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The effect of firms' structural designs on advertising and personal selling returns

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ABSTRACT

Firms make substantial investments in advertising and personal selling to improve their performance, but it is unclear how returns on the promotional mix vary across different corporate-level organizational structures. This article identifies and integrates two structural designs that foster customer alignment, namely, *structural type* (i.e., organizing corporate-level business units around customer instead of product groups) and *structural granularity* (i.e., dividing a firm into smaller business units), then investigates how these customer-aligned structural designs moderate the effects of the promotional mix on firm performance. An analysis of 14 years of longitudinal, multisource, secondary data reveals that the performance effect of investments in advertising and personal selling are enhanced by customer-aligned structural designs. However, the synergistic effects of joint investments in advertising and personal selling get suppressed in customer-aligned structures because functional fragmentation results from internal inefficiencies and complexities. To specify the tensions involved across the different structures, the authors conduct a post hoc analysis and thereby derive organizational structure–specific guidelines.

1. Introduction

Investing in advertising and a sales force is argued to improve a firm's ability to differentiate itself and lead to enhanced firm performance. On the basis of this belief, U.S. firms annually spend more than $140 billion on advertising (Kantar Media, 2015) and $800 billion on personal selling (Zoltners, Sinha, & Lorimer, 2008), representing 5% of U.S. gross domestic product. Yet empirical evidence of the effect of advertising and personal selling, or the promotional mix, on firm performance remains mixed. Researchers identify external contextual factors (e.g., environment, industry) to help explain the mixed findings (e.g., Edeling & Fischer, 2016), but firms increasingly cite the lack of an appropriate internal organizational structure as a key impediment to the effectiveness of their marketing strategies. For example, 52% of executives assert that organizational restructuring made no improvement in or even worsened the returns of their company's marketing efforts (Advertising Age, 2008). Reflecting managers' interest in these

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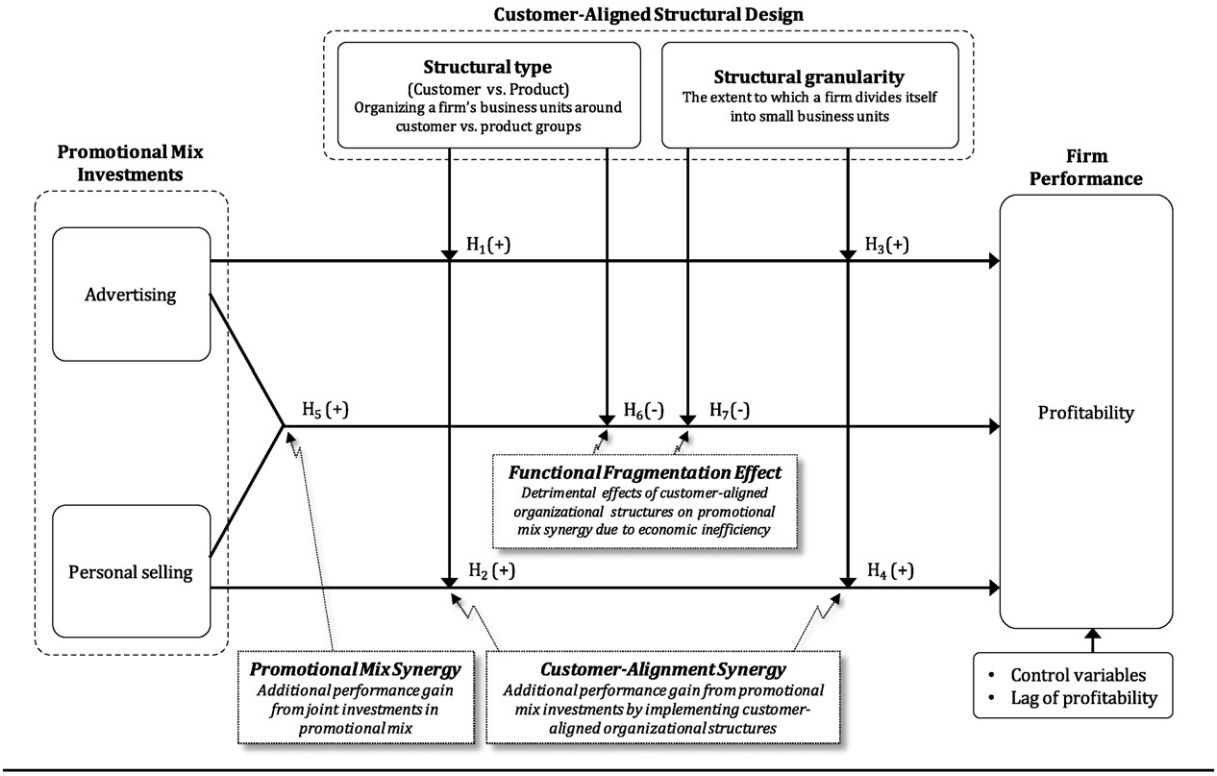


Fig. 1. The influence of firms' structural designs on advertising and personal selling returns.

topics, the Marketing Science Institute (2014, p. 7) has set a firm's *organizational structure* as a top research priority and urged more research on "developing and organizing [structures] for marketing excellence."

Many firms seek to design structures that seamlessly align their internal units with their external customers, to provide better support to their marketing and sales functions. Organizing business units around customer groups instead of product groups can foster responsibility and accountability for customers, leading to closer relationships that ultimately increase firm performance (Day, 2006; Lee et al., 2015). According to this logic, customer-aligned structural designs should improve the returns on advertising and personal selling efforts, because such structures provide in-depth insights into customers and better track changing needs, which is necessary to devise promotional mix strategies that better fit customers' needs now and in the future. For example, Dell (2010, p. 2) reorganized its business units around distinctive customer groups (i.e., Large Enterprise; Public, Small, and Medium Business; and Consumer) to establish "alignment [that] creates a clear customer-centric focus … and greater responsiveness." Other firms avoid organizing their units by customer groups though, worried that such structural designs might create infrastructure duplication and internal complexity. For example, Cisco abandoned a structure that supported customer alignment, in its attempt to "address costly redundancies" (Gulati, 2007, p. 102). The inherent tensions in customer-aligned structures also leave managers without clear guidance about how different organizational structures might undermine or amplify the impacts of marketing and sales. Thus, this article conceptualizes and empirically examines *how customer-aligned structural designs leverage the returns on advertising and personal selling investments*, so that we can advance research on the contingent nature of the promotional mix–performance linkage.

Using a unique, multisource, secondary data set that captures the organizational structure of publicly traded U.S. firms listed in *Selling Power* magazine over 1999–2012, we obtain empirical support for a theoretical foundation that describes how a structural design that fosters customer alignment can influence the performance effects of advertising and personal selling. The trade-off involved in promotional mix investments across different structures often makes it difficult for managers to assess their net impact. Our post hoc analysis offers more managerially relevant insights into the net effects of promotional mix on performance, using the elasticity of advertising and personal selling. Overall, our results are robust across various performance metrics (gross margin, return on assets, and brand equity) and time windows.

With these efforts, we derive three main contributions. First, to our knowledge, this article is the first to identify and integrate, in a single holistic model, two corporate-level, customer-aligned structural designs in an effort to understand how they strengthen or weaken the effects of advertising and personal selling on performance. We include *structural types*, which refer to whether a firm organizes its corporate-level business units around customer or product groups, and *structural granularity*, which is the extent

to which a firm divides itself into small business units at the corporate level. These two customer-aligned structural designs help firms quickly identify and respond to changing customer trends by keeping the marketing message targeted to customer needs, so a firm's promotional investments are more effective at communicating its message, which in turn enhances its performance (i.e., improves marketing effectiveness). To capture this synergistic interaction between promotional mix investments and organizational structure, we use the label *customer-alignment synergy* and define it as additional performance gained from individual investments in the promotional mix by implementing customer-aligned structural designs. This finding is novel; marketing scholars primarily study the performance impact of the fits between structure and *corporate* strategies (e.g., cost leadership, prospector) (Vorhies & Morgan, 2003) instead of *marketing* strategies (e.g., advertising, personal selling) (Lee, Kozlenkova, & Palmatier, 2015). Although extant research has studied the behavioral aspects of structure, such as centralization and formalization (Cadogan et al., 2001; Hernández-Espallardo & Arcas-Lario, 2003), research on the customer-centric benefits of structure, such as type or granularity, on marketing efforts is scarce. Thus, we make a unique contribution by explicating the fit between marketing mix strategies and the physical (customer-centric) aspects of structure.

Second, we detail the adverse consequences of customer-aligned structural designs for which improved external effectiveness comes with an internal cost (reduced efficiency), because with both structural designs, advertising and selling resources are allocated to customer groups. Making marketing decisions at the *external* customer group level might undermine the *internal* synergies and learning benefits that are known to occur from coordinating both selling and advertising activities; that is, these activities are driven by external customer needs rather than internal efficiency criteria. We term this performance gain that comes from a joint, coordinated investment in advertising and personal selling (Gatignon & Hanssens, 1987) as a *promotional mix synergy*. However, our results show that these potential promotional mix synergies can be suppressed when a firm maintains customer-centric (structural type) or smaller (structural granularity) units, because such a firm focuses less on and is less able to make internally optimal decisions; instead, it now focuses on external customer needs, which reduces its internal efficiency. This effectiveness–efficiency trade-off also appears in other, non-marketing contexts when organizing units by customer groups or splitting units into smaller entities creates functional redundancies and internal conflicts across units (Gulati, 2009). The detrimental effects of customer-aligned structural designs on the promotional mix synergy due to the inefficiencies associated with making joint promotional mix investments constitutes what we term the *functional fragmentation effect*.

