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A Structure–Conduct–Performance Perspective of How Strategic Supply Chain Integration Affects Firm Performance

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Keywords
strategic integration, capabilities, performance, buyer/supplier relationships, structural equation modeling, survey, archival data

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Abstract

There are several factors which affect a firm's ability to successfully integrate internally and externally for organizational improvement. This study seeks to understand the relationship between a firm's strategy, its supply chain integration efforts, and firm performance. Leveraging the theoretical lens of structure – conduct – performance (SCP) from the industrial organization economics literature, and utilizing both archival and survey data, we describe how firms may align their internal and external supply chain integration strategies with customers and suppliers. In doing so, these internal and external integration strategies affect the firm's ability to respond to customer demand, which then impacts operational and financial performance. Our work provides theoretical and empirical evidence of these relationships and thus extends prior strategic supply chain integration literature.

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A STRUCTURE-CONDUCT-PERFORMANCE PERSPECTIVE OF HOW STRATEGIC SUPPLY CHAIN INTEGRATION AFFECTS FIRM PERFORMANCE

INTRODUCTION

Linking supply chain processes across enterprises is a means to create efficiencies, generate customer value, and gain a competitive edge (Devaraj, Krajewski, & Wei, 2007). One way to create supply chain efficiencies is to integrate processes both internally across departments or functions and externally across firms (Paulraj & Chen, 2007; Narasimhan, Swink, & Viswanathan, 2010). Stated differently, supply chain integration enables a firm to meet customer demand by bringing departments or partnering firms closer together. In this study, integration is defined as the management of various sets of activities that aims at seamlessly linking relevant business processes both within and across firms, as well as eliminating duplicate or unnecessary parts of the processes for the purpose of building a better functioning supply chain (Chen, Daugherty, & Roath, 2009).

Managing relationships in a supply chain requires cross-functional and cross-firm business processes with appropriate levels of information sharing, close partnerships, and the coordination of operational activities (Leuschner, Rogers, & Charvet, 2013). Building upon that foundation, supply chain integration is viewed as a process by which a firm acquires, shares, and consolidates strategic knowledge and information internally throughout the firm and externally with supply chain partners (Swink, Narasimhan, & Wang, 2007). Effective integration can reach beyond functional silos and firm boundaries to develop a unified value creation process that generates and delivers value for the customer.

However, integration among firms, and even within, is not without challenges. Integration is a difficult undertaking that involves careful management of resources (Koufteros,

Cheng, & Lai, 2007). For example, Fawcett and Magnan (2002) note that some firms have trouble forging relationships with external partners because they are busy coordinating internal activities. Richey et al. (2010) discuss certain barriers to integration including a unidirectional flow of information, incongruent goals and losing sight of the customer which could impact external **or** internal firm relationships. Additionally, integration efforts implemented without a clear focus can lead to less than desired performance results (Fawcett & Magnan, 2002; Springinklee & Wallenburg, 2012). This suggests that firms may need to rethink why they integrate as well as how integration, both internally and externally, can impact firm performance.

Integration is not a standard solution to every business problem. Rather, integration may be better utilized as a tool for firms to employ as a response in certain market and environmental conditions (Porter, 1980). Having a reason to integrate may provide the impetus for more successful relationships. In this regard, firms can integrate due to common issues and share a singular goal to maintain individual firm performance while providing customer value. The current research investigates this broad research question by analyzing the extent to which strategic integration affects firm performance from a supply chain perspective. Specifically, we leverage the structure – conduct – performance (SCP) framework from industrial organizational economics to develop and empirically test theory about how a firm's supply chain integration activities act as a structural response to basic market conditions in order to impact firm performance (Caves, 1964; Caves & Porter, 1977; Chatain, 2011).

One contribution within this work is that the integration constructs contain process oriented, strategically focused elements that suggest a higher level of integration than solely at the operational level. A firm integrates with its supply chain partners as a way to deliver and provide customer value (Flynn, Huo, & Zhao, 2010). Strategic integration of supply chain

elements internally and externally help to further this endeavor (Mackelprang, Robinson, Bernardes, & Webb, 2014). This is because integration allows business units or groups of firms to act as a single unit potentially enhancing efficiencies and performance for all parties (Tan, Kannan, & Handfield, 1998; Frohlich & Westbrook, 2001; Schoenherr & Swink, 2012). The current research specifically investigates corporate strategic integration (internal integration) as well as strategic customer integration and strategic supplier integration (external integration). Another contribution of the work is the use of the SCP framework to explain the conduct of firms. Finding ways to distinguish firms from one another is a hallmark of competition (Porter, 1980). One such method in supply chain management is to be responsive to customer demand. Demand response is the ability to anticipate or handle changes in marketplace demand (Braunscheidel & Suresh, 2009). This ability allows firms to meet customer expectations while also mitigating supply challenges that may be associated with stochastically demanded goods (Fisher, 1997). Following the SCP framework, we investigate the relationship between demand response and both operational and financial performance because managers must balance both metrics in competitive supply chain settings. Thus, the specific research questions are:

RQ1: Is corporate strategic (internal) integration related to strategic customer and supplier (external) integration?

RQ2: Does strategic customer and supplier integration impact firm conduct, specifically demand response?

RQ3: What is the relationship between demand response and firm performance?

In the next section of this paper, we discuss the literature and theoretical framework supporting the research. Next, we introduce the study's conceptual model and hypotheses. Afterwards, we describe the study's methodology and sample population, and present our

findings. We conclude by discussing the theoretical and managerial implications of the study's findings.

LITERATURE REVIEW

Supply Chain Integration

Firms realize that in order to remain competitive they have to offer goods or services to customers that are of higher quality and/or priced lower than competitors (Cousins & Menguc, 2006). In other words, firms have to deliver value to customers while remaining profitable. This proves problematic in a time when firms are less vertically integrated and firms may have to rely on other parties to aid in providing customers value (Saeed, Malhotra, & Grover, 2005). One method for a firm to address this challenge is to integrate supply chains internally and externally. Supply chain integration links intra-firm departments, buyers, suppliers and other chain members to improve the efficiency and effectiveness of supply chains and their deliveries to end users (Morash & Clinton, 1998).

