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THE MODERATING INFLUENCE OF FIRM MARKET POWER ON THE TRANSACTION COST ECONOMICS MODEL: AN EMPIRICAL TEST IN A FORWARD CHANNEL INTEGRATION CONTEXT

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Transaction cost economics (TCE) has guided a variety of research on governance in the strategic management literature. An important question arises, however, as to whether the TCE framework is equally appropriate for all types of firms in all business settings. In this paper, we argue that TCE is not and suggest that firms with high market power may be able to lower transaction costs under high asset specificity and uncertainty in nonintegrated distribution channels, avoiding the need to utilize highly integrated channels as a result. We test our hypotheses with data collected from 40 manufacturers of electronic and telecommunications products in 109 product-markets in the United States. The results support our hypothesis that transaction cost factors are better at explaining forward channel integration for firms with low market power than for firms with high market power. Our results indicate that the basic TCE framework must be supplemented by the market power construct to adequately explain forward channel integration decisions.

Transaction cost economics (TCE) has become one of the leading theoretical perspectives in the study of management and organizations (David and Han, 2004). Based on foundational work by Coase (1937), Williamson (1975, 1981) developed the basic TCE framework. TCE has been used to guide a variety of empirical research on governance arrangements in the strategic management literature, especially over the past decade, including work on the integration of production within the firm (i.e., make or buy) (Gulati, Lawrence, and Puranam, 2005; Hoetker, 2005; Jacobides and Winter, 2005; Leiblein, Reuer, and Dalsace, 2002; Leiblein and Miller, 2003), the integration of services within the firm (Delmas and Tokat, 2005; Nickerson, Hamilton, and Wada, 2001; Murray and Kotabe, 1999; Poppo and Zenger, 1998), the management and performance of multinational enterprises (Goerzen and Beamish, 2003, 2005), the functioning and performance of joint ventures (Luo, 2002; Pearce, 1997; Reuer, 2001), the coordination of inter-organizational relationships, such as alliances (Michael, 2000; Poppo and Zenger, 2002; White and Lui, 2005), and the international mode of market entry (Brouthers,

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Brouthers, and Werner, 2003; Chang and Rosenzweig, 2001).

These accomplishments aside, controversy exists regarding the contribution of TCE in particular and economic models in general to the strategy area (David and Han, 2004; Rumelt, Schendel, and Teece, 1991). Schendel (1991: 3) states:

> the role of economics in strategy can be understood as an important and necessary, but insufficient, contributor to the applied field of strategic management and the problems and issues it must solve.

Chen, Peng, and Saparito (2002), David and Han (2004) and Ghosal and Moran (1996), among others, have questioned TCE's empirical validity and applicability to the field of strategic management. In fact, in his 1991 Nobel lecture, Coase argues:

> the interrelationships which govern the mix of market and hierarchy, to use Williamson's terms, are extremely complex and in our present state of ignorance it will not be easy to discover what these factors are. What we need is more empirical research. (Coase 1993: 234)

Further, David and Han's meta-analysis finds mixed support for the framework as a whole. They conclude that a more thorough empirical grounding of the theory's foundation is needed and go on to state:

> the theory itself can be refined by specifying 'scope conditions' (Schoonhoven, 1981; Walker and Cohen, 1985). Given the mixed support TCE has currently garnered, it is critical to understand the conditions under which the theory works well and under which it does not (David and Han, 2004; 54).

There has been limited research to date that examines how scope conditions or contextual variables, including moderator variables, affect the explanatory and predictive power of TCE.[1]

Our study is concerned with the forward integration decision of manufacturers in shaping their channels of distribution. In a forward integration context, channels of distribution are the means by which manufacturers make their finished products available for purchase by end customers.[2] They can be completely integrated (direct), where the firm uses its own human and physical assets to gain and fulfill customer orders, completely non-integrated (indirect), where the firm uses independent firms named intermediaries (e.g., distributors) to gain and fulfill customer orders, or somewhere in between, which is most common, especially in business-to-business settings (see Hennart, 1993). The forward channel integration decision is highly important to the firm, as it will impact sales and gross margins gained from end customers, as well as investments and costs incurred in selling to and servicing end customers (Coughlan *et al*., 2001). To date, most of the empirical research on forward channel integration has embraced the basic TCE framework (Anderson, 1985; Aulakh and Kotabe, 1997; Coughlan, 1985; Erramilli and Rao, 1993; John and Weitz, 1988; Klein, Frazier, and Roth, 1990; Majumdar and Ramaswamy, 1995). TCE predicts that under high asset specificity and high uncertainty, the firm will embrace a highly integrated channel in all cases. We question this.

The objective of our study is to clarify the applicability and limits of TCE to the forward channel integration decision of the firm by exploring whether or not a key scope condition, a *firm's market power*, moderates the framework's basic predictions (see Figure 1). Specifically, we argue that the basic TCE framework will not be a strong predictor of forward integration choice for firms that enjoy a high level of market power. The primary reason for the inability of transaction cost logic to explain the channel integration choices of firms with high market power may be the ability of such firms to influence the behavior of independent channel intermediaries. Thus, the possession of market power by a firm may allow it to lower transaction costs without resorting to a high level of forward channel integration, even when asset specificity and uncertainty are high. The TCE framework may be a reasonable predictor of forward channel integration only when firm

[1] Artz and Brush (2000) found that relational norms moderate the relationship between asset specificity and negotiation costs. Utilizing TCE, Coles and Hesterly (1998) found different results regarding contracting decisions in public vs. private hospitals. Buvik and John (2000) found that trust could lower the transaction costs of exchange, while two studies found that trust led to less integration between transacting parties than would be predicted by transaction cost factors (Gulati, 1995; Oxley, 1997).

[2] Our focus is on forward channel integration, not backward channel integration, involving how manufacturers access (i.e., make or buy) the materials, components, and supplies that they use in the process of making finished products. Other factors not considered in our conceptual framework could impact the backward channel integration decision (see Buvik and John, 2000).