In our conceptual framework (Fig. 1), the customer-alignment synergy, promotional mix synergy, and functional fragmentation effect together illustrate the complex role of customer-aligned structural designs for determining the returns from promotional mix investments. The framework also depicts our core premise: individual promotional effectiveness improvements from an external customer alignment (revenue benefits) are offset by the reduced internal efficiency of functional complexity across joint promotional investments (cost side). In essence, the net effect of structure on the linkage between promotion mix and performance must be considered individually and jointly, because a customer-aligned structural design yields a higher return from promotional mix spending (customer-alignment synergy), but the gain is mitigated by lower promotional mix synergies, due to the functional fragmentation effect.[3]

Third, we elucidate how two opposing mechanisms (i.e., increase in customer-alignment synergy vs. decline in promotional mix synergies due to functional fragmentation effects) affect the overall effectiveness (elasticity) of advertising and personal selling and also document how advertising and personal selling elasticities vary across different organizational structure choices. We find that firms with high granularity (smaller unit size) yield 41% greater returns from personal selling than do those with low granularity, because the customer alignment synergy that arises with smaller units outweighs functional fragmentation. In addition, firms with product-centric units could enhance advertising elasticity by 4.8 times by shifting from low to high granularity structures, while firms with customer-centric units can enhance advertising elasticity only by 12% by shifting from low to high granularity structures. As such, managers should recognize that structural design choices could alter the effectiveness of their advertising and personal selling investments, and take promotional mix variables into account when considering structural transition.

2. Promotional mix and organizational structure

2.1. Effects of advertising and personal selling investments on firm performance

Both advertising and personal selling are subsets of the promotional mix, but whereas advertising targets a mass of customers through standardized messages, personal selling involves face-to-face, interpersonal presentations, with more freedom to adjust messages. Investments in advertising improve performance by helping customers recognize product features, drawing their attention, building psychological connections between brands and consumers, and providing customers with more confidence in their decisions. The familiarity triggered by repetitive advertising exposures also makes customers less sensitive to the price of the firm's product and increases brand and firm performance (Boulding, Lee, & Staelin, 1994). Empirical findings on the advertising–performance link vary though; for example, some studies assert that greater advertising expenditures fail to generate excess profit, and as one meta-analysis notes, “Approximately 7% of advertising elasticities are negative” (Sethuraman, Tellis, & Briesch, 2011, p. 464). Contextual factors explicate this performance conundrum (Edeling & Fischer, 2016), but prior research has not accounted for organizational structure as a moderating factor.

[3] We appreciate this valuable insight from a reviewer.

Investments in personal selling imply that firms allocate more resources to the sales force, which can communicate directly with prospective and current customers to provide additional information about the firm's offerings and enhance perceptions of the brand. During interactions with sales personnel, customers tend to find offerings that fit their preferences and develop a positive attitude toward the brand, as presented by the sales force (Weitz & Bradford, 1999). Yet personal selling is not uniformly effective (Albers, Mantrala, & Sridhar, 2010), and unexpected growth in selling even can lower financial value (Kim & McAlister, 2011). To explain these inconsistent findings, marketing communications or product life cycle stages represent potential contingent factors (Narayanan, Desiraju, & Chintagunta, 2004), but the influence of the structural design remains unclear.

2.2. Customer-aligned structural design

Scholars often investigate ways design a "customer-aligned" organization by moving away from product focus, based on the belief that doing so will enhance firm performance. The widely researched "customer orientation" or "market orientation" construct, which typically refers to specific firm behaviors or cultures (e.g., gather, disseminate, and react to customer and competitor information), is described as an outcome of designing a customer-aligned organization through structure, leadership, or processes (Jaworski & Kohli, 1993; Verhoef & Leeflang, 2009). To achieve customer alignment, firms often reorganize business units around customer groups instead of product groups (structural type) Shah et al. (2006), though other "structural remedies" (Day, 1990, p. 361) can offer similar benefits. We therefore propose two structural designs that foster customer alignment in the firm—structural type and structural granularity—and argue that an integrated perspective is needed to understand how they leverage the returns from advertising and personal selling. Each customer-aligned structural design provides benefits by aligning internal employee groups with external market groups, with varying costs and complexity levels. Only by considering the benefits and costs of these organizational structures simultaneously can a firm evaluate the returns on its promotional mix.

2.2.1. Structural type

Depending on the grouping of organizational entities (e.g., by customers or products), organizational structure can be classified as different structural "types." Marketing scholars pay closer attention to the effects of organizing a firm's business units around customer groups instead of product groups. We illustrate the comparison of customer-centric units (Panel A) with product-centric units (Panel B) in Appendix A, using Intel's organizational structure chart. Organizing by customer groups builds accountability for the firm's relationships with customers, creates a within-unit focus on customers, increases market insights, and provides a unified customer contact point (Lee et al., 2015; Shah et al., 2006), which then should facilitate the selection of market-relevant value propositions. In addition, customer-centric firms often build a global marketing–sales organization that is responsible for brand communication, to establish consistent communication to customers (Galbraith, Downey, & Kates, 2002). In contrast, in a firm with product-centric units, multiple units might target the same customers, creating confusion for customers and disrupting relationship-building efforts (Rust, Moorman, & Bhalla, 2010).

Yet customer-centric units produce functional inefficiency from complex internal reporting relationships. Managers must ensure that decision-making processes and sales calls move across functional boundaries, which increases the coordinating costs required to resolve the dissonance among the internal functions in these more complex structures (Day, 2006; Galbraith, Downey, & Kates, 2002). As mentioned previously, Cisco retreated from its customer-centric structure due to the costs associated with producing and selling "the same or similar products [to] different customer segments" (Gulati, 2007, p. 102). Each customer-centric unit delivers different versions of a similar product and often competes for scarce resources, so internal costs increase with the effort to coordinate rivalries and to build strong lateral connections. These costs rise especially when the firm adopts more shared activities across units and functional areas to ensure communication consistency. The duplication of infrastructure and functions in customer-centric units thus reduces the efficiency of marketing and sales efforts.

2.2.2. Structural granularity

Another customer-aligned structural design is *structural granularity*,[4] which captures the customer alignment that occurs when a firm divides itself into smaller business units. In Appendix B, we illustrate a generic firm with high (Panel A) versus low (Panel B) structural granularity. Extant research describes the effects of structural granularity (i.e., organizational disaggregation, divisionalization), without necessarily focusing on customer alignment–related benefits (Homburg et al., 1999). It can deliver many of the same advantages that a firm might obtain from changing its structural type. First, breaking a firm into smaller structural units increases customer alignment by allowing each unit to "exploit niche opportunities for growth" and "pursue fragmenting markets, markets evolving at different rates … need[ing] different operating models" (Eisenhardt & Brown, 1999, p. 77). Second, this structural design offers benefits, by lowering managers' cognitive workload, increasing the speed of customer responses, and reducing the diversity of customer problems, especially as traditional barriers break down and personnel from

[4] Because the size of business units tends to go beyond the control of managers and is intrinsic to the firm's core strategy (Phan & Hill, 1995), the level of structural granularity in the firm is generally determined independent of the choice of structural type. The question of how structural type and granularity simultaneously influence marketing outcomes has not been closely investigated, but one study finds that firms that divide their business into many smaller independent units (higher structural granularity) are agile and nimble enough to adapt to customer trends in a timely manner, so restructuring units by customer groups (structural type) has less impact on customer satisfaction and provides little incremental advantage in terms of financial performance (Lee, Sridhar, Henderson, & Palmatier, 2012). As such, reorganization decisions related to structural type are not necessarily subject to a firm's inherent structural granularity level but instead serve as a substitute.

different functional backgrounds intermingle (Child & McGrath, 2001). For example, Microsoft tries to limit its units to 200 employees at most, so they do not become muddled with divergent problems (Eisenhardt & Brown, 1999).

Nonetheless, greater structural granularity can be expensive. Splitting the firm into small, multiple units often creates functional redundancies, raises the costs to coordinate activities across units, sacrifices economies of scale, and increases resource competition (Eisenhardt & Brown, 1999; Lawler, 1996), which adds to the firm-level costs of maintaining some degree of standardization in marketing and sales activities (Garvin & Levesque, 2008). Smaller units thus provide alignment benefits, by allowing more market differentiation within each unit, but they also require additional processes that might reduce internal coordination and economic efficiency.

3. Conceptual model and hypotheses

Configuration and contingency theories suggest that a firm's structure should match its strategy (Chandler, 1962). We draw on these theoretical bases to investigate how organizational structure influences the effectiveness of advertising and personal selling. Configuration theory asserts that the fit or congruence among "multiple characteristics of the business" dictates their impacts on performance (Vorhies & Morgan, 2003, p. 101). Similarly, contingency theory argues that the performance implications of a firm's structure depend on the firm's strategy and business context (Donaldson, 2001). Thus, we do not predict main effects of promotional mix investments on performance but instead focus on how organizational structures moderate the performance effects of promotional mix investments. In Table 1, we review literature that provides insights into these interaction effects.

3.1. Customer-alignment synergy

Because customer-aligned organizational structures engender a better understanding of markets and customers external to the firm, they should lead to more effective advertising and personal selling. We label this performance gain from promotional mix investments, achieved by implementing customer-aligned organizational structures, the *customer-alignment synergy*.

3.1.1. Individual promotional mix investment and structural type

Organizing structural units by customer groups should enhance the performance effects of promotional mix spending (advertising or personal selling), because it allows employees to identify unarticulated customer needs, gain deep customer insights, and respond faster to changing needs (Day, 2006; Lee et al., 2015). For example, Intel's customer-centric units allowed employees across different functional areas to come together to design advertising that was more appealing to specific customer groups (*BusinessWeek*, 2005). Such ad campaigns connect better to customers' needs and generate additional revenue, such that firms with customer-centric units earn greater returns from their advertising spending than do those with product-centric units.

In contrast, when the firm is organized by product groups, multiple product divisions target the same customer group, potentially creating confusion for customers and undermining marketing efforts (Galbraith et al., 2002). These diffused contacts also make it difficult to sense changes that might be affecting any particular customer group, which reduces the effectiveness of the content, delivery, and impact of advertising messages. Our prediction is in line with the argument that "An organizational structure built around getting and keeping customers, not simply selling products, … allows the marketing organizations to use tactics that are appropriate for different customer segments" (Blattberg and Deighton, 1996, p. 144).

H1. When the firm organizes its business units around customer groups instead of product groups (i.e., customer structural type), investments in advertising have a greater impact on firm performance.

Following a similar logic, firms with customer-centric units benefit more from personal selling investments than those with product-centric units. Customer-specific knowledge centralized in a global sales organization helps salespeople uncover and quickly address unmet customer needs (Kumar, Venkatesan, & Reinartz, 2008). Sales personnel in customer-centric units can better identify prospects in the market, adjust offerings to fit the special needs of each customer group, and build long-term personal commitment to key customers. That is, customers likely prefer to do business with a salesperson from a customer-centric unit, because "the end goal of customer-centric sales is not only to boost sales and trumpet your brand but also to make customers happy they shopped at your store, building the foundation for future sales" (*BusinessWeek*, 2009). In contrast, sales personnel in a product-centric unit might not be able to identify market-specific information and trends because they must work across multiple market segments, which prevent them from gaining deep knowledge about any one segment. Thus, organizing business units around customers should enhance the performance effects of personal selling expenditures.