A rich literature base exists on the topic of integration. Skinner (1969) espouses the benefits of internal integration to make sure departments are unified along a single company goal. Bowersox, Closs, and Stank (2000) concur by discussing how focusing on functional or departmental excellence can sometimes come at the expense of firm goals. Rather, the authors note that internally integrating can improve firm performance and prevent internal departments from creating pockets of power that harm other corporate functions. Additionally, internal integration can create value by eliminating redundancies, creating efficiencies, and reducing costs (Stank, Keller, & Closs, 2001; Mollenkopf, Russo, & Frankel, 2007; Mollenkopf, Frankel, & Russo, 2011).

However, the benefits of integration are not solely held within firm boundaries. Firms integrate with external supply chain partners in order to streamline business processes with the goal of meeting customer demand (Narasimhan et al., 2010). External integration has been shown to positively benefit customer service, innovation and new product development (Vickery, Jayaram, Droge, & Calantone, 2003; Koufteros, Voderembse, & Jayaram, 2005; Koufteros et al., 2007; Oke, Prajogo, & Jayaram, 2013). While numerous examples promote the benefits of integration, why are more firms not able to successfully integrate with their supply chain partners? As Pagell (2004) notes, the importance of integration is not in doubt. Benefits of integration have been shown both internally and externally. Yet firms struggle to achieve these benefits (Fawcett & Magnan, 2002). With challenges occurring during integration, how can firms hope to capitalize on these benefits? The answer may lie with enmeshing strategy and integration.

Strategic integration combines resources and competencies between business units and firms for the purpose of supporting and/or advancing corporate strategy (Burgelman & Doz, 2001). As such, the impetus to integrate is not necessarily to make a process more efficient or capitalize on economies of scale; instead integration occurs because it supports firm goals or objectives. In this regard, strategically integrating may have a stronger relationship with improved performance because the foundation for integration is not operational in nature; rather the foundation is to support an underlying strategy (Mackelprang et al., 2014; Wiengarten, Pagell, Ahmed, & Gimenez, 2014). Consistent with our research questions, and for the purposes of contributing to the literature related to strategic supply chain integration, we investigate the role of corporate strategic (internal) integration and its impact on strategic customer and supplier (external) integration. Additionally, this higher order view of integration at the strategic level is

examined to determine its impact on demand response or the ability to handle demand changes in the marketplace (Braunscheidel & Suresh, 2009). Finally, the relationship between demand response and performance, both operational and financial, is examined.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Structure – Conduct – Performance

The structure – conduct – performance (SCP) framework finds its roots in industrial organization economics. The theory argues that firms derive competitive advantages by responding to the characteristics of the industry in which they compete (Mason, 1939; Bain, 1956; Caves, 1964). Firms pursue strategies in response to market conditions, which alter firm (and supply chain) conduct to positively impact the level of profits earned (Weiss, 1979; Bettis, 1981). The main contribution of the theoretical framework is the consideration of industry and firm-level factors on performance (Panagiotou, 2006).

Porter (1979, 1980, 1991) points out that industry composition, derived from competitors and standard operating practices, influences the decisions firms make to survive. He also notes that a firm's strategy is formulated in response to industry dynamics, which affects conduct and ultimately firm performance. Strategy is defined as the match an organization makes between its internal resources and skills and the opportunities available in its external environment (Grant, 1991). When organizations compete, it is important for them to consider the marketplace in which they participate (Lawrence & Lorsch, 1967; McKone-Sweet & Lee, 2009). This consideration may lead to a strategy which defines corporate goals and steps required to meet those goals (Gibson, Mentzer, & Cook, 2005; Stank, Davis, & Fugate, 2005). In this manner, strategy can lead to reasoned, planned action driving firm conduct (Day, 1999).

Strategy formulation at the firm level needs to consider internal and external environments as well as different organizational levels, i.e., departments and divisions (Bowersox & Daugherty, 1995). However, considering external environmental factors can lead firms to realize that acting alone may not be enough. Firms usually do not possess all the necessary resources and capabilities required to effectively compete in today's marketplace (Ellram, Tate, & Billington, 2008; Leuschner et al., 2013). Therefore, creating a differential advantage by maximizing value to end consumers can require a multi-firm focus (Jap, 1999, 2001). Operational processes and actions spanning firms may benefit from a strategic framework, which fosters cross-functional and cross-organizational integration (Bowersox, Closs, & Stank, 1999). Strategically integrating with collaborative partners can lead to coordinated actions which align the processes of multiple firms (Porter, 1980; Flynn et al., 2010).

Strategic integration internally and across supply chain partners may also be a structural response to industry and market characteristics. Vertical integration has been noted as one way firms can structure themselves to more effectively compete (Caves, 1964; Porter, 1980; Morgan, Kaleka, & Katsikeas, 2004). In this manner, strategic supply chain integration may represent the current structural business form required for firms versus traditional approaches in the SCP framework. This is because achieving supply chain success and firm performance outcomes in today's business environment may rely on the successful integration of multiple supply chain partners (Richey et al., 2010). The current research aims at addressing this gap by bringing together the theoretical framework of SCP and strategic integration. Specifically, we argue for achieving internal integration and utilizing this internal competency to drive external integration with both customers and suppliers. This is different than past research because of the level of focus on strategic integration and how strategy plays a role in integrative efforts, both internally

and externally. The strategic emphasis helps to account for industry dynamics while providing a focus for firm and supply chain partner conduct to impact performance. The conceptual model for the current research is provided below. The following section discusses the hypotheses underlying the research.

INSERT FIGURE 1 HERE

Hypothesis Development

Firms search and take note of market factors, including the characteristics of the industry (Porter, 1979; 1980; Jaworski & Kohli, 1993), in order to compete with other firms. Industry characteristics include the number and size of buyers and sellers in a given market, degree of product differentiation, extent of vertical integration, and the level of the barriers to entry or switching in a given market (Caves, 1964; McWilliams & Smart, 1993). Industry factors are an important determinant of firm competitive behavior because the signals that are communicated in the market provide clues on which actions the firm needs to take. However, noting how much firms could profit provides no indication on how they should act, or towards what purpose they should strive, to achieve those profits. In other words, firms seek to understand how to structure themselves to be a successful competitor. One such method may be through the development of corporate strategy.