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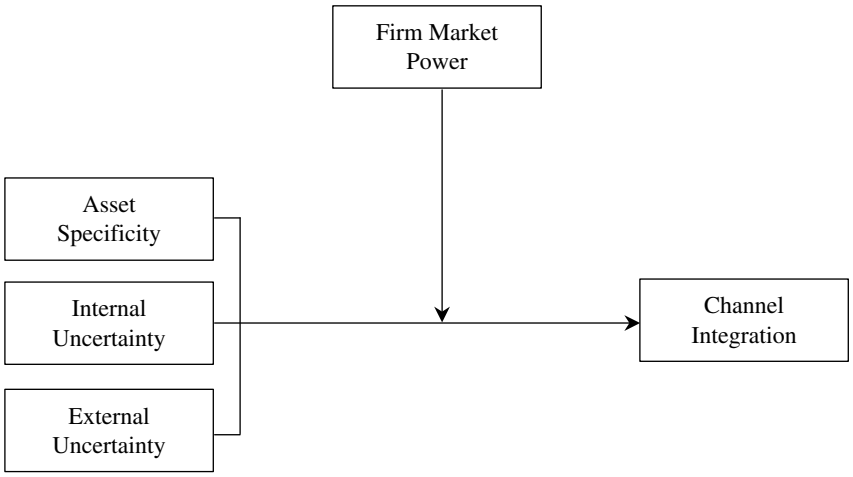

Figure 1. Moderating effects of firm market power on the TCE model

market power is low. In such cases, the firm cannot mitigate the effects of high asset specificity and uncertainty on transaction costs by effectively influencing independent intermediaries.

The firm's level of market or bargaining power has been a key construct in strategy research (Harrigan, 1983, 1985; Porter, 1976, 1980, 1985). A firm's power has also played an important role in channels research in the marketing literature, though mainly in managing ongoing channel relationships rather than shaping channel organization (Frazier, 1999). The power construct has been largely ignored by TCE advocates in their development of a theory of vertical integration. The potential benefits of exploring the impact of a firm's market power on the basic predictions of the TCE model seem too great to ignore. As Heide and John (1992: 41) argue:

> the normative insights from transaction cost theory might be augmented with power ... theory's descriptive insight into the mechanisms that allow certain inter-firm structures to be implemented.

Transaction costs are defined in TCE as the 'costs of governing relationships' (Williamson, 1975). Firms can use their market power to help in 'governing' or managing relationships (Coughlan *et al*., 2001). Given such a direct connection between transaction costs and market power, the need to explore whether or not market power moderates the basic predictions of TCE is both obvious and important in helping to clarify the strengths and weaknesses of the framework, which David and Han (2004) argue is necessary for future advancement.

After discussing the basic TCE framework and developing the firm's market power construct in greater depth, we develop theoretical arguments for why a firm's market power will have an important role as a moderator variable in decisions on forward channel integration. Next, we discuss our research method, including the research context, measure development, and data collection. The analysis and results follow. The paper concludes with a discussion of the implications and limitations of the study.

TRANSACTION COST ECONOMICS

TCE focuses on transactions (i.e., transfers of a good or service) and the costs that attend completing transactions by one organizational form (e.g., market, hybrid, hierarchy) rather than another (Williamson, 1975). Within TCE, the goal of the firm is to choose the organizational form that minimizes *transaction costs* (i.e., the costs of governing relationships) when completing transactions. TCE assumes that bounded rationality exists among decision makers and that at least some people or firms in any setting will be opportunistic (i.e., self-interest seeking with guile).

Williamson (1975) argues that transaction costs are not directly measurable since they represent the potential consequences of alternative decisions. Consequently, Williamson (1975) builds the TCE framework on a set of factors that are proposed

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to determine the transaction costs incurred under different organizational forms. They are the level of asset specificity needed to support the exchange, internal uncertainty or performance ambiguity, and external uncertainty.[3] TCE contends that greater integration will occur when these transaction cost factors are present at high levels, since market exchange will be very costly under such conditions.

Asset specificity is the extent to which specialized investments are needed to support an exchange (Williamson, 1981). In the context of forward channel integration, sales personnel knowledge of product benefits, personal relationships developed over time that provide the ability to act quickly and correctly, and customized physical facilities (e.g., warehouses, delivery vehicles) are examples of specific assets made possible by the firm's specialized investments. Specific assets, whether physical or intangible, cannot be redeployed to another application or relationship without a significant loss in value. Thus, specialized investments in such assets have the effect of reducing a large-numbers bargaining situation (i.e., one in which many intermediaries are available) to a small-numbers situation where the firm may face a 'hold-up' problem in the market. As John and Weitz (1988: 24) state, 'Because non-redeployable specific assets make it costly to switch to a new relationship, the market safeguard against opportunism is no longer effective.' As a result, when asset specificity is high, TCE predicts that the firm will tend to utilize more integrated channel structures in order to minimize transaction costs.

Internal uncertainty is the extent to which it is difficult to assess performance (Williamson, 1981). When performance ambiguity is present, the firm cannot easily discern what level of performance it is getting. Thus when internal uncertainty is high, due to no measures of results or poor measures of results, the market option would lead to high transaction costs, as the firm would need to seriously monitor and direct the activity of independent firms. As a result, TCE predicts that, as internal uncertainty increases, firms are likely to increasingly rely on more integrated distribution channel options. In a channels context, the ability of the firm to discern what is contributing to sales with end customers (e.g., salesperson effort) is the key performance issue presented by internal uncertainty (Anderson, 1985).