H2. When the firm organizes its business units around customer groups instead of product groups (i.e., customer structural type), investments in personal selling have a greater impact on firm performance.

3.1.2. Individual promotional mix investment and structural granularity

Firms with granular units may gain greater effectiveness from promotional mix spending than those with larger units. Small units deal with less customer heterogeneity, compared with a large unit, so employees can adapt quickly to customers' changing needs, capture intimate customer knowledge, create a committed unit of employees, and strengthen marketing capabilities that

Table 1
Literature review on organizational structures affecting promotional mix returns (advertising and personal selling).

Study	Main focus	Context	Key findings/propositions
"Customer-Alignment Synergy": Additional Performance Gain from Promotional Mix Investments by Implementing Customer-Aligned Organizational Structures			
Ling-yee (2011)	Structural type (customer-centric structure, marketing metrics	Survey of 209 exhibitor managers from manufacturing firms	Customer-centric structure (included as part of a multidimensional construct, customer value-based organizational process) improves marketing metrics such as market responses to new product campaigns.
Reimann, Schilke, & Thomas (2010)	Customer alignment, customer relationship management, business strategies	Survey of 318 senior executives from U.S.-based business units	Customer insight units and other organizational units (e.g., brand- or advertising-oriented groups) in the organization should be integrated to differentiate their offerings and increase performance.
Child & McGrath (2001)	Structural granularity, customer alignment	Theoretical discussion	Small units are more responsive to external changes and market requirements.
Brickley & Van Drunen (1990)	Structural granularity, corporate structure	222 announcements of corporate restructuring	Splitting a firm into smaller units fosters greater focus on specific businesses, entrepreneurial spirit, and adaptability.
"Promotional Mix Synergy": Additional Performance Gain from Joint Investments in Promotional Mix			
Ahearne, Gruen, & Jarvis (1999)	Salesperson performance, advertising	Survey of 339 pharmaceutical company sales representatives	Perceived salesperson attractiveness, which often forms as a result of persuasive advertising, improves salesperson performance.
Albers, Mantrala, & Sridhar (2010)	Personal selling, marketing communication	Meta-analysis on 88 empirical data sets across 75 previous articles	Personal selling elasticities from models that include personal selling-marketing communication interactions are higher than those from models that exclude such interaction effects.
Gopalakrishna and Chatterjee (1992)	Communications mix, personal selling, advertising	Mature industrial product	Joint impact of advertising and personal selling investments on sales of a mature industrial product is positive at various account levels and market levels.
Narayanan et al. (2004)	Personal selling, advertising	Monthly data on brands of second-generation antihistamines from 1993 through 2002	Interaction effects between pharmaceutical direct-to-consumer advertising and sales force (detailing) have a positive synergistic impact on return on investment.
Smith, Gopalakrishna, and Smith (2004)	Personal selling, marketing communications mix	Pre- and post-show surveys of 203 distributors	Marketing efforts at a trade show enhance the effect of follow-up personal selling on sales performance.
"Functional Fragmentation Effect": Detrimental Effects of Customer-Aligned Organizational Structures on Promotional Mix Synergy Due to Economic Inefficiency			
Galbraith et al. (2002)	Marketing, sales, structural type	Case studies	In contrast with a customer-centric structure, firms with product-centric structures benefit from economies of scale by housing different functions (e.g., marketing, sales, engineering) in one silo.
Gulati (2009)	Multiple functions, structural type	Theoretical paper based on case studies	Customer-dedicated divisions deliver different versions of a similar product and often compete for scarce resources, so management costs increase with the effort to coordinate rivalries among structural units.
Strikwerda and Stoelhorst (2009)	Multidimensional customer-centric organization	Interview of CEOs and CFOs from 36 organizations from various industries	Customer-centric organizations require teamwork across multiple business units, so resources and data are reported over multiple dimensions and at all levels of the organization. Such organizational forms prevent firms from exploiting economies of scale through financial synergies.
Lawler (1996)	Structural granularity, customer alignment	Theoretical discussion	Creating a set of small multiple units leads to functional redundancies, adds more coordination costs, and impairs economies of scale.

are critical to positioning its products uniquely (Brickley & Van Drunen, 1990). Each unit then produces advertising messages that are commensurate with its differentiated position in customers' minds, and customers perceive it as more influential and persuasive. In turn, customers should be more likely to form favorable attitudes toward brands advertised by granular units, which enables the firm to demand higher prices for those offerings and improve its revenue. Following this logic, for example, "To create the products and marketing programs needed to bring these prospects into the wired world, 3Com has formed a small business unit. Its only job is to serve customers with 100 or fewer employee" (*BusinessWeek*, 1996). Conversely, firms with larger units are less agile and adaptive to market dynamics (Child & McGrath, 2001), such that they often fail to deliver advertising messages that are well suited for their target markets. Thus, the interaction of advertising and structural granularity improves performance.

H3. When the firm divides itself into smaller business units (i.e., high structural granularity), investments in advertising have a greater impact on firm performance.

Similarly, personal selling should yield additional profit when a firm breaks into granular units. Salespeople in each small unit are responsible for more homogeneous market problems, so they develop expertise to solve customer problems. For example, when a business unit with 100 customers is split up into four units of 25 customers each, the salespeople from each of the four autonomous units can adapt to each customer's needs, as opposed to dealing with divergent customer problems through one large business unit. Alternatively, as units coalesce, salespeople encounter more diverse customers, find it more difficult to diagnose each customer's problems, and react more slowly to customers' preference changes (Eisenhardt & Brown, 1999). Personal selling investment in larger units then becomes less effectual for gathering customer information and identifying their problems. Consequently, greater levels of structural granularity should improve the returns from personal selling investments.

H4. When the firm divides itself into smaller business units (i.e., high structural granularity), investments in personal selling have a greater impact on firm performance.

3.2. Promotional mix synergy

The simultaneous effects of promotional mix investments tend to be complementary, such as when advertising establishes a favorable interface for a sales call (Ahearne, Gruen, & Jarvis, 1999; Gatignon & Hanssens, 1987; Narayanan et al., 2004). We label this interaction the *promotional mix synergy*, defined as the additional performance gain from joint investments in advertising and personal selling. This synergy arises when selling activities reinforce memories of advertised products, helping buyers encode the product information. Advertising creates awareness in customers' minds and offers general information about the products, which enhances the efficacy of a sales call. Multisource communications (impersonal advertising plus interpersonal sales calls) also reduce memory wearout, through repetition in different sources, and make the product look more credible and convincing. Thus, we argue for positive interaction effects of advertising and personal selling on performance.

H5. Joint investments in advertising and personal selling positively interact to increase firm performance.

3.3. Functional fragmentation effect

Even if advertising and personal selling spending have positive synergistic effects on performance, the success of such joint efforts depends on seamless coordination across different functional areas and units. A firm with customer-aligned structural designs (customer structural type, or high structural granularity) cannot reap the full benefits of collective promotional mix investments though, because the infrastructure duplication and internal complexities associated with customer-aligned structural designs tend to intensify conflicts among internal organizational groups (Kotler, Rackham, & Krishnaswamy, 2006), such that the firm incurs additional internal costs. Specifically, when a firm has customer-centric units (structural type) or smaller units (structural granularity), it is less focused on or able to make internally optimized decisions, because it instead considers external customer needs, which reduces its internal efficiency. This reduction in efficiency also appears in other non-marketing areas, where organizing units by customer groups or dividing units into granular entities creates duplication of functional efforts and internal conflicts across different units (Gulati, 2009). These detrimental effects of customer-aligned structural designs, due to increased inefficiency in making joint promotional mix investments, are the *functional fragmentation effect*.

3.3.1. Joint promotional mix investment and structural type

The performance benefits from a promotional mix synergy may be mitigated if a firm diffuses its functional resources and employees into customer-centric units. Functional fragmentation commonly occurs in a firm that organizes its units by customer groups, because aligning the firm's internal structure with external groups (i.e., customers) requires the division and duplication of resources, capabilities, and people, with increased organizational barriers to learning, sharing, and communicating, as well as greater complexity-related costs (Strikwerda & Stoelhorst, 2009). In a customer-centric unit, salespeople continuously generate qualified leads and present offerings, which requires more personal selling investments, and the marketing group simultaneously must duplicate its advertising and collateral development efforts for each distinct customer group, which creates greater redundancies and may undermine firm performance. We predict that with every additional advertising dollar spent to increase brand

awareness, personal selling spending becomes less likely to leverage those marketing efforts, because the customer-aligned structural design "raises the risk of fragmentation" (Day, 1999, p. 189). Thus, the positive synergistic effects of joint promotional mix investments are weakened in a firm with customer-centric units.

Conversely, promotional mix synergy might be strengthened in a firm with more internally focused product-centric units, because "[t]he divisions in product companies usually have a high degree of autonomy … without the constraint of coordinating with other divisions" (Galbraith, Downey, and Kates, 2002, p. 71). Because each product-centric unit is responsible for selling its own products across external markets, marketing and sales get housed in each product unit, and they enjoy greater scale economies, with less functional duplication in the organization (Vermeulen, Puranam, & Gulati, 2010). The marketing group in a product-centric unit enjoys greater negotiation power when buying media to support sales personnel, which enables salespeople to leverage their selling efforts and create a promotional mix synergy. When marketing and sales together determine which product to push to the market, their product-centric unit also should be more efficient in reaching a consensus and executing plans than a customer-centric unit would be, because the product decision occurs within the same unit. This process takes more time and effort in a customer-centric unit, for which internal communication and decision making are more complex. A firm with product-centric units can better leverage promotional mix synergies, and we expect that organizing business units around customer groups mitigates the positive interaction effect of advertising and personal selling on firm performance.

H6. When the firm organizes its business units around customer groups instead of product groups (i.e., customer structural type), the synergistic effect between advertising and personal selling on firm performance is suppressed.