The firm's corporate strategy influences how a firm competes in an industry or market (Olson, Slater, & Hult, 2005). A firm's strategy can serve as a foundation for, as well as a guide to, different company functions on what needs to occur and be accomplished to meet firm goals (Rodrigues, Stank, & Lynch., 2004). Chandler (1962) was one of the first authors to argue that strategy, born from knowing and understanding competitive opportunities, can drive firm

conduct in order to improve or assure firm performance. A properly developed strategy can serve as a signal to employees as to what a firm believes is important. Firm strategies also provide a unifying sense of purpose to employees (Thun, 2010). Additionally, and perhaps more importantly, well-known and accepted firm strategies align organizational departments and operations with the intent of achieving firm goals (Wheelwright, 1984; Baier, Hartmann, & Moser, 2008). Strategic alignment between firm and operational strategies can lead to efficiencies throughout the firm and improve overall organizational effectiveness (Venkatraman & Prescott, 1990; Chan, Huff, Barclay, & Copeland, 1997). In a sense, strategic alignment facilitates the coordinated actions of firm departments and employees, assuring that efforts at work are being directed toward overarching firm goals. This highlights the importance of ensuring that corporate strategy is diffused throughout, and fully integrated within, a firm.

Swink et al. (2007) define corporate strategic integration as the process of acquiring and sharing objectives, plans, and related knowledge pertaining to business and operational strategies. The value of having a corporate strategy fully integrated throughout the firm is the value generated and potential competitive advantages created (Day & Wensley, 1983). While this is aided by acquiring and sharing knowledge between business and operational strategies, other factors may also play a role. These include alignment between corporate and functional level strategies, clarity, intra-organizational communication, and top management support (Chandler, 1962; Burgelman & Doz, 2001; Fawcett, Magnan, & McCarter, 2008). As such, corporate strategic integration is defined as the diffusion of firm level strategy within functional departments and functional goals being aligned with, and communicated throughout, the entire organization.

Kahn and Mentzer (1996) and Ellinger, Daugherty, and Keller (2000) both discuss the ineffectiveness of forcing employees across departments to work together without a clear objective. Corporate strategic integration solves this issue. Additionally, corporate strategic integration can bring together firm departments highlighting functional capabilities that can assist in meeting company goals as well as limitations that might prevent a firm from achieving its goals. When these limitations are known, a single corporate strategy unifies firm employees to find solutions (Rosenzweig, Roth, & Dean, 2003). These solutions include strategically integrating with external partners including customers and suppliers.

Strategic customer integration is defined as the firm's acquisition of information about customers that can be used to generate customer value (Hayes & Wheelwright, 1984; Swink et al., 2007). Strategic customer integration serves multiple purposes. One benefit is the ability of the firm to proactively seek information on customer preferences and needs (Vickery et al., 2003). This information should allow firms the opportunity to align their actions to best meet customer demand because strategically integrating with customers requires more than process level or operational task integration. A firm has little idea how satisfied the customer is with performance or what else the customer would like to see the providing firm accomplish when information is exchanged electronically or operations occur through established routines. Customer intimacy and the sharing of customer satisfaction information throughout the firm are more pertinent to strategically integrating with customers (Flynn, Schroeder, & Sakakibara, 1995; Swink et al., 2007; Flynn et al., 2010). However, receiving the benefits of strategically integrating with customers may occur only when the firm realizes this is an important undertaking. One way to espouse these benefits may be through having a corporate strategy integrated throughout the firm. Therefore the following hypothesis is offered:

H1: Corporate strategic integration is positively related to strategic customer integration**.**

Strategic customer integration is of limited value if the firm cannot successfully capitalize on the information and requirements shared by customers (Narasimhan et al., 2010). Sometimes possessing knowledge or information is not enough, especially if firms have no means of producing or providing the customer requirements. Recently, companies are more apt to rely on suppliers to help effectively deliver the goods and services customers want (Koufteros et al., 2005; Koufteros et al., 2007). Strategically integrating with suppliers allows for mutual support, cooperation, and coordination (Rosenzweig et al., 2003).

Strategic supplier integration is defined as the process of acquiring and sharing operational, technical, and financial information and related knowledge with the supplier in order to drive improvement and generate value (Swink et al., 2007). Flynn et al. (2010) note that strategic supplier integration facilitates the supplier's understanding and anticipation of the focal firm's needs. Strategic supplier integration involves improved information sharing and supplier engagement (Swink et al., 2007). Suppliers benefit from strategic supplier integration because they can become more quickly aware of the firm's operational activities and what the supplier can do to meet the organization's needs. This in turn can lead to an improvement in the focal firm's customer service. Strategically integrating with suppliers also allows firms to focus on their core competencies. This helps firms handle what they do well while being able to rely on the expertise of partners for areas in which they need assistance (Zhao, Huo, Flynn, & Yeung, 2008). There is a complementarity that exists between strategically integrated suppliers and firms that facilitate improved coordination, capabilities, and performance (Paulraj & Chen, 2007).

We propose that firms which have their corporate strategy integrated throughout the firm may be better able to strategically integrate with suppliers because an integrated corporate strategy will highlight opportunities for external integration as well as what type of supply partner may be best. As such, we argue that corporate strategic integration helps in the process of integrating with suppliers. Thus, the following relationship is hypothesized:

H2: Corporate strategic integration is positively related to strategic supplier integration.

At the center of integrative efforts is the desire to improve performance by developing or enhancing competencies with which to meet customer demand (Flynn et al., 2010). These collaborative relationships create synergistic resources where summed parts can be greater than individual components (Corsten & Kumar, 2005; Ellram et al., 2008). Frohlich and Westbrook (2001) note that integration can spawn new, or coordinate existing, capabilities and provide a competitive advantage. Further, these partnerships are enhanced when they are strategically integrated (Swink et al., 2007; Flynn et al., 2010; Narasimhan et al., 2010). This is because strategy helps to coordinate and manage the value creation process to create activities designed for customer benefit (Payne & Frow, 2005). In this manner, strategy serves as the structural foundation for firm and supply chain partner integration in order to create value for the customer. In this study, we measure value to the customer as the ability to be responsive to demand.