External uncertainty is the extent to which it is difficult to accurately predict future states of the world (Williamson, 1981). The construct is driven by an industry environment that is very dynamic (fast changing) and/or very complex and difficult to grasp. High external uncertainty, given bounded rationality, precludes the writing and enforcement of contingent claims contracts that specify every eventuality and consequent response. Further, it allows negative information asymmetries to develop and provides the potential for outside intermediaries to behave opportunistically. Therefore, under high external uncertainty, transaction costs are likely to be high in the market, leading to greater levels of channel integration. Such internalization may facilitate an adaptive, sequential decision process that can best confront a changing and complex environment.[4]

Thus the basic TCE proposition when applied to the forward channel integration decision is as follows:

> *TCE Proposition: Asset specificity, internal uncertainty, and external uncertainty will be positively related to the level of forward channel integration.*

This general proposition has gained some degree of support in empirical research. Anderson (1985), John and Weitz (1988), Klein, Frazier, and Roth (1990), and Majumdar and Ramaswamy (1995) find asset specificity positively related to the level of channel integration. However, Aulakh and Kotabe (1997) fail to find a significant effect for asset specificity on channel integration. Two studies have found support for the proposed link between internal uncertainty and channel integration. Anderson (1985) finds that the difficulty of evaluating salesperson performance is positively related to the use of a company-owned sales force, while John and Weitz (1988)

[3] Frequency of the exchange was also mentioned by Williamson (1975) as an important factor. However, we do not examine the frequency variable because only recurrent exchange exists in the forward channel integration context we examine (also see John and Weitz, 1988).

[4] Importantly, some organizational theorists and strategy scholars argue that firms will be less integrated under high external uncertainty in order to reduce and spread levels of risk (Lawrence and Lorsch, 1967; Leifer and Huber, 1977; Pfeffer and Salancik, 1978). We turn to this possibility more fully in discussing the empirical results of our study.

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indicate that the difficulty of assessing downstream performance is positively related to the use of integrated channels. The effects of external uncertainty are less clear. Some evidence suggests that volatility in the firm's output environment contributes to channel integration (Dwyer and Welsh, 1985; John and Weitz 1988; Klein *et al*., 1990). Anderson (1985) reports a significant interaction between unpredictability and asset specificity.[5]

FIRM MARKET POWER

The power construct has received attention in many diverse disciplines, including economics (Scherer, 1980), sociology (Emerson, 1962), management and organizational behavior (Bacharach and Lawler, 1980; Pfeffer and Salancik, 1978), and marketing. Within the strategy literature, power has been examined at many different levels of aggregation, including: (1) an individual's power within an organization (Jensen and Zajac, 2004); (2) a subunit's power within an organization (Golden and Zajac, 2001; Medcof, 2001); (3) a firm's power within inter-firm relationships or a specialized network of firms (Kim, Hoskisson, and Wan, 2004); and (4) a firm's market or bargaining power in a product-market or industry (Foss and Foss, 2005; Harrigan, 1985; Makhija, 2003; Porter, 1976, 1985).

While no single conceptual definition of power exists across all these studies, a common thread is strongly evident, namely that power will provide to its holder the ability to achieve a high level of influence or control on the behavior of others in contact with it. Based on this foundation, we define 'market power' as a firm's ability to influence the actions of others in a product-market (Harrigan, 1983; Makhija, 2003; Porter, 1976, 1980). If a firm serves a variety of product-markets, its market power could vary significantly across them.[6] Given our focus, the ability of the firm to influence independent channel intermediaries is of main concern.

The industrial organization (IO) literature in economics has long indicated that a firm's market power is based upon (1) the firm's market position, normally reflected by its market share, and (2) the level of product differentiation (Bain, 1968; Child, Chung, and Davies, 2003; Isely and Roelofs, 2004; Makhija, 2003; Scherer, 1980; Shamsie, 2003). Independent intermediaries are in the business of acquiring products from manufacturers and then reselling them to their downstream customers. The extent to which end customers are aware of individual brands and exhibit preferences for individual brands are critical to the intermediary in selling the products it carries (see Hoyer and MacInnis, 2004). Low market share brands with little if any differentiation will not be valued to any extent by intermediaries, since their own customers place little value on them. In contrast, intermediaries will go out of their way to gain and then keep manufacturer brands with high market share that are also highly differentiated in the marketplace because of contributions to their financial goal attainment (Scherer, 1980). That is, intermediaries should be able to quickly sell such products in large volume and earn healthy gross margins because of end customers' perceived value of these products (see Frazier, 1983).

Therefore, a manufacturer's market position and product differentiation are likely to drive its level market power in a channels context because of the motivation of the intermediary to gain and then maintain an exchange relationship with the firm. When intermediary compliance is needed, a firm with high market power should be able to frequently gain such compliance by merely making its desires known or pressing the intermediary to comply (Gaski, 1986; Payan and McFarland, 2005). A variety of empirical research has found that firms with high power are able to secure fairly high levels of influence on the behavior of associated channel members (Anderson, Lodish, and Weitz, 1987; Anderson and Narus, 1990; Gaski and Nevin, 1985). More specifically, firms with high market or bargaining power in a product-market are likely to be able to influence: (1) the prices, terms, and shipping schedules of intermediaries, (2) the promotional policies of downstream firms;

[5] Like some other advocates of TCE, Anderson (1985) argues that external uncertainty is relevant only when asset specificity is high. We believe that the main effect of external uncertainty is important to examine in its own right (John and Weitz, 1988; Klein *et al*. 1990). External uncertainty poses challenges to governing relationships irrespective of specialized investments (see Pfeffer and Salancik, 1978).

[6] For example, in the business-to-business setting, 3M has three key product-markets: (1) adhesives in the U.S. market; (2) cutting tools and abrasives in the U.S. market; and (3) safety products in the U.S. market. Its market power does vary across these three product-markets (based on an interview with a vice president of Marketing in 3M).

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(3) the amount of information gained from intermediaries on the product benefits desired by end customers; and (4) the job tasks or work activities that intermediaries agree to perform in carrying out their role in the channel system (Harrigan 1983: 33–34; also see Porter, 1976). Therefore, it seems plausible that the firm's market power may impact some of the hazards (e.g., inability to exercise legitimate authority, monitor behavior, or offer effective incentives) TCE identifies as being associated with using nonintegrated channels when asset specificity and uncertainty are high.[7]

The firm's level of market power is likely to be considered by management in making the forward channel integration decision. Highly integrated channels are very costly to establish and operate, not in transaction cost terms, but in terms of investments in personnel (e.g., salespeople), equipment (e.g., delivery vehicles, computers), facilities (e.g., warehouses), software (e.g., customer relationship management (CRM) software), inventory, credit, and accounts receivables (see Harrigan, 1983). Before making such resource commitments, firm management is likely to consider all options. Weighing and evaluating the firm's market power is critical in judging the feasibility of making a nonintegrated channel actually work.

