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ORIGINAL EMPIRICAL RESEARCH

Competence resource specialization, causal ambiguity, and the creation and decay of competitiveness: the role of marketing strategy in new product performance and shareholder value

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Abstract Marketing strategists should create, maintain, and arrest the decay of causally ambiguous resource competences that lead to competitiveness and thus performance. However, competence causal ambiguity, which helps create competitiveness, is also implicated in competitiveness decay. In this study we test a model of specialization-competitiveness-performance using primary and secondary data from 169 public respondents/firms, to examine the effects of negative internal barriers to replication and adaptation. These barriers develop due to resource lock-in arising from the same specialization processes that lead to the positive barriers to imitation that deter competitors. Results suggest that commitment to learning can mitigate resource lock-in problems with internal competence causal ambiguity, competence causal ambiguity among competitors appears more essential to competitiveness in more competitive markets, competitiveness positively relates to both shareholder value and new product performance, and an increased differential focus on marketing versus operations in the organization strengthens the positive bridge between organizational competitiveness and shareholder return.

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Introduction

A common premise in marketing strategy literature is that organizations need to focus on developing or acquiring specialized resources for creating competences as they pursue organizational competitiveness and thereby superior performance (e.g., Day 1994; Hunt 2000; Hunt and Morgan 1995, 1996, 1997; Madhavaram and Hunt 2008; Vargo and Lusch 2004). Organizations therefore strive to gain complex bundles of intangible skills and knowledge, labeled *capabilities*, which enable the firms to act upon tangible resources (assets) such as capital, labor, land, and material. The specialized, interconnected combinations of capabilities and assets are termed *competences* and are theorized to lead to organizational competitiveness. Because organizational competitiveness can be created but can also decay, it is a point of crucial interest to marketing strategists seeking to affect new product performance and shareholder value through specialization of the organization's resources (Madhavaram and Hunt 2008; Moorman and Rust 1999).

Despite considerable research concerning the creation of the competences that can lead to competitiveness (Atuahene-Gima 2005; Chandy et al. 2003; Day 1994; Day and Wensley 1988; Grewal and Tansuhaj 2001; Hunt and Morgan 1996; Mizik and Jacobson 2003; Srivastava et al. 1998), knowledge gaps remain—such as the need to more extensively investigate the decay of competitiveness through the weakening of the competence-competiveness

relationship (cf., Hansen and Mitchell 2007; King 2007) or to examine its connection to product performance and financial accountability (Moorman and Rust 1999). For example, the supposed positive effects of competence-based knowledge entry barriers on competitiveness are based upon a between-firms logic (i.e., they create barriers to imitation among competitors). However, can such specialization at times also have a similar effect inside the focal organization—a within-firm logic? For example, due to resource lock-in arising from specialization, could strategic capabilities become entrenched and/or forgotten and as a result become underappreciated, devalued, dismissed, or even divested? To what extent would such competence causal ambiguity within the focal firm risk a decay of organizational competitiveness, impacting, for example, new product performance and shareholder value? And, in such a case, is an increased focus on marketing versus operations more effective in connecting organizational competitiveness and organizational performance? Moorman and Rust (1999) propose that the marketing function can improve its contribution to the organization by including more emphasis on connecting customers, products, and financial accountability. Thus, the foregoing questions are all marketing strategy questions that need addressing.

The goal of this study is to provide insight into how marketing managers might better help their organizations to obtain the often theorized positive effects of competence resource specialization—the idiosyncratic nature of the resources developed and acquired to produce the competence—while avoiding the less obvious possible negative effects. In our research model, we therefore outline and examine how competence resource specialization can result in both positive (through creating and maintaining ambiguity among competitors) and negative (through lock-in leading to ambiguity inside the focal organization) effects on organizational competitiveness. We also investigate the extent to which certain firm-level elements (specifically, commitment to learning and organizational focus on marketing versus operations) and industry-level elements (specifically, industry turbulence[1] and industry competitive intensity) have direct or moderating influences on other elements in the model. For example, we investigate whether marketing or operations (as a focus) is more effective in connecting competitiveness and performance. In a partial least squares (PLS) structural equation analysis of merged key informant-answered scales and Compustat-gathered data for 169 respondents and their firms, we examine the relationship between competence resource specialization, the two emergent forms of competence causal ambiguity (i.e., the inability to understand the link between competence and the resulting competitive advantage), and organizational competitiveness. In turn, we test the relationships between organizational competitiveness and (1) new product performance (as indicated by the percentage of firm sales from new products) and (2) shareholder value (as indicated by Tobin's q)—as well as whether a marketing versus operations focus moderates the competitiveness-performance connection.