Demand response is the ability to anticipate or handle changes in marketplace demand (Christopher, 2000; van Hoek, Harrison, & Christopher, 2001; Braunscheidel & Suresh, 2009). Responding quickly to demand changes is almost a competitive priority in dynamic business environments (Handfield & Bechtel, 2002; Danese, Romano, & Formentini, 2013). Demand response derives its value from not only assisting in meeting customer desires, but also

predicting or alleviating any supply issues which might prevent meeting customer demand. This occurs as strategic integration with customers and suppliers helps organizations match resource deployments with demands (Swink et al., 2007). Integrating customers and suppliers based on a foundation of end customer value creation can lead to a knowledge sharing process between firms (Esper et al., 2010). Having the ability to synthesize information from supply chain partners about their operations and changes they estimate will happen in the marketplace greatly enhances a firm's capability to respond to demand (Fisher, 1997). This also enables all firms in the supply chain to understand customer requirements. Once these requirements are known, firms can prioritize and fulfill customer orders based upon the shared generation, dissemination, interpretation and application of real-time customer demand and potential supply constraints (Esper et al., 2010).

Strategic integration with both customers and suppliers can help firms effectively respond to changes in demand. Strategic customer integration helps firms understand customer preferences and predict how these preferences may change over time (Swink et al., 2007). This heightened customer awareness can lead to capabilities which represent value added customer activities (Autry, Griffis, Goldsby, & Bobbitt, 2005). Strategic supplier integration enhances information sharing and resource utilization to assist in meeting demand (Koufteros et al., 2005). With the understanding that demand response is vital to creating customer value, we offer the following hypotheses:

H3: Strategic customer integration is positively related to demand response.

H4: Strategic supplier integration is positively related to demand response.

One of the benefits of responding quickly to changes in customer demand is the ability to maintain or improve operational performance (Braunscheidel & Suresh, 2009; Richey, Adams, & Dalela, 2012). Understanding the linkage between customer demand response and operational performance is one way in which firms can generate a competitive advantage. Once the needs, preferences, and capabilities of supply chain partners are known, a supply chain can operate more efficiently (Hult, Ketchen, & Nichols, 2002). One potential benefit of this awareness is order cycle time process performance (Hult, Ketchen, & Slater, 2004).

Order cycle time process performance is defined as the interval between a buyer's request for a good or service and this good or service's delivery or fulfillment (Hult et al., 2004). Cycle time process performance is one potential outcome of efficient operations. Reliable and consistent cycle times represent a competitive advantage for firms (Gunasekaran, Patel, & Tirtiroglu, 2001) due to the value derived by customers from receiving timely orders (Hult et al., 2002; Hult et al., 2004). Anticipating or responding to changes in demand should help maintain or enhance the performance of the cycle time process. Therefore, we hypothesize the following relationship:

H5: Demand response is positively related to improved cycle time process performance.

Another desired effect of demand response is the positive impact on financial performance. The firm needs to react quickly to demand signals because market and consumer conditions change rapidly (Oliva & Watson, 2011). This ability to understand or even forecast demand could have a large impact on resource requirements cost, inventory expense, and profitability (Gunasekaran, Patel, & McGaughey, 2004; Peng, Verghese, Shah, & Schroeder, 2013). Demand responsiveness highlights a firm's ability to meet market needs. This

responsiveness may even impact customer perceptions and signal to the competitive environment an effective utilization of firm resources (Day, 1999). As such, a firm may expect financial gain when it responds quickly to changes in customer demand. Therefore, the following hypothesis is offered:

H6: Demand response is positively related to improved financial performance.

Finally, we expect that operational performance influences firm financial performance (Ketchen & Hult, 2007). Lambert and Burduroglu (2000) conceptualize a strategic profit model where operational capabilities and processes, in this case logistics, impact firm performance. Positive cycle time performance may also affect firm performance.

Hult et al. (2004) specifically suggest that time based competition is prevalent in today's business environment. The authors posit that improved cycle time performance positively impacts overall firm performance, with the rationale that shorter cycle times can provide firms a competitive advantage. This factor may differentiate firms from competitors and be valued by customers contributing to overall firm profitability. Handfield and Nichols (2002) as well as Ketchen and Hult (2007) both state that cycle time performance has a direct, positive link to firm profitability. As such, the following hypothesis is offered:

H7: Cycle time process performance is positively related to firm financial performance.

METHODOLOGY

Measurement Development and Sample

A web based survey utilizing Dillman's (2000) recommended approach was developed to evaluate the study's hypotheses. Multi-item measures were used to operationalize the constructs.

The items used in the survey were adapted from established scales in the literature (Churchill, 1979). Before administering the survey to the respondent pool, feedback was solicited from eight industry practitioners and five academic faculty. The feedback provided by the experts ensured survey representativeness, clarity, content validity, and face validity. After modifying the survey based on the experts' edits and recommendations, the questionnaire was distributed to supply chain professionals employed in U.S. manufacturing firms.

The sample pool of supply chain professionals was acquired from a Dun & Bradstreet (D&B) database. The database contained professional contact information, including telephone numbers and email addresses of supply chain employees of firms located in the United States. The D&B database was purchased because it was important to the research team to acquire a database containing both the telephone and email address of potential survey respondents. Having the contact information of the respondent pool allowed the research team to pre-alert the supply chain professionals about the survey instrument (Dillman, 2000). In so doing, a team of university students was hired and trained to contact the supply chain professionals listed in the D&B database. Pre-contacting the survey respondents was done to create awareness of the upcoming survey and attempt to mitigate the problems associated with a low response rate. Additionally, contacting the respondent pool also allowed the research team to gain insight as to why potential respondents may not participate in the survey. In total, the research team attempted to contact 4,456 supply chain professionals from late 2010 through early 2011. Of the total respondent pool, 2,284 were unreachable due to various reasons such as bad contact information, the contacts no longer being with the company, or being employees of companies that did not allow their workers to participate in surveys. Surveys were provided to the remaining 2,172 potential respondents in an email with a link to a secure, online web address.

