers, and SCM seeks to improve performance through better use of supplier capabilities. Heightening the managerial challenge, decisions made in one stage influence performance in other stages. Managing the link between each node within the chain to synchronize the entire supply chain is critical. The inclusion of these linkages in supply chain decision making represents the cornerstone of effective management for firms. Strengthening the various links of the supply chain requires a strategic perspective for achieving competitive advantage (Lummus, Vokurka, & Alber, 1998; Mabert & Venkataraman, 1998).

Theoretical Background for the Study

Resource-based view (RBV). RBV is founded on the idea that firms are comprised of bundles of resources, namely assets, input factors, and capabilities (Wernerfelt, 1984). Firms utilize their unique bundle of resources to build competitive advantage and may experience superior performance, if resources are used in a manner that is difficult to imitate (Barney, 1991). Firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, and so on controlled by a firm. The RBV emphasizes the strategic importance of firm's resources and capabilities to maintain competitive advantages. More and more firms have realized that one of the largest resources for a company is its supply base. A firm's ability to produce a quality product at a reasonable cost, and in a timely manner, is heavily influenced by its supplier capabilities. Concurrent with these changes, sourcing operates at a strategic level—acquiring, managing, and configuring supply chain structures to meet manufacturing and corporate strategic requirements.

Porter's framework of competitive strategy and competitive advantage. Research drawing from traditional industrial organization and more specifically from Porter's (1980, 1985, 1991) framework of competitive strategy and competitive advantage adopts an "outside-in" perspective regarding market structure and its effect on performance. Within this framework, the firm is viewed as a bundle of strategic activities aiming at adapting to industry environment by seeking an attractive position in the market arena. In Porter's framework, buyers and suppliers are two of the driving forces of competitiveness in an industry. Within this framework, strategy choice is the product of (and response to) a sophisticated understanding of industry structure. Strategies are driven by five forces which an organization has to take into account: the power of customers,

the power of suppliers, the threat of similar products, the level of existing competition, and the threat of new market entrants.

In reality both RBV and Porter's framework of competitive strategy and competitive advantage can coexist and shape actual firm behavior (Foss, 1996). It has been recently recognized that Porter's framework and RBV complement each other in explaining a firm's performance: (1) One can gain a more balanced view on the sources of competitive advantage (internal and external determinants) by drawing insights from both, (2) Both perspectives seek to explain the same phenomenon of interest (i.e., sustained competitive advantage), and (3) The unit of analysis is identical in both cases (i.e., the firm).

Linking Strategic Sourcing to Gaining Competitive Advantage

The organizations emphasizing strategic sourcing recognize the benefits and competitive advantages associated with integrating purchasing into strategic planning (Tan, Kannan, et al., 1998). The ultimate goal of the leading firms is to manage their suppliers throughout the entire supply chain for dependable delivery, decreased production lead time, reduced cost, and increased quality. When the goal is to build long-term, clan-like relationships, a company's supply chain creates one of the strongest barriers to entry for competitors (Choi & Hartley, 1996).

The need for sourcing to be supportive of gaining competitive advantage has been stressed by Watts, Kim, and Hahn (1992) in their framework linking strategic sourcing to corporate goals. Strategic sourcing is a way to obtain manufacturing capabilities without capital investments (Narasimhan & Das, 1999). The cost of raw materials, component parts, and services purchased from external suppliers is significant for most manufacturing firms. When the goal is boosting profits by low costs, a business should first look to what it buys. On average, manufacturers' purchases of goods and services amount to 55% of revenues; this is in contrast to labor costs of 6% and overhead expenses of 3% of revenues (Tully, 1995; Vokurka, 1998).

Strategic sourcing builds competitive advantage through early supplier involvement in product engineering, sharing of supplier technology, and supplier assistance in developing product and process improvements. Therefore, strategic sourcing contributes to a firm's competitiveness by ensuring satisfactory quality for its inputs, which in turn leads to high quality of the final products. There is evidence that manufacturing firms are increasingly obtaining volume, design, and technology flexibilities through strategic sourcing (Narasimhan & Das, 1999; Tully, 1995). A principal objective of strategic sourcing is uncertainty reduction and improvement of flexibilities when faced with supply, demand, and competitiveness uncertainties (Freeman & Cavinato, 1990; Narasimhan & Das, 1999).