RESEARCH HYPOTHESIS

TCE argues that when asset specificity and uncertainty are high, market imperfections will exist, making nonintegrated channels less tenable because of high transaction costs. In our judgment, when firm (manufacturer) market power is high, the market imperfections that TCE identifies can be effectively confronted and dealt with by the firm, allowing it to move toward greater use of nonintegrated channel options and reliance on intermediary financial, human, and physical assets to consummate sales with end customers. A high level of market power in a product-market is likely to translate into high levels of attention and support from associated intermediaries (Anderson and Narus, 1990), thereby helping to minimize control losses that can occur in nonintegrated channel systems (Heide and John, 1992).

More specifically, firms with high market power in a product-market should be able to effectively manage relationships with independent intermediaries without extreme transaction costs because processes associated with bargaining, assembling information, and coordinating channel relationships should be facilitated by the possession of power (Coughlan *et al*., 2001; Pfeffer and Salancik, 1978). While high specialized investments may lead to some asset exposure, a firm with high market power has leverage in dealing with independent intermediaries (Michael, 2000). In such cases, intermediaries are likely to understand the value of having the manufacturer's products and need to maintain satisfactory exchange relationships with the firm. This motivation is likely to curb tendencies for significant intermediary opportunism. As Heide and John (1992: 41) state, 'a dominant partner in terms of bargaining power can extract safeguards for specific investments' (also see John, 1984; Stinchcombe, 1985). Moreover, firms with high market power should have access to a good deal of information possessed by its intermediaries, reducing the degree to which negative information asymmetries exist. The fact that firms with high market power can effectively exercise legitimate authority, monitor behavior, and offer a varied set of attractive incentives to independent channel members (Bello and Gilliland, 1997; Gaski, 1986; Gaski and Nevin, 1985) should lessen the impact of unforeseen contingencies and ambiguity in performance evaluations in nonintegrated channel systems. While TCE holds that the need to 'direct intermediary activities' when asset specificity and uncertainty are present will lead to significant transaction costs, such need not always be the case. Firms with high market power can provide guidance to intermediaries on appropriate behaviors that lead to desired outcomes; intermediaries are likely to be receptive to such guidance from them (Celly and Frazier, 1996). If these arguments hold, firms with high power can reduce transaction costs to a significant degree in nonintegrated channels even when asset specificity is present and uncertainty is high, thereby calling into question the universal applicability of transaction cost logic.

[7] While we do not couch our arguments on what market power is based upon in resource dependence terms (Emerson, 1962; Pfeffer and Salancik, 1978), our arguments are not inconsistent with this theoretical perspective. Intermediary motivation to gain and maintain a relationship with a manufacturer with high market share and highly differentiated products could be interpreted as reflecting dependence on the manufacturer. However, we do not judge, in turn, the dependence of the manufacturer on intermediaries. Thus our approach does not reflect an 'interdependence' orientation.

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On the other hand, TCE factors are expected to work much better in product-markets where the firm possesses low market power. The hazards associated with market imperfections when asset specificity and uncertainty are high are likely to hold and may even be strengthened in such situations. When faced with high asset specificity and uncertainty, a firm lacking in power will possess very little leverage in dealing with members of nonintegrated channels, leaving it open to the hazards of opportunism and negative information asymmetry (Michael, 2000). Under such conditions, the costs of attempting to govern independent channel intermediaries may be extreme. Monitoring efforts and attempts to direct intermediary activities are likely to be rebuffed (Celly and Frazier, 1996). Bottom line: when asset specificity and uncertainty are high, control losses are likely to be substantial if a firm with low market power tries to rely on less integrated channel structures.

Hypothesis 1: Transaction cost factors will be more strongly related to channel integration when firms possess low market power than when they have high market power in a product-market.

We propose that firms with high market power will rely more on independent intermediaries in the face of high asset specificity and uncertainty than TCE predicts. A major question then arises of why independent intermediaries would agree to take on the firm's products under such conditions. Intermediaries could be reluctant to market and sell a firm's products when specialized investments and uncertainty are high. In our judgment, intermediaries will be motivated to assume such risks for manufacturers with high market share and high product differentiation because of the potential of high contributions to goal attainment. Intermediaries will likely make the necessary specialized investments under conditions of uncertainty because the likely return on those investments is high. Leading brands are easier for intermediaries to market and sell because of end customers' perceived value of these products (Coughlan *et al.*, 2001). Intermediaries are in the business of acquiring and selling manufacturer products, whatever the underlying conditions.

Finally, it could be argued that a firm with high market or bargaining power is more likely to make use of a non-integrated channel. The primary reason is the leverage that such firms will have with independent firms in making a non-integrated channel work, avoiding the high investments necessary to establish and maintain a highly integrated channel in the process (Grossman and Hart, 1986; Harrigan, 1983; Porter, 1976). We do not expect firm market power to have a main effect on channel integration. Possessing market power gives options to the firm in making the integration decision; which option makes sense cannot be pinpointed until transaction costs, among other factors, are considered. This said, we will test for the main effect of firm market power on channel integration in the data analysis.

METHOD

Setting, sample, and data collection

Manufacturers of electronic and telecommunication products in the U.S. market were selected as the setting for the empirical test. Such firms vary widely in their use of integrated and nonintegrated channels. In addition, pre-study interviews suggested that substantial variation was likely to exist on the other constructs of interest as well.

Pre-study interviews also indicated that forward channel integration decisions are typically made at the product-market level rather than at the firm or business unit level. Since information regarding channel decisions in a product-market is not available from a public or commercial source, a personalized approach was taken. The Institute for the Study of Business Markets was helpful in providing personal contacts. Because of budget constraints and the fact that personal visits are normally required to solicit cooperation from firms, an attempt was made to focus on manufacturing firms of electronic or telecommunication products in the following locations: (1) a large Southwestern city; (2) a medium-sized Northwestern city; (3) a large Mid-western city; (4) a large Northeastern city; and (5) a medium-sized Southern city.