This online platform allowed the research team to collect responses electronically. Of the remaining 2,172 potential respondents, 220 completed usable surveys were received which also represented 220 unique companies. This resulted in a final response rate of 10.13%.

The average respondent was 48.2 years old with an average of 26.75 years of work experience. Approximately 80% of the respondents were male with respondents representing the occupations of analysts, managers, or executives. The average firm represented in the sample had a market share of 26% and a return on assets of 3.2%. Thirty-one percent of the respondents represented firms in the computer and electronic manufacturing industry, with another 15% from the industrial chemical industry. Electrical equipment, food, heavy machinery, and transportation equipment manufacturers were industries represented by between 5% and 10% of other respondents. Various industries were represented by the remaining respondents.

Non-response bias was investigated by comparing demographic factors among companies that responded to the survey and those that did not. Utilizing the Wharton Research Data Services (WRDS) database, the research team collected firm financial and operational level information for respondent and non-respondent firms alike. No statistically significant differences among the financial and operational variables collected existed among the respondent and non-respondent groups. Additionally, non-response bias was tested by comparing the responses of early versus late respondents (Armstrong & Overton, 1977). No statistically significant differences were found between the groups. Therefore, it was concluded that non-response bias is not a serious concern in our sample.

Common methods bias can be a concern when both independent and dependent variables are collected from the same survey respondent (Podsakoff & Organ, 1986). Common method

bias (CMB) concerns were addressed in a variety of ways. First, a Harman's single factor test of all of the measurement items was conducted (Harman, 1976). If all of the measurement items across the constructs of interest were to load on one single exploratory factor, or one factor accounted for more than 50% of the explained variance, CMB would be assumed to be present (Podsakoff & Organ, 1986). An exploratory factor analysis was performed and the factor solution identified five different factors above the eigenvalue greater than 1.0 criterion. These five factors explained 73% of the variance in the data with the largest factor reporting only 38% of the explained variance. A second test of CMB was completed using Lindell and Whitney's (2001) marker variable technique. In this analysis, the smallest correlation between constructs was used as a post hoc proxy to represent CMB. This marker variable correlation was then partialled out from the remaining constructs to see if the remaining relationship between constructs was still significant. The remaining correlations remained significant, indicating CMB did not play a significant role in our findings.

Additionally, the latent variable constructs in the current study utilized different response formats. Podsakoff, MacKenzie, and Podsakoff (2012) advocate this technique as another way to control for common method bias. Finally, one of the dependent variables (financial performance) and all of the control variables in the study were gathered from the WRDS database. Use of multiple data sources, in this case the survey and the data from the WRDS database, help to mitigate the effects of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Independent and Dependent Variables

The variables utilized in the current research project are described below as well as in Appendix A. The first independent variable is corporate strategic integration and is adapted from items found in Swink et al. (2007). Respondents were asked to rate (1=strongly disagree, 7=strongly agree) their level of agreement with the four corporate strategic integration items. Strategic customer integration and strategic supplier integration were also adapted from Swink et al. (2007) and each had three items. The constructs were measured on a 7 point scale (1=strongly disagree, 7=strongly agree). The items measuring demand response were adapted from Braunscheidel and Suresh (2009), Christopher (2000), and van Hoek et al. (2001). The four items were rated by respondents on a 5 point scale (1=strongly disagree, 5=strongly agree). Cycle time process performance, one of the dependent variables in the current study, was rated using 3 items adapted from Hult et al. (2002). Respondents were asked to indicate their level of agreement (1=strongly disagree, 7=strongly agree). Return on equity serves as the financial performance metric in the current study. This measure was calculated for fiscal year end 2011 based on archival data from the WRDS database. Return on equity (ROE) represents organizational value as derived from, or recognized by, shareholders (Hillman & Keim, 2001) and has been used in existing supply chain research (Flynn et al., 2010; Petersen, Ragatz, & Monczka, 2005). However, the current paper represents one of the first supply chain integration studies to employ objective firm financial and industry level data.

Control Variables

The control variables utilized in the analysis were derived from the WRDS database. Industry size, assessed by the number of companies with a common NAICS code, was one control variable. Similarly market share was also utilized as a control variable. Market share was calculated by taking a firm's revenue and dividing it by the industry's total revenue. Market

share serves as a proxy for the level of power that the firm has in the industry. Industry type was also included as a control variable in order to control for industry factors that could affect firm financial performance (e.g., industry concentration).

Analysis

Anderson and Gerbing's (1988) two-step approach was utilized. A confirmatory factor analysis (CFA) was used to evaluate the measurement items. After confirming the validity of the measurement model, we evaluated the study's structural model.

Validity and Reliability

Convergent validity was assessed by examining the standardized factor loadings of each measurement item along with the average variance extracted of each latent measurement construct. The items had measurement loadings ranging from .63 to .87 and were all significant ($p < .001$). The loadings are above the .50 threshold and indicate convergent validity (Hair et al., 2006). As shown in the Appendix, the average variance extracted (AVE) was calculated for each construct. The AVE indicates the amount of variance captured by the latent construct relative to error variances (Fornell & Larcker, 1981). The AVEs for the constructs in this study range in value from .51 to .65. This also indicates convergent validity as the constructs account for more than 50% of the variance explained in the constructs (Hatcher, 1994). We tested for discriminant validity by comparing the square root of the AVEs to the inter-item correlations between pairs of constructs (Fornell & Larcker, 1981). If the square root value of the AVE is larger than the correlations, discriminant validity is supported. Our results, depicted in Table 1, support the discriminant validity of the study's constructs based on this test. As noted in the appendix, the

Cronbach's Alpha estimate of the constructs ranged from .75 to .86, providing evidence of construct reliability (Cronbach, 1951).