3.3.2. Joint promotional mix investment and structural granularity

Promotional mix synergy (i.e., additional performance gain achieved from joint investments in advertising and personal selling) may be suppressed in a firm that divides its structure into small-scale units (high structural granularity). By splitting into multiple, smaller entities, the firm loses scale economies, because its functional efforts must to be duplicated within each unit (Garvin & Levesque, 2008). All else being equal, sales personnel in more granular units might fail to leverage the product advertising collateral, compared with those in larger units with low granularity, because they likely are overwhelmed by the multiple versions of the sales tools and materials duplicated across smaller units. The smaller units also deal with more resource duplications, so marketing activities will be less efficient in leveraging sales tools and building brand awareness to help the sales teams close the deal. A promotional mix synergy then should be mitigated by a more granular structure. In essence, by focusing on and optimizing smaller external market segments, firms may find it more difficult to coordinate internal sales and advertising efforts.

In contrast, in a firm with fewer, larger business units, each unit has more opportunities to enjoy economics of scale. If the marketing and sales functions dispersed across five business units merge into one unit, marketing can develop a broad advertisement that more salespeople can use, so these sales personnel can capitalize fully on advertising spending. All else being equal, the effect of subsequent synergies from advertising and personal selling spending (promotional mix synergy) should have less impact on performance with high granularity.

H7. When the firm divides into smaller business units (i.e., high structural granularity), the synergistic effect between advertising and personal selling on firm performance is suppressed.

4. Methodology

4.1. Data

Our data set came from multiple archival sources, including *Selling Power* magazine, Harris Interactive EquiTrend, COMPUSTAT Industrial Annual database, COMPUSTAT Business Segments database, Center for Research in Security Prices, and the annual and quarterly financial reports (i.e., Forms 10-K, 10-Q) that firms file with the U.S. Securities and Exchange Commission. To determine the effects of structural design on promotional mix returns, we include firms listed in *Selling Power* magazine, as used in past marketing research (e.g., Kim & McAlister, 2011), which is an appropriate sampling frame for three main reasons. First, *Selling Power* collects the data required to measure firms' annual personal selling spending. Although COMPUTAT provides selling, general, and administrative expenses, it contains other items that are not of interest and increases measurement errors. Second, firms listed in *Selling Power* are publicly traded, U.S.-based firms, so we can collect structure information and other accounting and finance variables from secondary sources. Third, firms listed in *Selling Power* span various industries (e.g., manufacturing, insurance, services, direct sales, automotive), so the findings should generalize to many U.S. firms with sales forces. After accounting for missing data, the final sample features 1371 observations, representing 197 firms across a 14-year period, from 1999 to 2012. We describe the subsamples and brand measures subsequently; we summarize the operationalization and data sources in Table 2.

Table 2
Constructs, definitions, measurements, and data sources.

Constructs	Definitions	Measures (references)	Data sources
Firm performance	Overall level of firm profitability	Gross margin, operationalized as the ratio of gross profit (sales revenue − cost of goods sold) to sales revenue.	COMPUSTAT Annual Industrial Files
Advertising	Firm's investment on advertising activities	Advertising expenditure (in millions of dollars) (Srinivasan, Lilien, & Sridhar, 2011).	COMPUSTAT Annual Industrial Files
Personal selling	Firm's investment on personal selling activities	We approximate a firm's personal selling spending by multiplying the number of a firm's salespeople times the average annual cost of a salesperson. It is measured as the personal selling expenditure (in millions of dollars) (Kim & McAlister, 2011).	*Selling Power*
Structural type	Whether a firm's primary organizational structure is organized around customer groups	Dummy variable coded as 1 for a firm that organizes its business units by customer groups; 0 for a firm that organizes its business units by product groups (Day, 2006; Gulati, 2007; Lee et al., 2015).	Form 10-Ks and 10-Qs under Statement of Financial Accounting Standards No. 131
Structural granularity	The extent to which a firm divides itself into small structural units	The reciprocal of the firm's total sales revenue in billions of dollars per segment (i.e., the reciprocal of the average segment size), so larger average unit size corresponds to a lower granularity score. To mitigate skewness and kurtosis, we log transform the measure (Homburg et al., 1999).	COMPUSTAT Business Segments, COMPUSTAT Annual Industrial Files
Firm age	Age of the firm	The log of the number of years since the first listing on the stock market (Grullon et al., 2004).	Center for Research in Security Prices
Firm size	Size of the firm	The log of market value of equity (Grullon et al., 2004).	COMPUSTAT Annual Industrial Files
Business focus	The extent to which a firm competes within a limited set of end markets	Herfindahl concentration index, or the sum of squares of the ratio of total sales revenue in each four-digit SIC industry group in which the firm operates i (i = 1, 2, …, number of unique industry segments) to the total sales of the firm. If a firm operates in a single four-digit SIC industry, its score is 1, indicating the highest level of business focus possible (Desai & Jain, 1999).	COMPUSTAT Business Segments
Industry profitability	Average level of industry profitability	The average gross margin of publicly traded firms operating in the same four-digit SIC industry (Lee et al., 2015).	COMPUSTAT Annual Industrial Files
Industry growth	The growth rates of the industry in which a firm operates	We first regressed sales revenues in the firm's core product industry (four-digit SIC) across the prior five years, with time as the independent variable. Then we divided the slope coefficient from this regression by the mean value of industry sales for those years (to adjust for absolute industry size) to arrive at a growth score for each industry (Fang, Palmatier, & Steenkamp, 2008).	COMPUSTAT Annual Industrial Files

4.2. Measures and operationalization

4.2.1. Firm performance

As a performance metric, we used gross margin, which is operationalized as the ratio of gross profit (sales revenue − cost of goods sold) to sales revenue. Gross margin offers several advantages over other outcome metrics for studying the effects of the promotional mix. It is "a less noisy indicator than earnings of the relation between the firm's input and output prices" (Lev and Thiagarajan, 1993, p. 195). It also captures the revenue gain resulting from promotional mix effectiveness but excludes advertising and selling costs from the equation. We examined the sensitivity of our results to alternative metrics, such as return on assets and brand equity, and the findings were consistent.

4.2.2. Advertising and personal selling

We measured advertising expenditures (in millions of dollars) (COMPUSTAT item: xad) (Srinivasan, Lilien, & Sridhar, 2011). Following prior literature (Kim & McAlister, 2011), we approximated a firm's personal selling spending (in millions of dollars) by multiplying the number of salespeople by the average annual cost of a salesperson. For the number of salespeople, we turned to *Selling Power*, whose research team collects information about the number of salespeople that companies employ each year (*Selling Power,* 2015).

4.2.3. Customer-aligned structural design

To capture the customer-aligned structural design, we measured both structural type and structural granularity. In keeping with extant research, to measure *structural type*, we evaluated each firm's structure as a dummy variable, equal to 1 for a firm that organizes its business units by customer groups and 0 for a firm that organizes its business units by product groups (Lee et al., 2015; Shah et al., 2006). To develop an objective structural type measure, we exploited the unit operating segment information section (Statement of Financial Accounting Standards No. 131) from Forms 10-K and 10-Q, which all publicly traded U.S.-based firms must submit. Firms must disclose disaggregated information about all business-operating units that correspond to their organizational structure in these forms (Financial Accounting Standards Board, 1997). This information is accurate and transparent, because "the segments are evident from the structure of the enterprise's internal organization" (Financial Accounting Standards Board, 1997, p. 6), so it is less vulnerable to "management's latitude" (Ettredge et al., 2005, p. 776). It also reflects the internal structure at the time, because segment information is "regularly reviewed by the enterprise's chief operating decision maker" (Financial Accounting Standards Board, 1997, p. 7).

To identify structural type, two academic researchers independently reviewed each firm's unit operating segment information from their Forms 10-K and 10-Q (see Appendix C for the detailed coding procedures, types of decisions, and examples). For example, on the basis of the following statement, we determined that a firm organized its unit by customer groups: "Effective for third quarter 2010 reporting … the Company created three customer-focused divisions, Commercial Markets, Consumer Markets and Wealth Management" (Hartford Financial Services Group, 2010, p. 15). We classified another firm as organizing its units by product groups when we read, "We operate, and are managed, as two strategic segments: Wireless and Long Distance. These segments are organized by products and services" (Sprint Nextel Corporation, 2006, p. 55). In less than 4% of the cases, the two researchers disagreed; we resolved those points through discussion. When a firm combined product–geography or customer–geography structural types, we categorized them as product and customer structures, respectively, if the sales revenue from the geographical business units accounted for less than 50% of the firm's total sales revenue (Lee et al., 2015). We did not include pure geographic structure firms because, in these firms, the structural design below the top level is the key.

To measure *structural granularity*, we first counted the number of business-operating segments and normalized this number by a firm's total sales revenue (in billions of dollars) (Homburg et al., 1999). We calculated the reciprocal of the average business unit size, such that a larger average unit size corresponded with a lower granularity score. A log transformation helped mitigate skewness and kurtosis (Chatterjee & Hadi, 2006).

4.2.4. Control variables

We included firm- and industry-level control variables, gathered from the COMPUSTAT and Center for Research in Security Prices. At the firm level, we controlled for firm age, firm size, and business focus to improve the comparability of our results. Firm age was calculated as the log of the number of years since the first listing on the stock market (Grullon, Kanatas, & Weston, 2004). Firm size was measured as the log of the market value of equity (Grullon et al., 2004). We measured business focus as the Herfindahl concentration index, or the sum of squares of the ratio of total sales revenue in each four-digit SIC industry group in which the firm operates i ($i = 1, 2, \ldots$, number of unique industry segments) to the total sales of the firm. If a firm operates in a single four-digit SIC industry, its score is 1, indicating the highest level of business focus possible (Desai & Jain, 1999).

At the industry level, we controlled for industry profitability and growth, which might be associated with firm performance. We measured industry profitability as the average gross margin of publicly traded firms operating in the same four-digit SIC industry (Lee et al., 2015). For industry growth, we first regressed sales revenues in the firm's core product industry (four-digit SIC) across the prior 4 years, with time as the independent variable. Then we divided the slope coefficient from this regression by the mean value of industry sales for those years (to adjust for absolute industry size) to arrive at a growth score for each industry (Fang, Palmatier, & Steenkamp, 2008). We summarize the descriptive statistics for these variables in Table 3.