The expected contributions of this research are at least threefold. First, we offer a more comprehensive explanation for the competence resource specialization-competitiveness relationship by empirically addressing both the creation and decay of competitiveness: through competence causal ambiguity among competitors (in the case of creation) and within the focal organization (in the case of decay). Second, by refining our conceptualization of the role of causal ambiguity as it relates to competences and competitiveness, we offer new possibilities for investigating the value-*retaining* organization (i.e., how commitment to learning can help firms retain the value of knowledge-based resources), addressing calls in, for example, organizational memory research (e.g., Moorman and Miner 1997). And third, this research shows that a stronger marketing focus (versus operations focus) improves the path between competitiveness and the generated shareholder value, addressing the research gap noted by Moorman and Rust (1999). In all, the results indicate that marketing research concepts have an important role in more general strategy research.

In the next section, we present the conceptual framework for our study, drawing upon the resource-advantage theory of competition to produce hypotheses. Following hypothesis development, we describe the sample of 169 respondents/organizations, the survey instrument and Compustat data, and the model analysis. We then discuss the results and present implications for marketing research and practice, and we offer our conclusions.

Conceptual framework

Our main thesis is that competence resource specialization can yield both positive and negative effects on competitiveness through two different types of ambiguity, as may be seen in the conceptual model shown in Fig. 1. In this section, we present the theoretical justification for the proposed relationships depicted in the model.

We use the resource-advantage theory of competition (e.g., Hunt 2000, 2012; Hunt and Morgan 1995, 1996, 1997) to describe the logic for the proposed direct paths and moderating effects represented in the model. Resource-

[1] Industry turbulence is used as a control variable in the structural analysis (i.e., not as part of the conceptual model) as more fully described in the methods section.

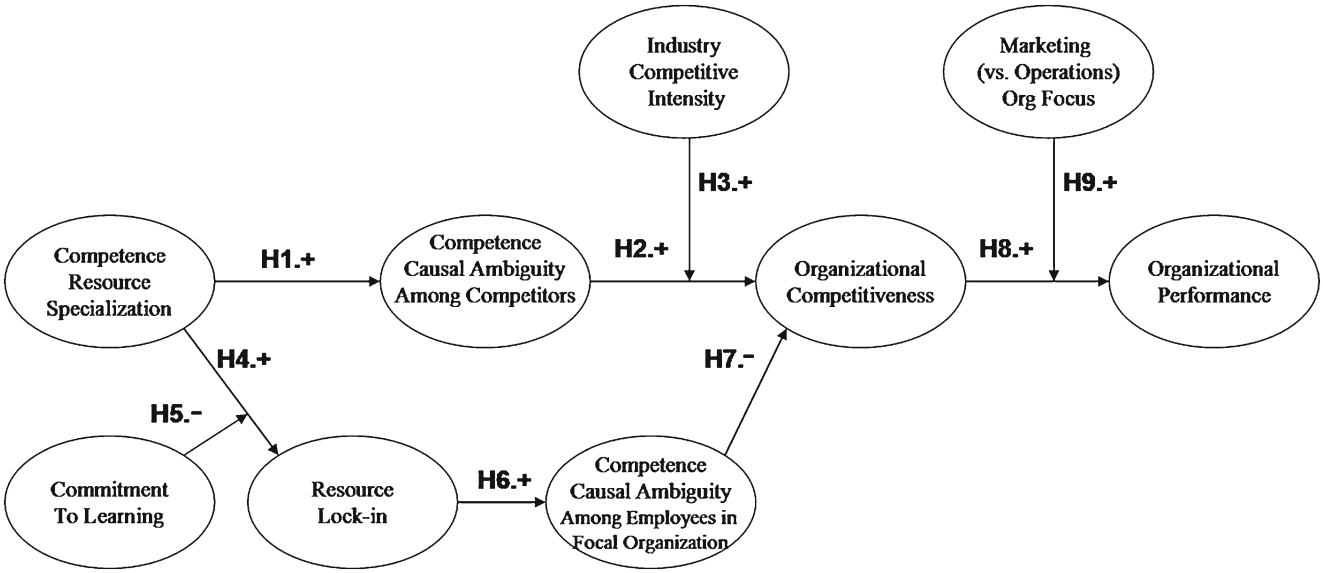

Fig. 1 Conceptual model linking resources → competitiveness → performance. Note: Hypotheses are labeled on the conceptual model (e.g., Hypothesis 1=H1) with theorized directionality for convenience