INSERT TABLE 1 HERE

The measurement model demonstrates adequate fit (χ^2 = 170.75, χ^2/d.f. = 1.57, CFI = .97, TLI = .96, RMSEA = .05, SRMR = .05). Each index falls within acceptable model ranges and indicates adequate measurement model fit (Iacobucci, 2010).

RESULTS

The structural model fit statistics indicate the data sufficiently fit the hypothesized model (χ^2 = 251.76, χ^2/d.f. = 1.95, CFI = .93, TLI = .92, RMSEA = .07, SRMR = .08) (Iacobucci, 2010).

INSERT FIGURE 2 HERE

We now turn to describing our findings. Corporate strategic integration is predicted to positively influence strategic customer integration (H1). The standardized path weight is .601 ($p<.001$), providing support for H1. Similarly, corporate strategic integration is hypothesized to positively influence strategic supplier integration (H2). H2 is supported with a standardized path weight of .705 ($p<.001$). Strategic customer integration and strategic supplier integration were both predicted to positively impact demand response (H3 and H4, respectively). H3 is supported with a standardized path value of .183 ($p<.05$). H4 is supported with standardized path loading of .527 ($p<.001$). Demand response is predicted to positively impact cycle time process performance (H5). The standardized path weight is .489 ($p<.001$), providing support for H5. Demand response is predicted to positively impact financial performance (H6). H6 is supported with a standardized path loading of .173 ($p<.05$). Finally, cycle time process performance is

predicted to be positively related to financial performance (H7). H7 is not supported. The control variables are not statistically significant. We discuss the implications of our results in the discussion section.

Mediation Testing

We now turn to examining the mediating relationships in our model as recommended by Zhao, Lynch, and Chen (2010). In so doing, the model paths were "bootstrapped" with an empirical sample distribution of the various hypothesized relationships. This sampling process occurred 5,000 times, after which the direct, indirect, and total effects estimates were generated. Results indicate that indirect effects were present between corporate strategic integration and demand response as well as strategic customer integration and strategic supplier integration on cycle time process performance and financial performance. Further, the confidence intervals surrounding these estimates were statistically significant (Preacher & Hayes, 2004). The direct effects, or direct relationships, between the mediated constructs in the bootstrapping analysis were not statistically significant indicating that indirect-only mediation is present (Zhao et al., 2010). These results further support the conceptualization of the structural model in the current research.

Alternative Model

To further support the mediation test's results, an alternative model was examined in which the three strategic integration variables – corporate strategic integration, strategic customer integration, and strategic supplier integration – each shared a direct relationship with cycle time process performance and financial performance. While adequate model fit statistics were obtained, the relationships between four of the six integration and performance variables were statistically insignificant. Corporate strategic integration and strategic supplier integration

each had a significant relationship with cycle time process performance while strategic customer integration did not. None of the strategic integration constructs shared a significant relationship with financial performance. The results support the current model's theoretical conceptualization of structure – conduct – performance. Stated differently, demand response serves as an important conduct variable in our model.

Additionally, the structural model was estimated with return on assets as the financial performance measure of interest. Return on assets (ROA), also derived from the WRDS database, measures the profitability of a firm relative to the company's total asset base (Dess & Robinson, 1984). The hypothesized results and overall model fit statistics were consistent with our original structural model using ROE except for two differences. Hypothesis 6, the relationship between demand response and financial performance, is supported at the $p < .10$ level. Hypothesis 7, the relationship between cycle time process performance and financial performance, is still not supported. However, the standardized path coefficient is negative and statistically significant at the $p < .05$ level. While the relationship between operational performance and financial performance will be discussed in more detail later, we believe operational efficiency as measured by the ROA financial performance metric may conflict with the speed required by cycle time process performance.

DISCUSSION, IMPLICATIONS AND FUTURE RESEARCH

Leveraging the structure – conduct – performance (SCP) framework from industrial organizational economics, we develop and empirically test theory about how a firm's supply chain integration activities impact firm performance. We utilize the SCP framework to examine how the firm can use its supply chain integration activities as a structural response to competitive

market conditions in order to enhance firm performance (Caves, 1964; Caves & Porter, 1977; Chatain, 2011). As firms integrate, both internally and externally, it is important to understand how these decisions impact firm and supply chain partner conduct and firm performance. The current study analyzes the role of supply chain integration, its effect on demand response, and the subsequent impact on both operational and financial performance. This study has implications for researchers and managers alike as there has been increasing attention to the topic of supply chain integration and its role on firm level competition issues (Braunscheidel & Suresh, 2009; Flynn et al., 2010; Zhao et al., 2011). The current research differentiates itself from past work with the theoretical perspective utilized, the type of integration examined, and the use of both operational and financial performance as well as objective financial performance data sources.

Corporate strategic integration was predicted to, and did, have a positive relationship to both strategic customer integration and strategic supplier integration. These findings support similar conclusions reached by past researchers (Koufteros, Rawski, & Rupak, 2010; Zhao et al. 2011). These results provide additional support for Bowersox et al. (1999) and Cooper and Ellram (1993), who propose that internal integration should occur before external integration. The current research takes an additional step by discussing strategic integration. Ensuring that a corporate wide strategy is disseminated throughout the firm and matches to or has department strategies to support a firm's overarching goals can lead to clarity and sense of purpose. It is through this sense of purpose that suppliers **and** customers can be identified in order to more fully integrate at a strategic level. The results support firms generating a common platform from which all employees work in order to highlight needs and identify the best partners possible.

Strategic customer integration and strategic supplier integration were both predicted to have a positive relationship to demand response. Research findings support these hypotheses. Companies that utilize customer satisfaction information and regularly interact with their customers as well as those that share information with and require improvements by suppliers are readily able to respond to market demand. This can stem from the ability of firms to know and understand what customers want while balancing this with the abilities of their firm and suppliers. Managers can utilize this information by understanding that one way to be responsive to customer demand is through strategically integrating with both customers and suppliers.

Demand response was predicted to, and did, have a positive relationship to both order cycle time (operational performance) and financial performance. Being responsive to demand can have positive effects on operational and financial performance. Operationally, demand response should result in a shortening of order cycle time process performance because more of the right product or service should be on hand when it is demanded. Having product available is a prerequisite for ensuring cycle time process performance. Demand response also has positive financial performance implications. This indicates that being able to respond to demand is a way to influence financial performance. The obvious implication is that demand response can be a way to improve firm finances.