4.3. Model specification

We observe firms' performance, advertising, and personal selling decisions over multiple years. Our goal is a robust, parsimonious assessment of the interplay among firms' structure, advertising, and personal selling on performance. To make this assessment, we had to address four important econometric challenges in our model specification.

4.3.1. Unobserved heterogeneity in performance

Firm performance (across firms and within firms over time) is likely heterogeneous, due to unobserved idiosyncratic firm characteristics and temporal shocks in market attractiveness. If we do not account for this unobserved heterogeneity, we might erroneously attribute unrelated increases/decreases in firm performance to the promotional mix. To mitigate this concern, we used a firm-random-effects approach to account for idiosyncratic, unobserved, time-invariant firm factors that induce performance variation. In addition, we used time fixed effects, which account for unobserved time-varying factors (common to all firms) that might result in performance variations. Flexible time fixed effects and random effects provide a robust means to address unobserved heterogeneity in firm performance (Germann, Ebbes, & Grewal, 2015).

Table 3
Descriptive statistics and correlations.

						Correlations									
	Mean	S.D.	Min	Median	Max	1	2	3	4	5	6	7	8	9	10
1. Firm performance	0.474	0.228	−0.033	0.467	0.907	1									
2. Advertising (in millions of $)	375.165	731.261	0.085	74.041	3430	0.130	1								
3. Personal selling (in millions of $)	1621.482	14961.06	5	153.25	312500	0.081	−0.026	1							
4. Structural type (customer vs. product)	0.174	0.379	0	0	1	−0.047	0.022	−0.035	1						
5. Structural granularity	0.601	0.609	0.02	0.382	3.443	0.154	−0.371	−0.033	−0.025	1					
6. Firm age	5.564	0.877	1.099	5.602	6.953	−0.056	0.341	−0.020	0.232	−0.305	1				
7. Firm size	8.535	1.898	2.837	8.412	12.142	0.307	0.600	−0.017	0.100	−0.655	0.394	1			
8. Business focus	0.807	0.252	0.227	1	1	0.110	−0.344	0.057	−0.133	0.086	−0.334	−0.328	1		
9. Industry profitability	0.438	0.199	0.057	0.428	0.769	0.807	0.163	−0.136	−0.011	0.179	−0.016	0.280	0.091	1	
10. Industry growth	0.093	0.089	−0.223	0.099	0.415	0.114	−0.066	0.047	−0.106	0.044	−0.103	−0.033	0.030	0.084	1

Notes: $p < .05$ if $r > .060$.

4.3.2. Long-term effects of promotional mix

Promotional mix investments may have a long-term effect on firm performance. One way to account for this carryover effect issue would be to include a *finite* number of lagged promotional mix terms in the model (Dekimpe & Hanssens, 1995; Kappe, Blank, & DeSarbo, 2014) that can pick up the effect of current and past investments on performance. Yet, this approach is tedious from a parameterization standpoint because the number of finite lags to include is not known a priori. Moreover, it is less suitable to our objective; we would have to test all the main and interaction effect hypotheses with current and past promotional mix investments.

Another approach to deal with long-term effects assumes an *infinite* number of lagged promotional mix terms in the model specification, such that the influence of the lagged independent variable declines exponentially with the length of the lag. In this model, the inclusion of the lagged dependent variable, and a serially correlated error coefficient restricted to be the same as the lagged dependent variable's coefficient (also called the Koyck transformation), parsimoniously captures the (infinite) distributed lagged effects of the promotional mix. Due to its operational flexibility and straightforward interpretation, the Koyck approach has a long-standing history in the marketing literature (e.g., Leone, 1995).[5]

4.3.3. Diminishing returns of the promotional mix

Promotional mix investments are subject to decreasing returns to scale. To capture this effect parsimoniously, we use the semi-log functional form in our model (e.g., Doyle & Saunders, 1990), which facilitates the interpretation of the interaction and main effects. As such, for a firm i in year t, we specify the model as follows:

$$\begin{aligned} Y_{it} = {} & \gamma_0 Y_{it-1} + \alpha_{0i} + \alpha_1 \ln AD_{it} + \alpha_2 \ln PS_{it} + \alpha_3 ST_{it} + \alpha_4 SG_{it} + \alpha_5 \ln AD_{it} \times ST_{it} + \alpha_6 \ln PS_{it} \times ST_{it} + \alpha_7 \ln AD_{it} \times SG_{it} \\ & + \alpha_8 \ln PS_{it} \times SG_{it} + \alpha_9 \ln AD_{it} \times \ln PS_{it} + \alpha_{10} \ln AD_{it} \times \ln PS_{it} \times ST_{it} + \alpha_{11} \ln AD_{it} \times \ln PS_{it} \times SG_{it} + \boldsymbol{\alpha}_{12} \boldsymbol{X_{it}} + \varepsilon_{it}, \end{aligned} \quad (1)$$

where Y_{it} captures firm performance; Y_{it-1} captures lagged firm performance (whose effect is captured through the coefficient γ_0)[6]; α_{0i} captures the intercept term; the terms $\alpha_1 - \alpha_4$ represent the main effects of log-transformed advertising ($\ln AD_{it}$), log-transformed personal selling ($\ln PS_{it}$), structural type (ST_{it}), and structural granularity (SG_{it}), respectively; α_5 and α_6 indicate the two-way interactions of advertising or personal selling with structural type, respectively; α_7 and α_8 indicate the two-way interactions of advertising or personal selling with structural granularity, respectively; α_9 captures the two-way interaction between advertising and personal selling; and α_{10} reflects the three-way interaction among advertising, selling, and structural type. The term $\boldsymbol{\alpha}_{12}$ is the coefficient vector of control variables ($\boldsymbol{X_{it}}$), which include both firm-level (firm age, firm size, business focus) and industry-level (industry profitability, industry growth) covariates. The year dummies were included to capture unobserved temporal shocks. Finally, ε_{it} is a normally distributed error term where $\varepsilon_{it} \sim N(0, \sigma_\varepsilon^2)$.

The year fixed effects capture unobserved temporal heterogeneity in performance; we also capture cross-sectional unobserved heterogeneity (across firms) by augmenting Eq. (1) with a random intercept specification:

$$\alpha_{0i} = \alpha_0 + \eta_i, \quad (2)$$

where α_0 represents the grand intercepts of firm performance, and η_i is a normally distributed error term that captures firm-level disturbances in performance where $\eta_i \sim N(0, \sigma_\eta^2)$.

4.3.4. Endogeneity of the promotional mix

Finally, firms make promotional mix and structure decisions strategically, in anticipation of actual performance or other unobserved factors, rendering promotional mix investments (advertising, personal selling) potentially endogenous to performance. Failing to account for such endogeneity can bias the true effect of marketing decisions (Edeling & Fischer, 2016). To address potential endogeneity, we employed a two-stage least-squares regression approach with instrument variables (2SLS/IV).

In the first stage of the model, the instruments consist of (1) the 2-year lagged observations of the endogenous variables (Mayer, Stadler, & Hautz, 2015), (2) mean values of the endogenous measures for firms in the same four-digit SIC code and in the same size (asset and sales revenue) quartile as the firm (Kale, Reis, & Venkateswaran, 2009), and (3) year dummies. We use decisions by other firms in the same industry as an exclusion restriction because the industry averages for marketing decisions are unaffected by firm-level idiosyncratic shocks and do not correlate strongly with the residuals in Eq. (1). Also, we expect high correlations across a firm's marketing decisions and the respective industry averages because they are guided by similar norms. Because marketing decisions' effectiveness is hard to assess, firms often look to their peers to guide their marketing actions, assuming that peer decisions reflect important economic information. Thus, as an instrument for advertising, we used 2-year lagged advertising expenses, the average advertising expenses by the firm's peer group (i.e., firms in the same four-digit SIC industry and of the same size quartile as the focal firm), and year dummies. We applied the same logic to construct the instruments for personal selling.[7]

[5] As one of our reviewers accurately points out, if one does not find evidence of serial correlation, one should label the model as a partial adjustment model. Therefore, to use the correct nomenclature (i.e. Koyck or partial adjustment specification), we conducted a specification test (Greene, 2004) which shows the presence of serial correlation. Thus, our model formulation is consistent with the Koyck model.

[6] A lagged dependent variable was instrumented with its deviations from the firm-specific mean ($\text{Performance}_{it-1} - \overline{\text{Performance}_i}$) to arrive at a consistent estimate of the carryover coefficient (Arellano, 2003; Fischer & Albers, 2010).

[7] We also conducted the Hausman–Wu test for moderators (structural type, structural granularity). The tests fail to reject the null hypothesis that structural type is exogenous ($p = .452$) and that structural granularity is exogenous ($p = .142$). Therefore, we model the endogeneity of advertising and personal selling but allow structure type and structural granularity to be exogenous.

We performed Hausman–Wu tests to determine if there is endogeneity between independent variables and firm performance. The test showed the presence of endogeneity in advertising ($p = .000$) and personal selling ($p = .000$). Second, we conducted Hansen-Sargan tests of overidentifying restrictions to check the validity of the instruments for advertising and personal selling. The test statistic was statistically nonsignificant for advertising ($p = .163$) and for personal selling ($p = .220$), suggesting that the instruments are valid.

4.4. Estimation results

Table 4 presents the estimation results with an endogeneity correction: a main effects model (Model 1), and a model with main and interaction effects (Model 2). We use the results from Model 2 for the hypothesis tests. The interaction of advertising with

Table 4
Estimation results: influences of organizational structures on advertising and personal selling returns.