Competition from offshore producers, technological innovations, and shortened product life cycles have changed buyer-seller relationships from a traditional win-lose orientation to closer, more collaborative approaches and a win-win model of strategic alliance (Krause, Scannell, & Calantone, 2000; Wilson, 1994). The literature indicates that buying firms are developing cooperative, mutually beneficial relationships with suppliers and viewing suppliers as virtual extensions of their firms (Tan, 2002). Strategic sourcing includes developing relationships with

key suppliers. Good buyer– supplier relationships help achieve shorter order cycle time. A reduction in the order cycle time leads to a reduction in the supply chain response time. This is an important measure as well as a major source of competitive advantage, and it directly influences the customer satisfaction level. When the purchasing function is elevated to a strategic level, it is in a better position to contribute to the firm’s key capabilities (Carr & Pearson, 1999, 2002; Reck & Long, 1988). Therefore, the following hypothesis was developed.

Hypothesis 1: Strategic sourcing has a positive impact on the firm’s ability to gain competitive advantage.

Linking Supplier Selection to Gaining Competitive Advantage

Supplier selection involves factors that an organization uses when selecting and evaluating key/preferred suppliers’ performance (Kannan & Tan, 2002). Given that more than 50% of the cost of goods sold worldwide is derived from purchased materials, supplier selection is an important strategic decision and serves as a source of competitive advantage (Simpson, Siguaw, & White, 2002). A firm’s ability to produce a quality product at a reasonable cost and in a timely manner is heavily influenced by its suppliers’ capabilities, and supplier performance is considered one of the key determining factors for the company’s success (Choi & Hartley, 1996; Krause et al., 2000; Shin, Collier, & Wilson, 2000).

There are several key reasons why suppliers are becoming increasingly critical to the competitive success of the U.S. firms. First, manufacturers are beginning to focus on their core competencies and areas of technical expertise (i.e., firms concentrating on what they do best; Prahalad & Hamel, 1990). An emphasis on internal competencies requires greater reliance on external suppliers to support noncore requirements directly. Second, developing effective supply base management strategies can help counter the competitive pressures brought about by intense worldwide competition. To remain globally competitive, firms in the United States must receive competitive performance advantages from their suppliers that match or exceed the advantages suppliers provide to leading foreign competitors. Third, suppliers can support directly a firm’s ability to innovate in the critical areas of product and process technology. As organizations continue to seek performance improvements, they are reorganizing their supplier base and managing it as an extension of the firm’s business system (Morgan & Monczka, 1996; Narasimhan & Jayaram, 1998; Trent & Monczka, 1998; Vonderembse & Tracey, 1999).

A growing emphasis on establishing longterm relationships, driven by competitive pressures and business complexity, has encouraged many firms to become highly selective in their choice of suppliers. Supplier selection criteria help a firm identify competent vendors; the evaluation process often involves the simultaneous consideration of several important supplier performance attributes that include price, delivery leadtime, and quality (Kannan & Tan, 2002; Kim & Rucker, 2005; Vonderembse & Tracey, 1999). When suppliers are selected with these criteria, both supplier performance and the buying firm’s operations performance are expected to increase (Tan, 2002; Vonderembse & Tracey, 1999), thereby enhancing the firm’s ability to gain competitive advantage. Thus, Hypothesis 2 was developed.

Hypothesis 2: Supplier selection has a positive impact on the firm's ability to gain competitive advantage.