Cycle time process performance was predicted to have a positive relationship to financial performance. There are many plausible reasons why we did not find support for this hypothesis. Firms sometimes face conflicting goals of operational and financial performance and the two objectives are not always synergistic. Speeding up the delivery process of goods may result in harming financial performance, but firms see this as a necessary expenditure (Blank, 2014; Mouton, 2014). Perhaps managers may see some operational outcomes (i.e., cycle time process

performance) as a cost or requisite of doing business. Some firms may make this trade-off by hoping for long-term loyalty or future business which is difficult to immediately quantify, but could have positive long-range implications. Further research is needed to fully understand this relationship.

From a theoretical perspective, this article leverages the SCP paradigm when theorizing about the relationship among strategic integration, firm conduct (demand responsiveness capability), and performance. Selecting strategic supply chain integration as the structural portion of the framework is a unique contribution. Many factors such as barriers to entry, product differentiation, and vertical integration have been noted as structural components firms can utilize in response to market conditions (Caves & Porter, 1977). Integrating both internally and externally with supply chain partners better reflects today's business environment and expands the list of structural "foundations" firms can employ, and researchers can study, in order to impact conduct and performance. Considering integration from a strategic perspective also focuses researchers on integration over and above simple process coordination. While process integration has benefits, strategic integration suggests a long-range goal or plan underlying integrative efforts. Not only can strategic integration impact firm conduct and performance, additional benefits may lie in improving integration success. The analysis of both financial and operational performance stemming from integrative efforts is another important research implication. Understanding that demand response, spurred by supply chain integration, positively impacts performance of both kinds establishes that demand response has multiple benefits. This allows future research to focus on different aspects of these relationships such as moderating variables that provide further knowledge of when and how these relationships can be impacted.

This study also offers a number of managerial implications. The study's results suggest the need to be aware of the power of strategic integration. The firm has the ability to strategically integrate both internally and externally across functional units and other firms by coordinating capabilities and generating efficiencies. The strategic focus ensures firms are working together for a purpose instead of simply going through operational motions. This may lead to lasting and beneficial relationships. Demand response, impacted by strategic integration, has the ability to influence both financial and operational performance. This supports the notion that managers must be cognizant of market demand and make attempts to balance demand and supply. Having the right goods on hand provides firms opportunities to excel at both financial and operational performance. Finally, the study should make managers pause when balancing operational and financial performance.

Future Research

Our study offers both theoretical and managerial insights regarding how to successfully integrate the supply chain to realize improved performance. We hope that this study provides the foundation for interesting extensions on the topic of supply chain integration. One extension is to expand on Richey et al. (2010) by attempting to better understand the barriers and facilitators of strategic supply chain integration. Additionally, future studies should look into dyadic data or even gathering data from the focal firm, suppliers, and customers in order to gain a more encompassing supply chain perspective. Perhaps further research can more fully analyze the relationship between operational and financial performance. Looking at other aspects of operational performance could provide further insights. Another interesting extension would be to collect longitudinal data in order to see the results of integration and both types of

performance over time. Lastly, future research should examine how a focal firm's supply chain integration efforts enable it to better respond to a rival's supply chain actions.

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APPENDIX A
Measurement Items

Construct	Label	Item	Mean	Standard Deviation	Standardized Factor Loadings	Cronbach's Alpha	Average Variance Extracted	Adapted from
Corporate Strategic Integration						0.86	0.65	Swink, Narasimhan, & Wang 2007
Please complete the following set of items by circling the number (1= strongly disagree, 7 = strongly agree) that corresponds to your level of agreement on each of the statements below								
	CSI1	Our department's supply chain strategy is well aligned with our corporate strategy	5.45	1.43	0.81			
	CSI2	Our supply chain strategic goals and objectives are clearly defined	5.27	1.51	0.87			
	CSI3	Supply chain strategies and goals are communicated to all employees	4.24	1.83	0.68			
	CSI4	Our firm's strategic goals leverage our company's existing capabilities	5.34	1.30	0.86			
Strategic Customer Integration						0.78	0.55	Swink, Narasimhan, & Wang 2007
Please complete the following set of items by circling the number (1= strongly disagree, 7 = strongly agree) that corresponds to your level of agreement on each of the statements below								
	SCI1	Results of customer satisfaction surveys are shared with all employees	4.45	2.00	0.80			
	SCI2	We actively create opportunities for employee-customer interaction	4.19	1.75	0.69			
	SCI3	We have a formal customer satisfaction program in place	4.58	2.00	0.74			
Strategic Supplier Integration						0.75	0.51	Swink, Narasimhan, & Wang 2007
Please complete the following set of items by circling the number (1= strongly disagree, 7 = strongly agree) that corresponds to your level of agreement on each of the statements below								
	SSI1	We require major suppliers to make improvements in terms of both cost and quality improvements	5.50	1.52	0.68			
	SSI2	We share real time supply chain information with suppliers (e.g. production schedules)	4.93	1.80	0.80			
	SSI3	We encourage our suppliers to become involved in product design	4.40	1.91	0.65			
Demand Response						0.83	0.56	Braunscheidel & Suresh 2009, Van Hoek, Harrison, & Christopher 2001, Christopher 2000
Please complete the following set of items by circling the number (1= strongly disagree, 5 = strongly agree) that corresponds to your level of agreement on each of the statements below								
	DR1	Our supply chain is able to respond to changes in demand without overstocks or lost sales	3.44	1.00	0.77			
	DR2	Our supply chian is able to leverage the competencies of our partners to respond to market demands	3.71	0.85	0.80			
	DR3	Our supply chain is capable of forecasting market demand	3.12	0.99	0.63			
	DR4	Our supply chain is capable of responding to real market demand	3.71	0.90	0.77			
Cycle Time Process Performance						0.83	0.64	Hult, Ketchen, & Nichols 2002
Please complete the following set of items by circling the number (1= strongly disagree, 7 = strongly agree) that corresponds to your level of agreement on each of the statements below								
	CTPP1	We have seen an improvement in the cycle time of the supply chain process recently	4.34	1.52	0.63			
	CTPP2	We are satisfied with the speediness of the supply chain process	3.78	1.51	0.87			
	CTPP3	Based on our knowledge of the supply chain process, we think it is short and efficient	4.00	1.43	0.87			