		Model 1	Model 2
		Main effects	Interaction effects
Main effects			
Advertising		−0.003	−0.010
		(0.003)	(0.008)
Personal selling		0.005	−0.004
		(0.004)	(0.010)
Structural type (customer vs. product)		−0.034***	−0.554***
		(0.012)	(0.164)
Structural granularity		0.034***	−0.031
		(0.008)	(0.029)
Customer-alignment synergy			
Advertising × Structural type	H1 (+)		0.071**
			(0.030)
Personal selling × Structural type	H2 (+)		0.010***
			(0.003)
Advertising × Structural granularity	H3 (+)		0.087***
			(0.032)
Personal selling × Structural granularity	H4 (+)		0.010*
			(0.006)
Promotional mix synergy			
Advertising × Personal selling	H5 (+)		0.000
			(0.001)
Functional fragmentation effect			
Advertising × Personal selling × Structural type	H6 (−)		−0.011**
			(0.006)
Advertising × Personal selling × Structural granularity	H7 (−)		−0.001**
			(0.001)
Control variables			
Lagged dependent variable		0.388***	0.361***
		(0.030)	(0.030)
Firm age		0.000	0.002
		(0.008)	(0.007)
Firm size		0.022***	0.023***
		(0.003)	(0.003)
Business focus		0.063***	0.069***
		(0.014)	(0.014)
Industry profitability		0.136***	0.141***
		(0.023)	(0.022)
Industry growth		−0.027	−0.036**
		(0.017)	(0.017)
		Year dummy	Year dummy
Constant		0.121**	0.166**
		(0.057)	(0.071)
σ_u		0.180***	0.183***
		(0.011)	(0.011)
σ_e		0.031***	0.030***
		(0.001)	(0.001)
Proportion of variance explained		0.971	0.973

Notes: Standard errors are in parentheses.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

structural type on firm performance is not significant (b = .071, $p < .05$), so H1 was supported. As we predicted in H2, the interaction between personal selling and structural type significantly increases firm performance (b = .010, $p < .01$). In support of H3, the interaction of advertising with structural granularity on firm performance is positive and significant (b = .087, $p < .01$). The interaction between personal selling and structural granularity has a significant effect on firm performance (b = .010, $p < .10$) in support of H4.

The two-way interaction between advertising and personal selling does not significantly increase firm performance (b = .000, *n.s.*), so H5 was not supported. In support of H6, the three-way interaction among advertising, personal selling, and structural type has a significant negative effect on firm performance (b = −.011, $p < .05$). That is, promotional mix synergy exerts a weaker effect on firm performance when the firm implements customer-centric units. In line with H7, the three-way interaction among advertising, personal selling, and structural granularity reveals a significant negative effect on firm performance (b = −.001, $p < .05$).

Table 5
Sensitivity analyses: alternative time frames and dependent variables.

		Alternative time frame		Alternative dependent variable	
		Model 1	Model 2	Model 3	Model 4
		Excluding the first year	Excluding the last year	Return on assets	Brand equity
Main effects					
Advertising		−0.011	−0.001	−0.024**	−4.561*
		(0.008)	(0.011)	(0.012)	(2.571)
Personal selling		−0.007	0.007	−0.020	−7.008**
		(0.010)	(0.012)	(0.013)	(3.136)
Structural type (customer vs. product)		−0.529***	−0.514***	−0.387**	−83.118**
		(0.162)	(0.182)	(0.176)	(41.029)
Structural granularity		−0.035	−0.013	−0.112***	−32.439
		(0.028)	(0.031)	(0.036)	(19.827)
Customer-alignment synergy					
Advertising × Structural type	H1 (+)	0.065**	0.064*	0.083**	11.525*
		(0.030)	(0.034)	(0.033)	(6.102)
Personal selling × Structural type	H2 (+)	0.010***	0.010***	0.007*	−0.662
		(0.003)	(0.004)	(0.004)	(1.213)
Advertising × Structural granularity	H3 (+)	0.084***	0.080**	0.067*	18.052**
		(0.032)	(0.035)	(0.035)	(8.036)
Personal selling × Structural granularity	H4 (+)	0.010*	0.006	0.013*	7.376**
		(0.006)	(0.006)	(0.007)	(3.503)
Promotional mix synergy					
Advertising × Personal selling	H5 (+)	0.000	−0.002	0.002	0.817*
		(0.001)	(0.002)	(0.002)	(0.426)
Functional fragmentation effect					
Advertising × Personal selling × Structural type	H6 (−)	−0.010*	−0.010	−0.014**	−2.422**
		(0.006)	(0.006)	(0.006)	(1.200)
Advertising × Personal selling × Structural granularity	H7 (−)	−0.001**	−0.001	0.001	−0.166*
		(0.001)	(0.001)	(0.001)	(0.094)
Control variables					
Lagged dependent variable		0.368***	0.333***	0.377***	0.125
		(0.030)	(0.032)	(0.028)	(0.077)
Firm age		0.004	−0.001	0.010*	1.215
		(0.007)	(0.008)	(0.006)	(1.016)
Firm size		0.024***	0.023***	0.018***	0.460
		(0.003)	(0.003)	(0.003)	(0.460)
Business focus		0.068***	0.076***	0.011	−3.132
		(0.014)	(0.016)	(0.015)	(2.436)
Industry profitability		0.122***	0.178***	0.088***	1.998
		(0.022)	(0.027)	(0.022)	(3.715)
Industry growth		−0.041**	−0.041**	−0.003	3.466
		(0.017)	(0.019)	(0.021)	(3.467)
Constant		0.199***	0.105	0.054	82.458***
		(0.071)	(0.080)	(0.075)	(18.334)
σ_u		0.186***	0.177***	0.058***	5.301***
		(0.011)	(0.011)	(0.004)	(0.590)
σ_e		0.029***	0.030***	0.038***	2.467***
		(0.001)	(0.001)	(0.001)	(0.131)
Proportion of variance explained		0.976	0.971	0.698	0.822

Notes: Standard errors are in parentheses.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

4.5. Sensitivity analyses: Alternative time frames and dependent variables

We conducted several sensitivity analyses to ensure the robustness of our results; we report the findings in Table 5. First, we tested our model with a series of alternative time frames, such that we excluded the first year (Model 1) and the last year (Model 2) of the data set, then evaluated the effects on firm performance (gross margin). As these models reveal, the estimates were similar to those in Table 4, which increases confidence in our findings.

Second, we tested the model with different dependent variables (alternative performance metrics). Using data from the COMPUSTAT Industrial Annual database, we considered the return on assets (ratio of operating income before depreciation divided by total assets). Along with firm performance metrics, we tested brand performance, measured as brand equity (Rego, Billett, & Morgan, 2009). Unlike other performance metrics, this measure comes from Harris Interactive's EquiTrend, which collects a brand equity score as a latent variable scaled on a 0–100 index, according to four consumer-level variables: familiarity, perceived quality, purchase consideration, and distinctiveness. Data availability in Harris Interactive EquiTrend led to a sample in the brand equity model of 315 firm-year observations and 65 firms, from 2006 to 2012. In Models 3 and 4 of Table 5, we find evidence of customer-alignment synergy and functional fragmentation effects, again increasing confidence in our arguments.

5. Discussion

Academics and managers both operate according to the basic premise that investments in marketing and personal selling improve financial outcomes, but they often forget to consider the influence of organizational structures. Noting that "structure should generally be the capstone, not the cornerstone, of a design effort" (Divakaran, Neilson, and Pandrangi, 2013, p. 11), this study takes a first look at the role of organizational structure when assessing returns from the promotional mix and empirically tests a conceptual model to explicate the effects of a customer-aligned organizational structure. As our novel contribution, we examine *how a firm's structural design leverages the effects of advertising and personal selling on firm performance.*

5.1. Implications for theory

We adopt organizational structure as a theoretical lens to identify drivers of marketing and sales success. Since the very first assertion that structure follows strategy (Chandler, 1962), management and marketing literature have investigated structure–*firm strategy* effects but often ignored the structure–*marketing strategy* link (Lee, Kozlenkova, & Palmatier, 2015). Our study reveals a clear link of structural design with marketing strategies and market-based capabilities.

We demonstrate the effects of two customer-aligned structural design strategies on the promotional mix–performance link, stemming from their contradictory individual-level (customer-alignment synergy) versus joint (functional fragmentation effect on promotional mix synergy) effects. Many researchers assume that realigning an organization in customer groups will improve the effectiveness of a promotional mix, without understanding the repercussions for investments. Because firms with customer-centric units house functional responsibilities inside those units to enhance market-related capabilities (e.g., accountability, insights), additional market knowledge should enable employees to deliver a differentiated value proposition and improve advertising design and placement, such that customers perceive greater value. However, the functional inefficiency inherent in customer-centric units can offset these benefits by undermining the synergies of joint investments in advertising and personal selling (Gulati, 2009). Breaking a firm into smaller entities similarly enhances its ability to respond to the marketplace and create pertinent promotional messages, but this structural form also impedes the effectiveness of joint investments in advertising and salespeople.

Moreover, we find evidence of influences on both firm and brand performance. Firms that focus on building their brand can leverage market knowledge gained from customer-aligned structures and allocate their marketing resources better to target customers. As Aaker and Joachimsthaler (2009, p. 26) suggest, achieving brand leadership requires "creat[ing] an organizational structure … that will lead to strong brands." Nonetheless, joint advertising and personal selling efforts in customer-aligned structures must be undertaken with caution because these structures may weaken the returns from the promotional mix.

5.2. Implications for practice

5.2.1. Understanding the net effects of promotional mix through elasticity decomposition

This research has important implications for top executives regarding the organizational structure that they should establish to support their firms' marketing and selling efforts. Because the influence of customer-aligned organizational structures involves trade-offs, we conduct post hoc analyses to answer two managerially relevant issues: what is the overall impact of advertising and personal selling investments (elasticity) across different structural design conditions, and how do the two opposing mechanisms (i.e., increase in customer-alignment synergy vs. decline in promotional mix synergies due to functional fragmentation effects) affect the overall effectiveness (elasticity) of advertising and personal selling?

The *performance elasticity of promotional mix*, or the percentage change in performance due to a 1% change in promotional spending, enables us to offer a direct comparison of the effectiveness of advertising and personal selling.[8] We compute the

[8] Our elasticities are not directly comparable to sales/demand elasticities because the dependent variable is gross margins. Our main goal is to obtain a unit-free measure of the impact of both advertising and personal selling for the purpose of comparability and benchmarking.