Linking the Ability of Gaining Competitive Advantage to Business Performance

A firm's business performance is typically measured in financial and market terms, such as return on asset (ROA), market share, profit as a percentage of sales (profit margin), and net income before taxes (Carr & Pearson, 2002; Carr & Smeltzer, 2000; Kannan & Tan, 2002; Tan, Handfield, & Krause, 1998; Tan et al., 2002; Tracey & Tan, 2001). Subjective performance measures have been widely used in strategy-related research and management research. Carr and Pearson (2002) and Tan, Handfield, et al. (1998) provided reasonable support for the use of managers' perceptual measures as a proxy for actual performance. Following the previous research in supply chain management and operations management (Carr & Pearson, 2002; Carr & Smeltzer, 2000; Tracey & Tan, 2001), which operationalize firm business performance, we chose to solicit respondents' perceptions of their firm's business performance over the past three years. A series of questions were tailored assessing firms' relative performance in market share, ROA, and profit margin.

Empirical research has shown that manufacturing companies that enrich their capacity to satisfy their customers in respect to competitive costs, quality, flexibility, delivery dependability, and quick response time, the five dimensions of gaining competitive advantage, enhance their level of overall business performance (Finch, 2003; Tan et al., 2002; Tracey & Tan, 2001). It is expected that a well-managed and integrated supply chain will lead to business benefits. Competitive cost, quality, flexibility, delivery dependability, and quick response time, in turn, will lead to better sales and profits. Thus, Hypothesis 3 was developed.

Hypothesis 3: The firm's ability to gain competitive advantage has a positive impact on firm's business performance.

Linking Strategic Sourcing to Business Performance

The literature on SCM suggests that a company's purchasing practices can impact the effectiveness of its SCM strategy and can ultimately impact its financial and market performance. Tan, Kannan, et al. (1998) provided empirical evidence that selected purchasing practices were strongly associated with the perceived financial and market success of firms. According to Carr and Smeltzer (2000), strategic purchasing has a positive impact on firms' business performance. Carr and Pearson (1999) examined the relationship between strategic purchasing and firms' business performance. They found that strategic purchasing was important to the success of the firm.

According to Bracker, Keats, and Pearson (1988), strategic planning processes that are well developed, properly implemented, and controlled contribute to a firm's successful overall financial performance. Strategic purchasing is derived from the concept of strategic management. Once a firm adopts strategic goals, it can then begin the process of developing purchasing strategies, and sourcing function has active interaction with other functions such as manufacturing, marketing, and customer services. When purchasing is elevated to a strategic

level, it can better contribute to the firm’s business performance (Carr & Pearson, 1999, 2002; Reck & Long, 1988). Therefore, Hypothesis 4 was developed.

Hypothesis 4: Strategic sourcing has a positive impact on firm business performance.

Research Model

Figure 1 presents the SEM using standard conventions. The corresponding factors and the indicators in the model are shown in Table 1. Measures for the constructs of strategic sourcing, supplier selection, competitive advantage, and firm business performance were developed through a review of the managerial and scholarly literature to establish the content validity of each construct and associated scales.

Methods

The survey method was used to collect data in the U.S. textile–apparel–retail complex.¹ Because a comprehensive list of all companies in the U.S. textile–apparel–retail complex was not available, a list of potential respondents was compiled from Dun & Bradstreet (D&B) Million Dollar Databases and two directory books—Textile World Blue Book (2003) and Davison’s Textile Blue Book (2003).

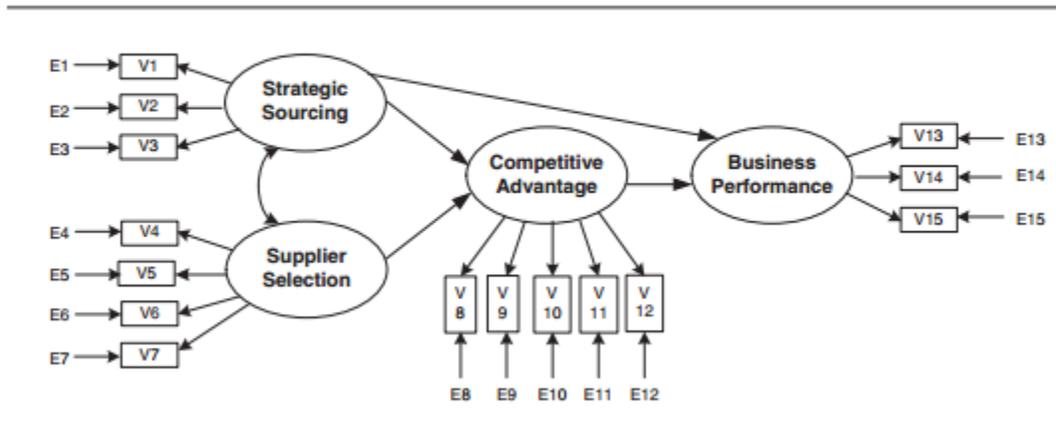
Table 1
Factors and Indicators in the Structural Equation Model (SEM)