FIGURE 1

Theoretical Model

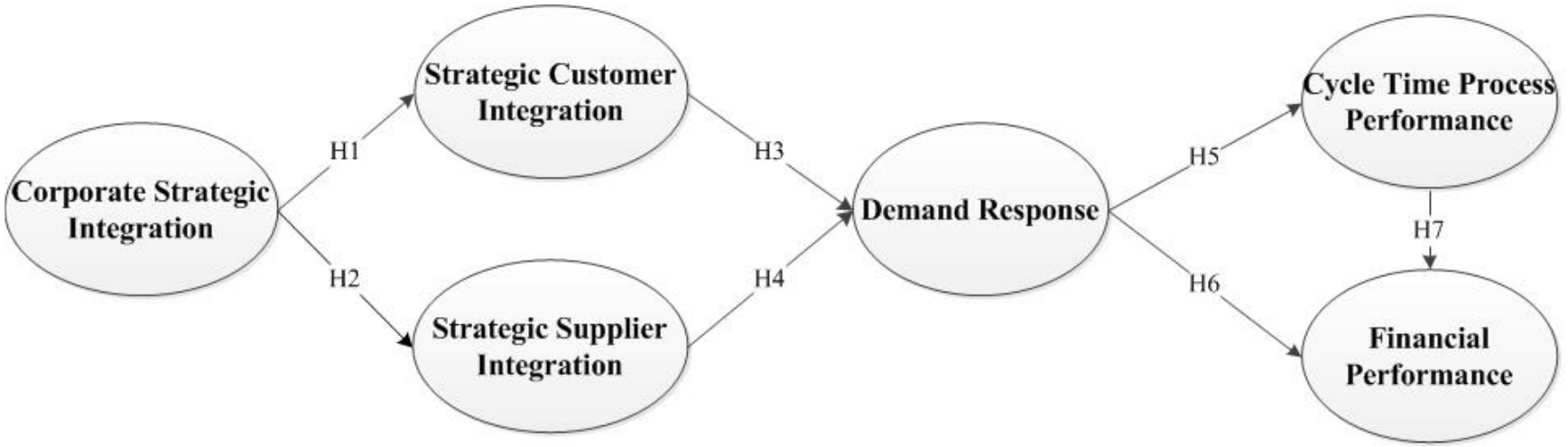
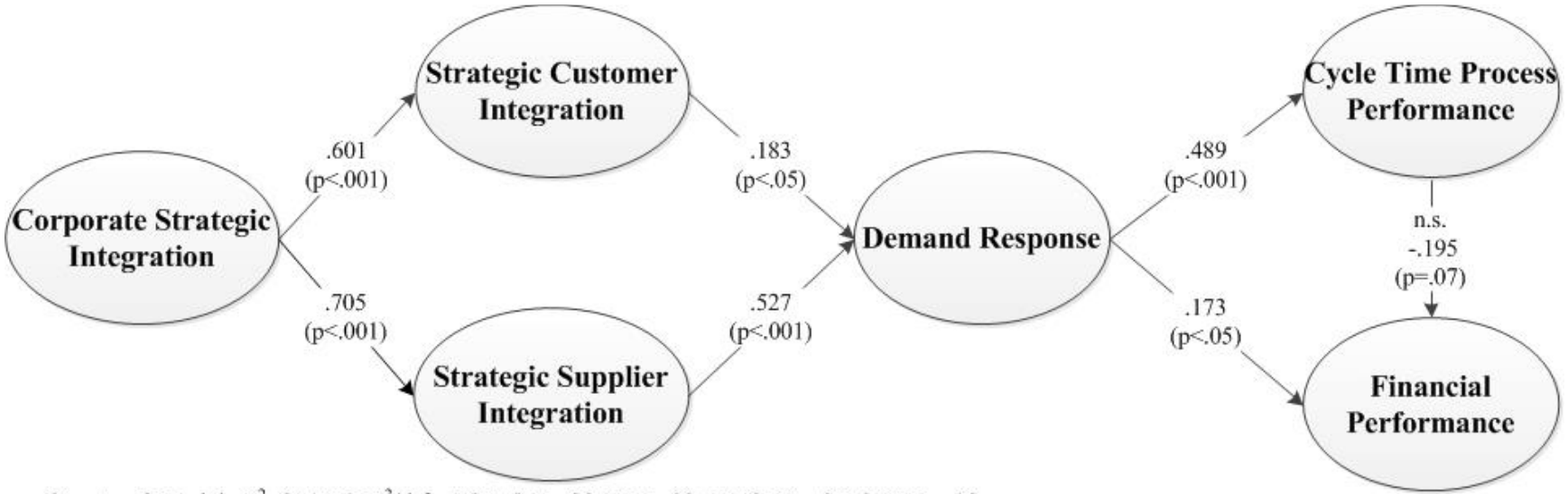


FIGURE 2

Path Model with Results



Structural Model: X^2=251.76, X^2/d.f.=1.95, CFI=.93, TLI=.92, RMSEA=.07, SRMR=.08
CFA: X^2=170.75, X^2/d.f.=1.57, CFI=.97, TLI=.96, RMSEA=.05, SRMR=.05

TABLE 1

Correlation Table

	CSI	SCI	SSI	DR	CTPP
CSI	**0.81**				
SCI	0.58	**0.74**			
SSI	0.63	0.48	**0.71**		
DR	0.68	0.38	0.54	**0.75**	
CTPP	0.39	0.25	0.10	0.49	**0.81**

CSI = Corporate Strategic Integration, SCI = Strategic Corporate Integration, SSI = Strategic Supplier Integration, DR = Demand Response, CTPP = Cycle Time Process Performance

Square root of the AVE listed in the diagonal