This process resulted in a list of 47 firms. An introductory letter was sent to the primary personal contact in top management in each firm. The letter explained the purpose of the study and

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solicited their participation. These individuals were then telephoned a week later. Often, a series of telephone calls or personal visits were required to gain approval of the study. A total of 41 of the 47 firms agreed to participate.

Two respondents normally provided data on the constructs for each product-market.[8] A senior staff marketing or strategic planning executive identified relevant product-markets for inclusion in the study and provided information on the firm's overall level of market power in each product-market. By virtue of their position, senior executives are typically knowledgeable of the firm's market power because they have an overall view of the business. This executive also identified the product/market/sales manager most knowledgeable about a specific product-market. A total of 137 product-markets were identified. Surveys were mailed to the senior executive expert who, in turn, directed them to the appropriate managers. The product/market/sales managers provided information on the channels used by the firm, market power, asset specificity, uncertainty, and production costs in each product-market. The surveys were returned to the researchers either via the top executive (in sealed envelopes) or directly. To ensure accurate responses all respondents were promised complete anonymity. Completed surveys were obtained in 109 of the 137 cases. Only one of the 41 firms that agreed to participate failed to eventually cooperate. Multiple product-market observations were obtained from 12 firms.

Operational measures

Once the measures were originally developed, the study instrument was pretested with over 20 managers from industrial product manufacturing firms. The pretest participants were asked to identify ambiguous or otherwise problematic scale items. Based on the inputs received, some items were eliminated, others modified, and new items added. For the TCE constructs, a total of five original items (two items for asset specificity, one item for external uncertainty, and two items for internal uncertainty) were discarded after the scale refinement procedure. The final scale items are provided in the Appendix.

[8] Some smaller firms were single product and single market. In these firms, one person provided all the data (29 observations out of 109).

Dependent and independent variables

Following John and Weitz (1988), the channel integration construct was operationalized by the percentage of sales going through all direct channels (see Appendix). In addition, a five-point semantic differential scale item was included in the survey to serve as a check for convergent validity. The scale anchors for this item were 'Channels mostly third party' vs. 'Channels mostly company-owned.' The percentage of sales measure exhibited a correlation of 0.63 ($p < 0.01$) with this item.

Asset specificity is the extent to which specialized investments are needed to support an exchange. It was measured using the items developed by Anderson (1985), John and Weitz (1988), and Klein *et al.* (1990). Four items were used to measure this construct. These items assessed the extent to which specialized knowledge was required by salespeople on the firm's products and procedures. The items were measured using a seven-point Likert scale ranging from 'Strongly disagree' to 'Strongly agree.' Coefficient alpha is 0.76 for the scale.

External uncertainty is the extent to which it is difficult to accurately predict future states of the world. We adopted a scale developed by John and Weitz (1988). The four items primarily relate to the level of volatility in the environment. Five-point semantic differential scales were utilized in their measurement. The scale has an alpha of 0.86.

Internal uncertainty is the extent to which it is difficult to assess performance in the channel of distribution. It was measured using items developed by Anderson (1985) and John and Weitz (1988). The three items reflect the extent to which it is difficult to assess selling performance in the distribution channel. These items were measured using seven-point scales ranging from 'Strongly disagree' to 'Strongly agree.' The scale has an alpha of 0.63.

Moderator variable

An index of market power was created for each firm based on responses from the senior executive and the product/market/sales manager. First, the senior executive was asked to indicate the firm's overall market power in the selected product-market. To ensure consistency across senior executives, a written description of firm power was provided to them. These descriptions were pretested in

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interviews with over 20 executives from industrial product companies. The firm power scale ranged from 'Low' to 'High' with 'Moderate-Low' and 'Moderate-High' as the intermediate scale points.

To ensure that senior executives had no problems in responding to the item on firm market power, they were encouraged to seek clarification from the researchers if the descriptions were unclear or confusing. Except for minor clarifications, which were promptly provided, none of the executives experienced difficulty in responding to the scale. Significant variation in firm power at the product-market level was found in the 12 firms from which multiple observations were collected, underscoring the ability of senior executives to discriminate between high and low power.

Second, the product/market/sales manager provided us information on the two market share items and the two product differentiation items (see Appendix). Seven-point scales ranging from 'Strongly disagree' to 'Strongly agree' were utilized.

A factor analysis of these five items produced two factors. The first factor had the overall market power item from the senior executive and the two market share items (alpha of 0.72). The second factor had the two product differentiation items (split-half reliability coefficient of 0.63). We combine the five items and treat the measure as an index. Note that our results do not change appreciably whether the five-item index or the three-item scale or the two-item scale is used in the analysis.

Control variables

Williamson has made one major adjustment to the original TCE framework when he acknowledged that the objective of the firm should be to minimize the sum total of transaction and production costs when making outsourcing decisions (see Williamson, 1985: 92–94, 129). In a manufacturing context, production costs refer to the costs of producing individual units of a specific product. Generally speaking, production cost efficiencies are driven by well-established concepts such as scale economies and experience curves. As a firm's volume of business increases, its own internal production costs are expected to drop, thus encouraging the firm to integrate.

Of course, in the context of distribution channels, the direct corollary of production costs is distribution costs, or the costs of performing selling and order fulfillment functions in the channel of distribution. Firms can be expected to minimize the sum total of distribution and transaction costs when making forward channel integration decisions. Hence, we also control for distribution costs in the present study. We measure it with three items: (1) sales in the product-market the past year (high sales reflect low per unit distribution costs); (2) number of customers served (low numbers reflect low per unit distribution costs); and (3) the extent to which a firm's customers are concentrated geographically (high concentration of customers would reflect low per unit distribution costs). These items were standardized and then summed to form an index of distribution costs for each firm.

Further, we control for overall firm size and firm financial performance, representing two common control variables in strategy research. Large firms (across all product lines and business units) and poorly performing firms may be more prone to channel integration in order to exercise control. Overall firm size was measured by overall dollar revenues, while sales executive satisfaction with ROI and profits were used as indicators of firm performance.