Constructs	Indicators
Strategic sourcing	V1: Purchasing/sourcing’s long-range plan is reviewed and adjusted to match changes in the company’s strategic plans on a regular basis. V2: Purchasing/sourcing’s long-range plan includes developing relationships with key suppliers. V3: Comprehensive purchasing/sourcing strategies have been developed to support the company’s overall strategies.
Supplier selection	V4: product cost V5: product quality V6: delivery dependability V7: delivery speed
Competitive advantage	V8: cost V9: quality V10: delivery dependability V11: flexibility V12: response time
Business performance	V13: return on assets (ROA) V14: profit margin (net income as a percent of sales) V15: market share

This study included the firms in the U.S. textile–apparel–retail complex that met predetermined criteria. The study focused on corporate headquarter level so that the effects of strategy and capabilities could be examined independent of the confounding effects of lower plant–level considerations. Only firms employing at least 25 employees were considered in the sample to ensure a minimum operating structure of each firm.

Using these criteria, a random sample of 660 firms was selected based on primary Standard Industrial Classification (SIC) codes—22 (textile manufacturing), 23 (apparel manufacturing), and 56 (apparel retailing). The target respondents for the survey were purchasing professionals (e.g., director of purchasing/sourcing, vice president of purchasing/sourcing, chief operating officer, and supply chain manager). These individuals were chosen because of their expertise in strategic sourcing, supplier selection, and firm performance. A letter with each survey requested that if the addressee was not the most qualified individual at the firm to answer the survey, the survey should be forwarded to the most qualified individual for completion.

Figure 1
The Structural Equation Model (SEM) Using Standard Conventions



The questionnaire was developed using scales established in the research literature. Questions were designed to be answered from the buyer’s perspective. Five-point Likert scales were used to measure the indicators in the model. For example, the items of strategic sourcing, supplier selection, and competitive advantage were measured using the instruction such as, “Please indicate the extent to which you agree or disagree with the following statements regarding your firm over the last three years” and using 5-point Likert scales ranging from 1 = strongly disagree to 5 = strongly agree. The items of business performance were measured using the instruction, “Tell us about your firm business performance on the following dimensions over the last three years” and using 5-point Likert scales ranging from 1 = decreased significantly to 5 = increased significantly. The survey instrument was refined, modified, and pilot tested through an incremental process before being finalized. The researchers visited eight major textiles and apparel companies in North Carolina and South Carolina and reviewed the instrument with purchasing managers and/or vice presidents to ensure that the questions were interpreted as intended. The survey instrument was pilot tested by nine supply chain managers/purchasing managers. Based on this process, questions were reworded, added, or discarded to improve validity and clarity. This process helped assure that the questions were relevant to the variables in the model.

In addition to the mail survey, follow-up phone call contacts and an e-mail survey were also used to request firm’s participation and/or to remind them to return the completed survey. These collectively constituted a modified version of Dillman’s (2000) “tailored survey methodology.”

SEM was used to investigate the relationships in the model. A two-stage approach SEM was used for the data analysis. In the first stage, the measurement model was tested using confirmatory factor analysis (CFA) to demonstrate adequate model fit and to ensure a satisfactory level of measure reliability and validity for the underlying variables and their respective factors in the model. In the second stage, SEM was used to test the hypothesized relationships in the model. The fit of the proposed model to the observed data was tested using LISREL Version 8.54 software (Jöreskog & Sörbom, 2003) with covariance matrix input.