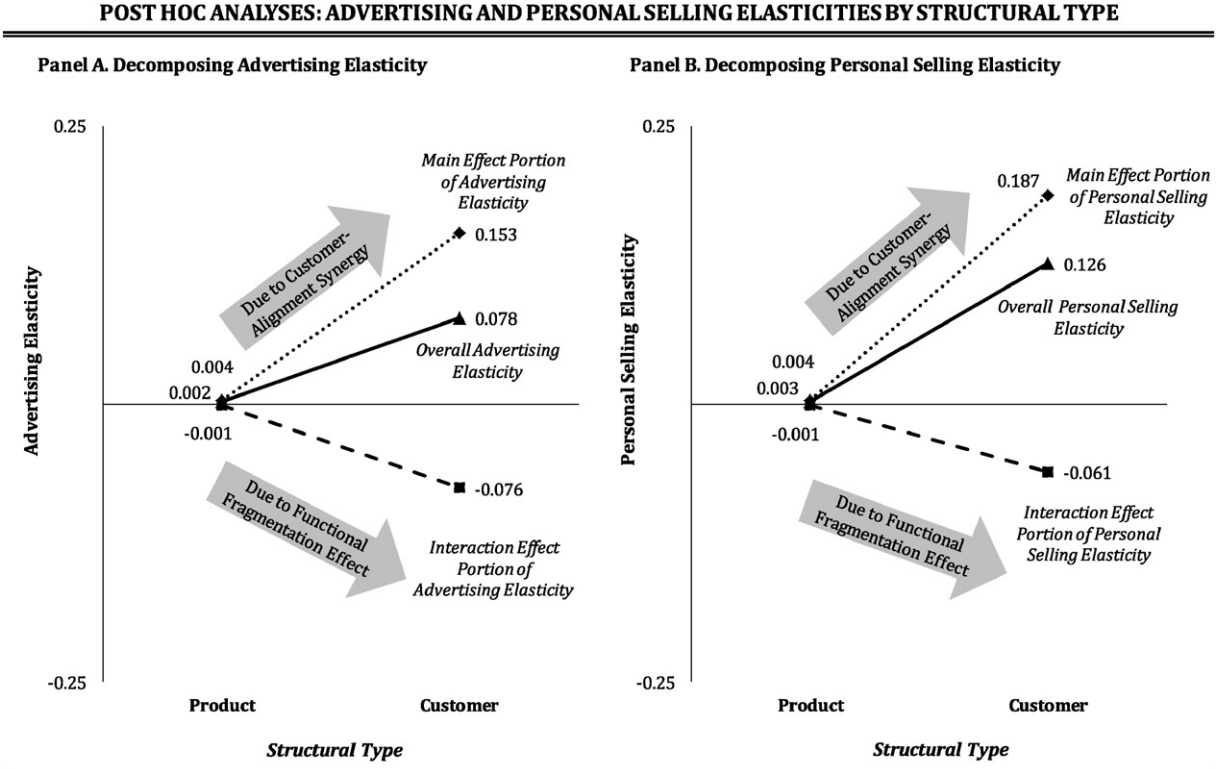


Fig. 2. Post hoc analyses: advertising and personal selling elasticities by structural type.

performance elasticities of advertising and personal selling, across different structural types (customer vs. product) and structural granularity levels (high vs. low), to find the net effect of their promotional mix spending on performance. For the significant coefficients in the estimation results in Model 2 of Table 4, we calculate elasticities at average levels of performance ($\overline{y}$), structural granularity ($\overline{SG}$), ln(advertising) [$\ln(\overline{AD})$], and personal selling [$\ln(\overline{PS})$]. For this assessment, we suppress time and firm subscripts. Overall elasticity consists of the main effect portion from the individual promotional mix investment (η^{Main}) and an interaction portion from the joint investments ($\eta^{Interaction}$). In Fig. 2, we represent the main effect portion (η^{Main}) with a dotted line, the interaction effect ($\eta^{Interaction}$) with a dashed line, and the overall effect with a solid line ($\eta^{Main}+\eta^{Interaction}$). We also use gray arrows to illustrate the mechanisms by which the effects contribute to performance (i.e., customer-alignment synergy, reduction in promotional mix synergy due to functional fragmentation). We present the elasticity of advertising in firms with product-centric units (η_{AD,ST_P}),[9] advertising in firms with customer-centric units (η_{AD,ST_C}),[10] personal selling in firms with product-centric units (η_{PS,ST_P}),[11] and personal selling in firms with customer-centric units (η_{PS,ST_C}).[12]

5.2.1.1. Elasticity analysis for structural type. At mean levels of granularity, performance, and promotional spending, product-centric firms achieve the overall elasticity of .002 whereas customer-centric firms achieve the overall elasticity of .078 (Panel A, Fig. 2). Specifically, firms organized by product groups do not gain much from the main effect portion ($\eta^{Main}_{AD,ST_P} = .004$), but they also make a near-zero loss from the interaction effect portion ($\eta^{Interaction}_{AD,ST_P} = -.001$). What is interesting is that firms organized by customer groups report a larger performance gain from the main effect portion ($\eta^{Main}_{AD,ST_C} = .153$) due to customer-alignment synergy, but also make a considerable loss from the interaction effect portion ($\eta^{Interaction}_{AD,ST_C} = -.076$) due to the functional fragmentation. Likewise, at a mean level of advertising, firms' customer-centric units achieve a greater performance gain from the main effect portion ($\eta^{Main}_{AD,ST_C} = .187$; Panel B, Fig. 2) than product-centric counterparts ($\eta^{Main}_{PS,ST_P} = .004$) due to customer-alignment synergy.

[9] $\eta_{AD,ST_P} = \eta^{Main}_{AD,ST_P} + \eta^{Interaction}_{AD,ST_P} = \frac{[\alpha_1 + \alpha_7 \cdot \overline{SG}]}{\overline{y}} + \frac{[\alpha_9 \cdot \ln(\overline{PS}) + \alpha_{11} \overline{SG} \cdot \ln(\overline{PS})]}{\overline{y}}$.

[10] $\eta_{AD,ST_C} = \eta^{Main}_{AD,ST_C} + \eta^{Interaction}_{AD,ST_C} = \frac{[(\alpha_1 + \alpha_2) + \alpha_7 \cdot \overline{SG}]}{\overline{y}} + \frac{[(\alpha_9 + \alpha_{10}) \cdot \ln(\overline{PS}) + \alpha_{11} \overline{SG} \cdot \ln(\overline{PS})]}{\overline{y}}$.

[11] $\eta_{PS,ST_P} = \eta^{Main}_{PS,ST_P} + \eta^{Interaction}_{PS,ST_P} = \frac{[\alpha_2 + \alpha_8 \cdot \overline{SG}]}{\overline{y}} + \frac{[\alpha_9 \cdot \ln(\overline{AD}) + \alpha_{11} \cdot \overline{SG} \cdot \ln(\overline{AD})]}{\overline{y}}$.

[12] $\eta_{PS,ST_C} = \eta^{Main}_{PS,ST_C} + \eta^{Interaction}_{PS,ST_C} = \frac{[(\alpha_2 + \alpha_6) + \alpha_8 \cdot \overline{SG}]}{\overline{y}} + \frac{[(\alpha_9 + \alpha_{10}) \cdot \ln(\overline{AD}) + \alpha_{11} \cdot \overline{SG} \cdot \ln(\overline{AD})]}{\overline{y}}$.

Yet, customer-centric firms do not fully enjoy such high returns (η_{PS,ST_C}=.126) due to the functional fragmentation ($\eta_{AD,ST_C}^{Interaction}$= −.061). While advertising and personal selling returns are higher overall in a firm with customer-centric units than in its product-centric counterparts, managers in those customer-centric firms should recognize that they will suffer from a drop in efficiency in making joint promotional mix investments.

5.2.1.2. Elasticity analysis for structural granularity. Applying the same logic, we calculated elasticity across different structural granularity levels by splitting the sample into high (top quartile) and low (bottom quartile) structural granularity groups. Thus, we present the elasticity of advertising in a firm with high granularity (η_{AD,SG_H}), advertising in a firm with low granularity (η_{AD,SG_L}), personal selling in a firm with high granularity (η_{PS,SG_H}), and personal selling in a firm with low granularity (η_{PS,SG_L}).

At mean levels of structural type, performance, and promotional spending, firms with larger units (high granularity) generate greater returns from advertising than firms with smaller units (low granularity) (η_{AD,SG_H}= .025 vs. η_{AD,SG_L}=.016; Panel A, Fig. 3). Interestingly, the functional fragmentation effect lowers the interaction effect portion of advertising elasticity by 29% ($\eta_{AD,SG_H}^{Interaction}$= −.018 vs. $\eta_{AD,SG_L}^{Interaction}$=−.014), whereas the customer alignment synergy increases the main effect portion of advertising elasticity by 43% (η_{AD,SG_H}^{Main}= .043 vs. η_{AD,SG_L}^{Main} = .030). Similarly, the main effect of personal selling elasticity is large in highly granular firms (η_{PS,SG_H}^{Main}= .049 vs. η_{PS,SG_L}^{Main} = .036; Panel B, Fig. 3), but the interaction effect is lower in high versus low granularity firms ($\eta_{PS,SG_H}^{Interaction}$= −.015 vs. $\eta_{PS,SG_L}^{Interaction}$= −.011). Thus, the performance drop due to functional fragmentation is offset by the customer alignment synergy that arises with smaller units.

In summary, this elasticity decomposition analysis suggests tensions between the customer-alignment synergy and the loss in promotional mix synergy due to functional fragmentation effects when a firm spends on both advertising and personal selling. Firms that implement customer-aligned structural designs by organizing around customer groups (structural type) or breaking into granular units (structural granularity) appear to achieve a greater return from individual advertising or personal selling investments due to their customer-alignment synergy; however, they encounter considerably lower returns from joint advertising and personal selling investment due to the fragmentation effects. Our empirical findings agree with Day and Moorman's (2010, p. 243) assessment that "managers who are attempting to reorganize their function- or product-dominant organizations around customers must understand the potential risks." Therefore, managers should evaluate if an increase in the individual mix