ANALYSIS AND RESULTS

Reliability, convergent, and discriminant validity

Table 1 presents the correlation matrix among the measures. None of the measures exhibit great overlap, the highest correlation among the exogenous variables being 0.33 between internal uncertainty and external uncertainty. Based on the low correlations among the measures, the possibility of criterion contamination can be more or less ruled out.

It was also important to establish the validity of the TCE constructs. Accordingly, following Anderson and Gerbing (1988), a two-step approach was used. In the first step, the items for asset specificity, external uncertainty, and internal uncertainty were factor analyzed to investigate their factor structure. The purpose of this analysis was to examine whether items load significantly on at least one factor (i.e., >0.30). The results were clean. Items appropriately loaded on their respective factors, with no cross-loadings above 0.3.

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Table 1. Correlations and reliabilities[a]

	X1	X2	X3	X4	X5	X6	X7	X8
Firm market power (X1)	—							
Asset specificity (X2)	0.31	0.76						
External uncertainty (X3)	−0.27	0.04	0.86					
Internal uncertainty (X4)	−0.01	0.03	0.33	0.63				
Channel integration (X5)	0.19	0.20	−0.30	0.16	—			
Distribution costs (X6)	−0.22	−0.19	0.26	0.02	−0.43	—		
Firm size (X7)	−0.07	−0.09	0.21	0.11	−0.02	0.01	—	
Financial performance (X8)	0.05	0.04	−0.21	−0.03	−0.24	−0.08	−0.16	—

[a] Coefficient alpha reliabilities are provided in the diagonal.

In the second step, following Bentler and Chou (1987), the constructs were analyzed using confirmatory factor analysis (CFA) to assess the factor structure of the items. The c2 for 38 degrees of freedom was 69.08, indicating a good fit. Additionally, the RMSEA, CFI, and GFI were 0.074, 0.92, and 0.91, respectively, suggesting a good fit. The completely standardized loadings for the items from the CFA analysis are reported in the Appendix. In every case, path coefficients from latent constructs to their corresponding manifest indicators were statistically significant at $p < 0.05$, providing evidence of convergent validity. Additionally, for each pair of measures, the average variance extracted (VE) for each measure was greater than the squared structural link (i.e., f2) between the two measures, providing evidence of discriminant validity (Fornell and Larcker, 1981). Lastly, the exogenous variables exhibit high reliability (i.e., >0.70) with the lone exception of internal uncertainty, which was 0.63. The scale reliabilities are provided along the diagonal of the correlation matrix. Overall, these results suggest that the measures have good psychometric properties.

To ensure the index of market power is valid, we also obtained the market share ranking of the firm in the product-market. A high correlation between the market power index and market share provides evidence of the convergent validity of the market power index. The correlation between the index of market power and market share is 0.72.

Base models

Two base models were first estimated via multiple regression. The purpose of the base models was to establish a baseline against which the added contribution of the moderator variable could be assessed. Therefore, the first model included channel integration (percentage of sales through direct channels) as the dependent variable and asset specificity, external uncertainty, and internal uncertainty as the independent variables. In addition, distribution costs, firm size, and firm performance were included as control variables. The purpose of the second base model was to examine whether the firm's market power had a main effect on channel integration. Consequently, the firm's market power was added as an independent variable in the second base model.

Table 2 presents the estimation results from these two base models. The first base model explains 36 percent of the variance in channel integration. As anticipated, asset specificity has a positive relationship to integration ($b = 0.16$, $p < 0.05$), consistent with the TCE prediction. Further, the difficulty of assessing performance (i.e., internal uncertainty) is positively associated with the level of integration ($b = 0.26$, $p < 0.01$), as TCE predicts. External uncertainty, however, exhibits a significant, inverse relationship with integration, contrary to TCE wisdom ($b = -0.38$, $p < 0.01$).

As indicated earlier, empirical results regarding the relationship between external uncertainty and channel integration have been mixed in prior research (Anderson, 1985; Dwyer and Welsh, 1985; John and Weitz, 1988; Klein *et al*., 1990). The negative relationship between external uncertainty and channel integration in this study is consistent with the argument that looser structures (i.e., less vertically integrated) are more effective under conditions of high uncertainty (Lawrence and Lorsch, 1967; Leifer and Huber, 1977; Pfeffer

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Table 2. Interaction regression results (standardized beta coefficients)

Dependent variable: level of channel integration

Exogenous variables	Base Model 1	Base Model 2	Interaction Model
Base Model 1			
Asset specificity	0.16**	0.16**	0.07
External uncertainty	−0.38*	−0.38*	−0.27*
Internal uncertainty	0.26*	0.25*	0.13
Control variables			
Distribution costs	−0.31*	−0.32*	−0.48*
Firm size	0.00	0.00	−0.01
Financial performance	−0.34*	−0.34*	−0.33*
Base Model 2			
Firm market power		0.01	0.02
Interaction Model			
Firm market power × Asset specificity			−0.21**
Firm market power × External uncertainty			0.20**
Firm market power × Internal uncertainty			−0.21**
Firm market power × Distribution costs			−0.37*
Adjusted R-square	0.36	0.36	0.44

* $p < 0.01$; ** $p < 0.05$

and Salancik, 1978). A nonintegrated organization is seen to be more flexible and better able to adapt to changing circumstances. Integrated structures are viewed to be too risky under conditions of high external uncertainty (Harrigan, 1983, 1985); they may be more insulated from the environment and slow to react, as a result.

The second base model that includes firm power as an independent variable explains the same amount of variance (i.e., 36%) in channel integration as the first base model. Firm market power is unrelated to channel integration ($b = 0.01$).

In both base models, distribution costs are negatively associated with the level of forward channel integration in each case ($b = -0.31$, $p < 0.01$ in Base Model 1; $b = --0.32$, $p < 0.01$ in Base Model 2). Firms are likely to increase their use of direct channels when distribution costs in serving end customers are relatively low. Further, within the base models, firm size is unrelated to channel integration, while financial performance, as expected, is negatively related to it ($b = -0.34$, $p < 0.01$ in each equation).