Results

Response Rate for the Survey

Of the 660 firms surveyed, 68 companies (10.3%) refused to participate due to company policy, 9 companies (1.4%) were closed, 21 companies (3.2%) were not in the textile or apparel industries any more, and 88 companies (13.3%) were unreachable (e.g., wrong address or person retired). The geographic areas of the 474 firms in the remaining sample included 32 states in the United States. Responses were received from 181 respondents for a 38.2% response rate.

The Respondents' Profile

The respondents consisted primarily of executives at high levels including director of sourcing/purchasing (29%), vice president of purchasing/sourcing (13%), chief executive officer/president (11%), and general manager (8%). The respondents worked for companies from a variety of textile– apparel–retail industries, including firms in textile industry (45.3%), apparel production industry (36.5%), and apparel retailing industry (18.2%). Table 2 presents the distribution of firms' annual gross sales in US dollars. Small, medium, and large firms were well represented in the sample.

Nonresponse Bias

The respondent sample was split into two groups on the basis of early and late returned surveys to investigate the possibility of nonresponse bias in the data (Lambert & Harrington, 1990). Multivariate analysis of variance (MANOVA) was performed for variables in each factor and also for the whole set of manifest variables. The results revealed no differences between the earlywave and the late-wave responders suggesting that nonresponse bias may not be a problem in this study.

Evaluation of the Measurement Model

Of the 181 returned surveys, 172 contained completed responses and were used in SEM. In SEM, researchers are expected to report multiple measures of fit for assessing model fit (Hair, Anderson, Tatham, & Black, 1995). An adequate fit was achieved for the measurement model. The χ^2 to df ratio = 1.66 is less than the common recommended value, 2.0, for practical research (Carr & Pearson, 2002; Hair et al., 1995; Narasimhan & Das, 1999). The Root Mean Squared Error of Approximation (RMSEA) = 0.062 is less than the recommended value, 0.08 (Kelloway, 1998), indicating a reasonable to fair fit. The goodness-of-fit index (GFI), nonnormed fit index

(NNFI), and comparative fit index (CFI), at 0.90, 0.94, 0.95, respectively, are all greater than the cutoff point of 0.90 (Kelloway, 1998), indicating an adequate fit for the measurement model.

Table 3 shows the factor loadings, standard errors, t values, and the summary of the analysis of reliability in the measurement model. As can be seen from Table 3, the t values of all the path parameter estimates for each factor in the measurement model are greater than 2.0 and are statistically significant ($p < .05$). In the measurement model, reliability analysis was conducted to check and confirm internal consistency using the standardized reliability estimate (Sharma, 1996) and composite reliability coefficient (DeVellis, 1991) for a given construct. As shown in Table 3, all the reliability coefficients are above the threshold .60 which DeVellis (1991) recommended and the acceptable guideline value of .70 which Nunnally (1978) suggested.

For each factor, all the t values of the factor loadings are statistically significantly different from zero (see Table 3), and each loading is in the anticipated direction and magnitude. Thus, convergent validity is established because all indicators are effectively measuring the same construct. Discriminant validity is shown by the confidence interval of two standard errors around the correlation for each respective pair of factors. None of the confidence intervals included 1.0; therefore, discriminant validity was established (see Table 4). Thus, the measurement model was adequate for testing the proposed structural model.

Table 2
Annual Gross Sales (US\$)

Annual Gross Sales (US\$)	Frequency	Percentage
Less than 5 million	13	7.2
5-24.9 million	31	17.1
25-49.9 million	19	10.5
50-99.9 million	26	14.4
100-500 million	50	27.6
More than 500 million	26	14.4
Missing	16	8.8
Total	181	100

SEM and Hypothesis Testing

Figure 2 shows the results of SEM. There are two positive and statistically significant paths (strategic sourcing–business performance; supplier selection–competitive advantage), and two positive but nonsignificant paths (strategic sourcing–competitive advantage; competitive advantage–business performance). The second hypothesis (Hypothesis 2), supplier selection has a positive impact on competitive advantage, was supported (path coefficient = .66, $p < .05$). The fourth hypothesis (Hypothesis 4), strategic sourcing has a positive impact on business performance, was supported (path coefficient = .26, $p < .05$).