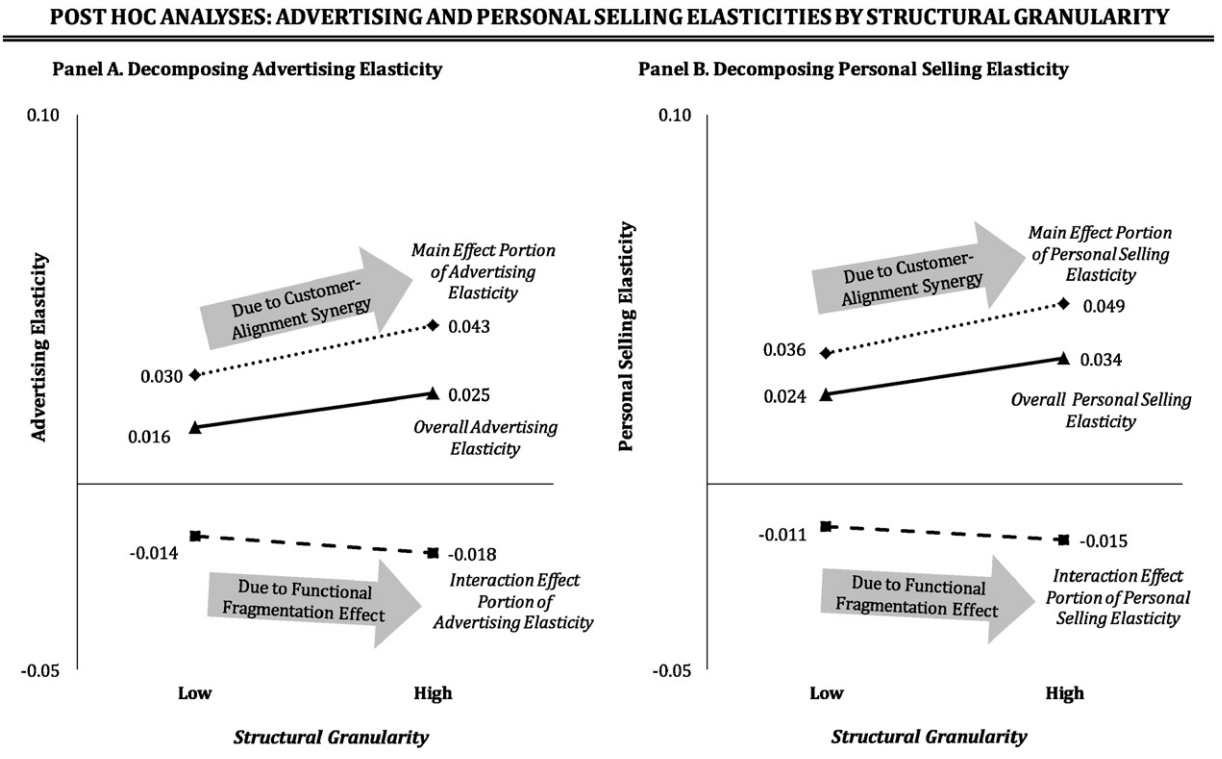


Fig. 3. Post hoc analyses: advertising and personal selling elasticities by structural granularity.

returns due to customer-alignment synergy exceeds the decline in promotional mix synergy due to the functional fragmentation effect.

5.2.2. Structural transition and promotional mix returns

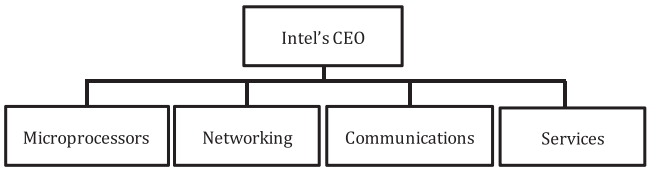
Because organizational structure choices could subsequently alter their promotional mix effectiveness, we provide additional managerial insights by considering how structural shifts may affect the promotional mix returns. That is, we evaluate the additional elasticity benefit when a firm shifts from low to high granularity at a given structural type. In revisiting our elasticity analysis, we calculate the overall advertising and personal selling elasticities for four possible cases expressed as a 2 (product-centric units vs. customer-centric units) by 2 (larger units vs. smaller units; top vs bottom quartile of structural granularity) matrix. We find that product-centric firms can enhance advertising elasticity by 4.8 times by shifting from low granularity to high granularity (.002 to .012), whereas customer-centric firms can enhance it only by 12% (.078 to .087). Similarly, product-centric firms can improve personal selling elasticity by 4.8 times by switching from low granularity to high granularity (.003 to .013) whereas customer-centric firms can improve it only by 8% (.126 to .136). Our results suggest that a firm that already has achieved customer alignment through customer-centric units yield less additional gains in promotional mix when breaking itself up into smaller units (higher level of structural granularity). In conclusion, managers should understand the current structural type and structural granularity and carefully evaluate the extent of potential increases in promotional mix elasticities when considering structural transition.

5.3. Limitations and research directions

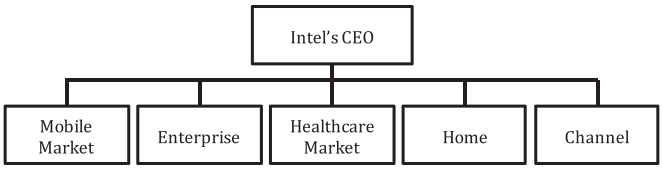
We offer some novel insights into the role of organizational structure, the effects of advertising and personal selling, and firm performance, but our study also has several limitations. First, our use of COMPUSTAT data means that the results refer only to large, publicly traded, U.S. firms. The main findings may be generalizable but do not necessarily hold for firms with smaller sales forces or specific international markets. Second, we used secondary data across a 14-year period, which creates both strengths and weaknesses. Additional research might explore different data sources, such as surveys and in-depth interviews, or employ other approaches, such as an event study, to verify some of the proxy measures. Third, given our findings on functional fragmentation effect, future research may investigate how a firm should execute customer alignment in the organization to yield positive net benefits. Finally, we examined structures; further studies might include a broader array of organizational design variables, such as cultures and processes. Related to this issue, future research may also investigate if customer-centric firms are more or less likely to form centralized corporate marketing functions.

Appendix A. Illustration of structural type (customer vs. product): Intel.

Panel A. Structural type: organizing business units around product groups (before 2005)



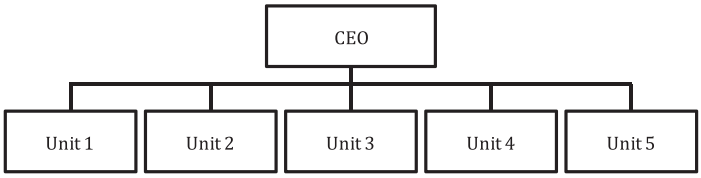
Panel B. Structural type: organizing business units around customer groups (after 2005)



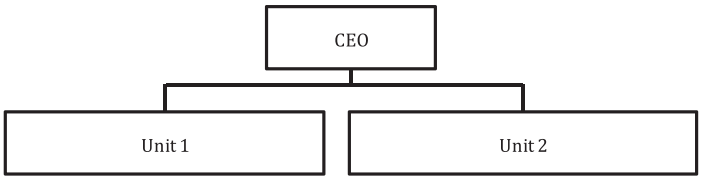
Notes: Although it is not unusual to find various structures at different layers of organization, we focus on the corporate-level organizational structures.

Appendix B. Illustration of high and low structural granularity.

Panel A. High structural granularity



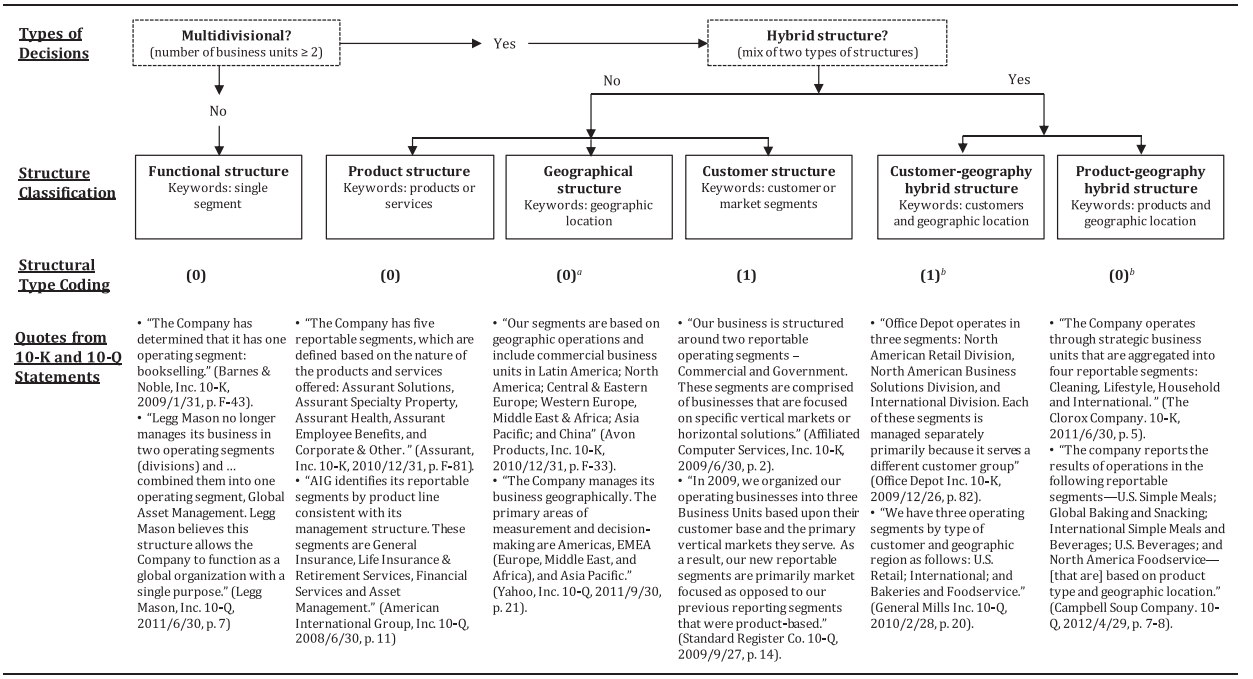
Panel B. Low structural granularity



Notes: Structural granularity is defined as the extent to which a firm divides itself into small business units at the corporate level.

Appendix C. Coding procedures and examples of firms' structural type, from 10-K and 10-Q statements.

Notes: Forms 10-K and 10-Q of its Securities and Exchange Commission filings (http://www.sec.gov/edgar/searchedgar/companysearch.html) provide information on the firm's structural type. In each firm's 10-K and 10-Q statements, we searched for "segment information" because Financial Accounting Standards Board's Statement No. 131 states that companies must report segment information consistent with their internal organizational structure.



[a] Firms with pure geographical structure were not included in this study, because the structural design below the top level is the key in these firms.
[b] When a firm combined product-geography or customer-geography structural types, we categorized them as product and customer structures, respectively, if the sales revenue from the geographical business units accounted for less than 50% of the firm's total sales revenue . We obtained unit-level sales revenues from COMPUSTAT Business Segments database.

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