Moderating effects of the firm's market power

In order to test for the moderating effects of firm market power, we used regression with interaction terms. As recommended by Aiken and West (1992), to minimize multicollinearity between the main effect and interaction terms, the variables were mean-centered. Table 2 presents the results of the interaction regression analysis.

Hypothesis 1 predicts that transaction cost factors will be more strongly related to channel integration when firms possess low power than when they possess high power. We first assessed the statistical significance of the interaction terms (see Table 2). When a term was significant, we then analyzed the form of the interaction using the interpretation procedures outlined by Aiken and West (1992). For example, the asset specificity by firm power interaction was significant ($b = -0.21$, $p < 0.05$). We interpreted this interaction by examining the regression weights ('simple slopes') of asset specificity at one standard deviation above and one standard deviation below the mean for firm power.

As predicted in Hypothesis 1, asset specificity is significantly related to channel integration only when firm power is low ($b = 0.26$, $p < 0.01$) and not when firm power is high ($b = -0.11$). The interaction of external uncertainty and firm power is significant too ($b = 0.20$, $p < 0.05$). Contrary to TCE expectations, the simple slopes analysis indicates that external uncertainty is negatively related to channel integration when firm power is low ($b = -0.45$, $p < 0.01$) and is unrelated to integration ($b = -0.09$) when firm power is high. This result is discussed in greater detail in the discussion section. The interaction of internal uncertainty and firm power is significant ($b = -0.21$, $p < 0.05$). As anticipated, internal uncertainty is positively related to channel integration when firm power is low ($b = 0.36$, $p < 0.01$) and is unrelated to integration when firm power is high ($b = -0.10$).[9]

We also examined the interaction of firm market power and distribution costs, as Williamson (1985) includes production (distribution) costs in the extended TCE model. Our analytical model would be misspecified without this interaction

[9] Both base models were checked for the stability of results using the jackknife procedure (Fenwick, 1979), using an alternative, categorical measure of channel integration (see Lilien, 1979), and by adding dummy variables to check for industry specific effects. The stability of the interaction model was checked using subgroup analysis (Arnold, 1982; Chow, 1960; Sharma, Durand, and Gur-Arie, 1981) as well as the jackknife procedure.

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term. As evident, the interaction of distribution costs and market power is significant ($b = -0.37$, $p < 0.01$). The results indicate that distribution costs are strongly related to forward integration for firms that have high power ($b = -0.85$, $p < 0.01$), while having no effect for firms with low power ($b = -0.11$).

DISCUSSION

The forward channel integration decision is highly important to the strategy discipline, as it impacts the revenues, investments, and costs incurred by the firm in generating and fulfilling sales orders from end customers. To date, the basic TCE framework has been used almost exclusively to guide research on the forward channel integration decision in the academic literature. The present study highlights the need to augment the basic TCE framework in the context of forward channel integration.

David and Han (2004) call for more empirical research in the strategy area that examines scope conditions of TCE. The empirical results of our study underscore the importance of this recommendation. TCE ignores the impact of firm market power on transaction cost and distribution cost factors in their relationships with levels of forward channel integration. Our results indicate that excluding market power from the analysis will lead to inaccurate predictions of the firm's level of forward channel integration.

Firm market power

Empirical results from this study support the contention that the influence of transaction cost factors on the forward channel integration decisions of firms is moderated by high firm market power. Transaction costs relate to the costs of governing channel relationships. A firm with high power in a product-market may be able to 'reasonably govern' independent channel members (Coughlan *et al*., 2001), thereby reducing levels of transaction costs in the process. In other words, high firm market power appears to provide safeguards to the firm in the use of nonintegrated channels not envisioned in TCE. Firms with high market power are likely to have significant monitoring and surveillance capabilities as well as the ability to exercise legitimate authority and offer a varied set of incentives to associated channel members (Bello and Gilliland, 1997; Gaski and Nevin, 1985). Opportunism, information asymmetries, and ambiguities in performance evaluations in nonintegrated channel systems are likely to be less significant to high market power firms, as a result. A firm with low market power, on the other hand, does not benefit to any extent from these same safeguards. As a result, such firms need to utilize a high level of forward channel integration, in all likelihood, with all of its associated fixed investments to make transaction costs manageable.

Clearly, based on the results of our study, firm market power should have a greater role in the TCE framework than it has been accorded to date. The moderating impact of firm power on channel integration choices should be carefully considered in future research efforts. In addition, based on our results, it would be prudent to suggest that the market power could be examined as a moderator in contexts other than forward channel integration.

Transaction cost factors

External uncertainty

TCE predicts a positive relationship between external uncertainty and channel integration. In contrast, we find that external uncertainty overall exhibits a strong negative relationship with channel integration. Our findings are consistent with theory developed by organizational behavior and strategic management researchers (Pfeffer and Salancik, 1978), who emphasize that greater flexibility and lower risks of nonintegrated channels are attractive to firms when faced with high environmental uncertainty. Importantly, however, we also find that external uncertainty is unrelated to forward channel integration when the firm's market power is high.

These findings, together with the fact that results in prior research have been mixed on external uncertainty, underscore the need to pay closer attention to this construct in future research. Within certain channel contexts, the TCE prediction regarding external uncertainty may hold (John and Weitz, 1988), whereas in other channel contexts the organizational behavior–strategic management perspective may take precedence. Theoretical development and further empirical research in this area is needed, particularly studies that examine the transaction cost versus flexibility–risk trade-off.

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Asset specificity

Asset specificity exhibits a significant, positive relationship with channel integration for firms with low power. This suggests that when firms with low market power need to make specialized investments, they tend to safeguard these investments by relying on greater channel integration. On the other hand, when firm market power is relatively high, such constraints are unlikely to be as important.

The assertion that high asset specificity will lead to the use of a hierarchy does not appear to have the universal applicability envisioned in the TCE model. This is an important finding and suggests that future research should be geared to identify other channel contexts where asset specificity is likely to have a major impact on channel integration and channel contexts where its impact is likely to be more marginal.