Discussion

The first hypothesis (Hypothesis 1) states that strategic sourcing has a positive impact on the firm’s ability to gain competitive advantage. However, the relationship was not supported.

Contrary to expectations, “look-ahead” strategic sourcing/purchasing did not significantly increase firm’s ability to gain competitive advantage. One plausible explanation for this result is that firms try to achieve competitive advantage in any business environment by all kinds of means, and not necessarily through strategic sourcing alone. It is not clear whether the firm’s current ability to gain competitive advantage results from strategic sourcing or other functions. Another possible explanation may be that many firms do not emphasize strategic sourcing to a great extent. Also, strategic sourcing attempts to capture the dynamic nature of the supply market and attempts to support the company’s strategic plan; however, the sweeping changes in the U.S. textile and apparel business may suggest that strategic sourcing does not perform to the extent it is expected to perform.

There is statistically significant evidence that supports the research hypothesis (Hypothesis 2), indicating that supplier selection is positively related to the firm’s ability to gain competitive advantage. To compete effectively in the world market, a company must have a network of competent suppliers; a company must build on the expertise and commitment of its suppliers (Mabert & Venkataramanan, 1998; Spekman, 1988). This result is consistent with the previous research (Tracey & Tan, 2001; Vonderembse & Tracey, 1999).

The third hypothesis (Hypothesis 3) states that competitive advantage has a positive impact on business performance. However, there is no strong statistical evidence to support the relationship. This result is contrary to expectations. It is likely that U.S. firms have striven to improve competitiveness in the five dimensions of gaining competitive advantage. However, the complex macroeconomic environment, the volatile domestic and global markets, and the relatively higher labor cost and business operations cost in the United States lead to the fact that it is harder for the U.S. textile and apparel firms to increase their business performance. A firm might have competitive advantage compared with other industry competitors; however, in such a fluctuating economic environment, it perhaps did not result in a significant increase in business performance.

Table 3
Factor Loadings, *t* Values, and Reliability Coefficients in the Measurement Model

Indicator Variables and Their Underlying Factors	Factor Loading	Standard Error	<i>t</i> Values ^a	Composite Reliability	Standardized Reliability
Strategic sourcing	—	—	—	.779	.775
V1	1.16	0.10	11.37	—	—
V2	0.74	0.08	8.82	—	—
V3	0.71	0.09	8.25	—	—
Supplier selection	—	—	—	.738	.719
V4	0.26	0.07	3.99	—	—
V5	0.47	0.05	9.18	—	—
V6	0.63	0.06	11.20	—	—
V7	0.59	0.08	7.60	—	—
Competitive advantage	—	—	—	.748	.727
V8	0.37	0.09	4.04	—	—
V9	0.36	0.06	6.13	—	—
V10	0.65	0.06	10.67	—	—
V11	0.36	0.06	5.90	—	—
V12	0.76	0.07	11.35	—	—
Business performance	—	—	—	.885	.883
V13	0.94	0.06	15.08	—	—
V14	0.93	0.07	14.07	—	—
V15	0.69	0.07	10.26	—	—

Note: Number of participants, *N* = 172.

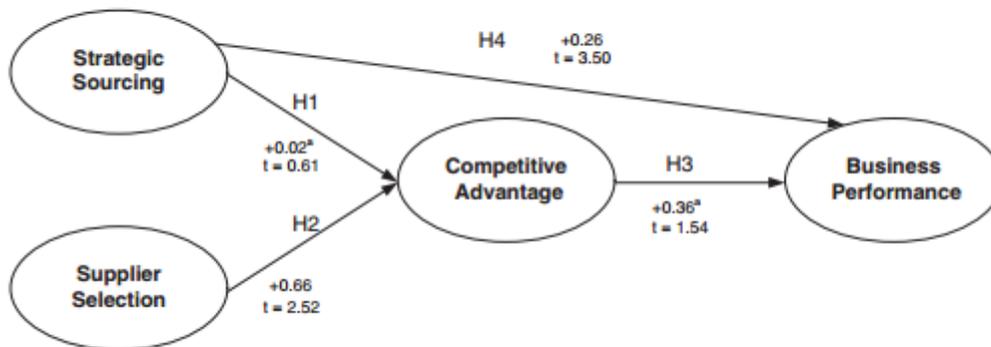
a. All *t* values are statistically significant at *p* < .05.

Table 4
Discriminant Validity of the Measurement Model

Factors	Correlation	Standard Error	Confidence Interval
Strategic sourcing–supplier selection	.34	0.09	(0.16, 0.52)
Strategic sourcing–competitive advantage	.22	0.09	(0.04, 0.40)
Strategic sourcing–business performance	.34	0.08	(0.18, 0.50)
Supplier selection–competitive advantage	.48	0.08	(0.32, 0.64)
Supplier selection–business performance	.28	0.08	(0.12, 0.44)
Competitive advantage–business performance	.20	0.09	(0.02, 0.38)

There is statistically significant evidence that supports the research hypothesis (Hypothesis 4) that strategic sourcing positively influences the firm's business performance by adding value to the firm. The strategic sourcing function has active interaction with other functions (e.g., manufacturing, marketing, customer services, etc.) to support the company's overall strategies, which lead to improvements in the firm's business performance. There have been some reports (Carr & Pearson, 1999, 2002; Narasimhan & Das, 1999) showing that integrating sourcing into strategic planning leads to higher business performance. This study supports previous research concerning strategic sourcing and its relationship with business performance.

Figure 2
Structural Equation Model (SEM) and the Research Hypotheses



Note: Number of participants, $N = 172$.

a. Indicates the t values for the path coefficients (for H1 and H3) are not statistically significant at $p < .05$.

Implications

This research fills a gap between theory and practice using data from the U.S. textile–apparel–retail complex to examine the relationships between strategic sourcing, supplier selection, competitive advantage, and business performance, and to test the research hypotheses by SEM. The findings from this research should have broader implications than previous studies that were only conceptual or used data from smaller samples. The study demonstrates that strategic sourcing and supplier selection clearly play a vital role in business operations in the U.S. textile and apparel industries. Strategic sourcing and supplier selection are increasingly emphasized by the U.S. textile and apparel industries to ensure that their products will be able to compete effectively in the global marketplace.

There are several limitations of this study. The current domestic and global economic environment in which the U.S. textile and apparel businesses operate is constantly fluctuating. Therefore, the existence of confounding variables must be recognized. Other factors not included in the model may contribute to the explanation of the relationships in the model. The conclusions from this study are based on data collected from the U.S. textile–apparel–retail complex; the external validity needs to be investigated by future study of other industries.

This study empirically investigated supply chain management issues in the U.S. textile–apparel–retail supply network, while building on past research. An agenda for future research is presented as follows: (1) Future research should be conducted to examine and validate the nonsignificant relationships beyond the present study; (2) One stream that provides future opportunities for research is to collect data on the factors in the model through a longitudinal study and reexamine the relationships between the factors in the model. This would provide useful information about how dynamic environments impact the relationships between strategic sourcing, supplier selection, and firm performance; (3) Future research should involve additional research efforts that examine the different groups in the sample based on specific industry segments (e.g., manufacturers and retailers) using a larger sample; (4) Future cross-industry study is needed to validate the model and the relationships of the constructs, and collecting data from other

industries is also needed to address external validity; and (5) An extension of this research is to conduct case studies to better understand strategic sourcing and supplier selection. Case studies and survey research complement each other and can result in a comprehensive investigation of the supply chain issues.

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