Internal uncertainty

The results pertaining to internal uncertainty are similar to those for asset specificity. Internal uncertainty does not appear to influence the level of channel integration for firms with high market power. Such firms can handle high internal uncertainty in nonintegrated channels by monitoring intermediary behavior and directing their activities to some extent (Celly and Frazier, 1996). However, high internal uncertainty appears to motivate firms with low power to utilize greater channel integration. In such cases, the firm may not have the ability to mitigate performance ambiguity in a nonintegrated channel because of lack of influence with independent intermediaries.

Once again, it appears that the options available to managers as they make channel integration decisions are much broader than TCE would suggest, particularly when a firm enjoys high market power. Such firms can create more 'hierarchy-like' performance monitoring in a nonintegrated channel, allowing them greater freedom in making channel integration decisions.

Distribution costs

As expected, we find that distribution costs are inversely related to the level of forward integration. When the firm can focus on a relatively small number of large customers that order in large sizes and are concentrated geographically, a more integrated channel makes sense due to low distribution costs in gaining and fulfilling orders (John and Weitz, 1988).

More importantly, however, we find that distribution costs are strongly related to forward integration for firms that have high market power, while having no effect on forward integration for firms with low market power. Firms with high market power are likely to have greater incentive to increase channel integration when distribution costs are low because they can more easily leverage their market position to win significant business from end customers. High market power firms can resort to their market-based assets (e.g., brand equity) in effectively contacting and serving end customers on their own without the assistance of intermediaries (Srivastava, Shervani, and Fahey, 1998). Such capability is lacking for firms with low market power.

Limitations and future research

There are some limitations of this study that would benefit from greater attention in future research. We utilize an industrial organization (IO) perspective on the drivers of a firm's market power based on firm market position and product differentiation. The interdependence perspective suggested in organizational theory (Pfeffer and Salancik, 1978) offers another approach that is in a sense more complete. The dependence of the firm on associated intermediaries would be considered in conjunction with the intermediaries' dependence on the firm in reflecting the market power construct. Future research should explore the implications of taking an interdependence approach to reflecting market power.

We found out through pre-study interviews that examining transaction cost factors and firm market power was most appropriate at the product-market level of analysis. However, this precluded us from gathering more objective measures on our constructs from secondary sources, as such data were simply unavailable at the product-market level. Future research should attempt to gather both perceptual and objective measures.

Although market power is shown to be an important moderator of the relationship between TCE variables and channel integration, there may well be other variables of concern. For example, as

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an institutional theory perspective would suggest, the available distribution infrastructure (Webster, 1976) may also have a moderating influence on the relationship between TCE variables and channel integration. The strategic management literature has discussed other variables such as product life cycle and industry life cycle as determinants of integration strategy (Harrigan, 1983). Clearly, more empirical work is needed to continue to define and refine the boundaries of the applicability of the TCE model.

Finally, it is important to extend future research to other types of integration decisions outside the distribution channels context. The basic question is 'Does market power have the same moderating impact on integration decisions in manufacturing and other critical business functions as it does in channel integration decisions?'

CONCLUSION

The fundamental concern of TCE is to develop satisfactory safeguards to protect the firm from the hazards of opportunism (Williamson, 1985: 32). The principal safeguard identified by TCE is greater integration. Our results suggest that the TCE perspective must be augmented with other constructs to improve its ability to explain integration decisions across firm and market-related contexts. Specifically, the firm's level of market power appears to represent another safeguard for firms to utilize when operating nonintegrated channels of distribution.

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APPENDIX

Dependent variable

Level of channel integration

Listed below are a number of alternative ways a firm can distribute products to its customers. Please indicate the percentage of your product line's sales each channel accounted for during the past year.

Directly to customers through:	
Dedicated sales force	——— %
Shared sales force (with other divisions	——— %
Telemarketing/catalog	——— %
To customers through third parties, including:	
Mfr reps/agents	——— %
Distributors	——— %
Retailers	——— %
Value-added resellers	——— %
Others (specify)	——— %
Total	——— 100%

Moderator variable

Index of firm market power

Overall market power[a]

1. A business unit's market power is the potential it has for influencing the decisions and actions of supplier's customers, competitors, and intermediaries in a product-market. Based on this definition, would you say the market power enjoyed by the business unit in this product-market is: High, Moderate-high, Moderate-low, Low?

Product differentiation[b]

2. We sell mostly standardized products. (Reverse scaled)
3. Our products are highly customized to each customer's requirements

Market share

4. Firm's product line market share relative to largest competitor: Much higher than largest competitor; About the same as largest competitor; Much lower than largest competitor.
5. We are one of the largest producers of products in our category[b]

Independent variables and confirmatory factor analysis loadings

	Loading[1]
Asset specificity[b]	
1. To be effective, a salesperson, whether our own or an intermediary's, has to take a lot of time to get to know the customers.	0.67
2. It takes a long time for a salesperson, whether company or third party, to learn about our products thoroughly.	0.57
3. To be effective, a salesperson, whether our own or third party, has to take a lot of time to get to know our competitors and their products.	0.65
4. A specialized sales effort is needed to market this product line.	0.75

(*continued overleaf*)

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(*Continued*)

	Loading[1]
External uncertainty	
Please indicate how you would describe your products compared to other products in your industry (a semantic differential scale was used to measure this construct).	
1. Easy to monitor trends *to* Difficult to monitor trends.	0.80
2. Sales forecasts are accurate *to* Sales forecasts are inaccurate.	0.86
3. Easy to gauge competition *to* Difficult to gauge competition.	0.62
4. The market is well known to us to The market is not known to us.	0.65
Internal uncertainty[b]	
1. It is very difficult to allocate credit for sales at the individual level.	0.43
2. It is always easy to assess how well each salesperson is doing. (Reverse scaled)	0.73
3. It is very difficult to monitor and evaluate the performance of sales personnel.	0.93

[a] This item for market power was reported by senior executives. The rest of the items for this construct, as well as other constructs, were reported by product, marketing, or sales managers.
[b] These items/scales are measured using a 7-point scale ranging from 'Strongly disagree' to Strongly agree.'
[1] Completely standardized loadings; confirmatory factor model fit: $\chi^2_{(39)} = 69.08$; RMSEA = 0.074; CFI = 0.92; GFI = 0.91.

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