advantage theory proposes that "the competitive process is viewed as the struggle among firms for a comparative advantage in resources that will yield a marketplace position of competitive advantage and, thereby, superior financial performance" (Hunt and Morgan 1997, p. 78). Accordingly, in the proposed model, we examine the three elements of (1) resources, (2) competitiveness, and (3) performance in more detail in non-equilibrium seeking competition, including both firm-level and industry-level moderating effects and control variables. Firm-level effects include commitment to learning (e.g., Baker and Sinkula 1999; Sinkula et al. 1997) and firm focus on marketing versus operations (e.g., Krasnikov and Jayachandran 2008). We note that in addition to organization-specific elements, resource-advantage theory (and the RBV concept and market orientation literature that the theory draws upon) proposes that industry context must be taken into account in examining the relationship between marketing strategy constructs and organizational performance (e.g., Hunt 2000; Hunt and Morgan 1995; Madhavaram and Hunt 2008). Thus, we also include two industry-level context factors in the model: industry turbulence[2] and industry competition (e.g., Amit and Schoemaker 1993; Fang et al. 2008; Jaworski and Kohli 1993; Srivastava et al. 2001). Next, we present logic and conceptual support behind the proposed relationships in the model.

Competence resource specialization

A key competence creation element discussed across marketing, economics, and strategic management literatures is competence resource specialization (e.g., Barney 2001; Hunt 2000; Liebowitz and Margolis 1995; Madhavaram and Hunt 2008; Rumelt 1984; Vargo and Lusch 2004; Wernerfelt 1984; Williamson 1985). Wernerfelt (1984, p. 172) defines resources as "those tangible and intangible assets which are tied semi-permanently to the firm." Likewise, Hunt and Morgan (1997) propose that resources are the imperfectly mobile tangible and intangible entities available to the firm such as financial, physical, legal, human, organizational, informational, and relational entities. As indicated by Madhavaram and Hunt (2008), competences can be viewed as higher order resources as they are complex interconnected combinations of basic resources (e.g., physical assets) and intangible resources (e.g., employee capabilities). The term *competence resource specialization* is defined as the tacitness, complexity, and specificity of the interconnected combinations of tangible and intangible assets that constitute the competences in an organization (Barney 1991; Hunt 2000).

Tacitness (cf. Polanyi 1966) refers to information gained through experience that is difficult to articulate to other individuals. Competence tacitness can be viewed as having both "cognitive" and "technical" elements (Nonaka 1994, p. 16). The tacitness of cognitive elements centers on the "schemata, paradigms, beliefs, and viewpoints that provide 'perspectives' that help individuals to perceive and define their world," and the tacitness of technical elements centers on "concrete know-how, crafts, and skills that apply to specific contexts" (Nonaka 1994, p. 16). Hence the tacitness of competence resource specialization draws from, for example, notions of difficulty to acquire necessary resources, specialized training, and learning by doing.

[2] See note 1.

As to the complexity of competence resource specialization, Hunt (2000, p. 82) suggests that competences are complex when they involve a large number of different technologies, skills, and routines. Even simple inner environments become complex due to the vast variety of phenomena that impinge upon the organization from its outer environment (Simon 1996). As a result, the acquisition of "necessary" resources is not necessarily clear cut due to environmental complexity; when identified, they are often difficult and costly to acquire.

The term "asset specificity" has been used to refer to the degree to which a resource cannot be redeployed to alternative uses and by alternative users without decreasing the productive value (Williamson 1985). The acquisition or development of the necessary resources and interconnections in the competence resource specialization process is often costly and difficult, which has the benefit of making them more valuable, rare, inimitable, etc. (Barney 1991; Hunt 2000). Specialization of any type of resource may lead to advantage building competences including financial, physical, legal, human, organizational, informational, and relational resources (Hunt 2000). The specialization of the intangible resources components of competences such as employee knowledge and understanding has been referred to as "human asset specificity," which entails learning by doing (i.e., know-how or tacit knowledge) and specialized training (Williamson 1985). The human asset specificity component is particularly important in the development of causal ambiguity.

Tacitness, complexity, and specificity often contribute to competence resource specialization in an intertwined manner. However, the development of specialized resources does not automatically lead to a position of competitive advantage (Barney 1991; Hunt 2000; Reed and DeFillippi 1990). According to resource-advantage theory, organizational competitiveness is the ability to maintain the advantage-creating efficacy of the competence resource specialization, including the refinement, adaptation, and renewal of competences necessary to sustain a position of competitive advantage (Hunt 2000; Hunt and Morgan 1995; Madhavaram and Hunt 2008). That is, "superior skills and resources are *not* automatically converted into positional advantages, *nor* is there a certain performance payoff for superior cost or differentiation positions" (Day and Wensley 1988, p. 7 emphasis added). Rather, "both conversions are mediated" (Day and Wensley 1988, p. 7). In the following sections, we discuss variables that might mediate the relationship between competence resource specialization and organizational competitiveness.

The role of competence causal ambiguity among competitors

As previously noted, complexity arises from involving many different technologies, skills, and routines. The resource-advantage theory, drawing upon the resource-based view of the firm, maintains that the combination of resources that results in the creation of competences leading to sustainable competitive advantage are socially and technologically complex, costly to produce in terms of time and other resources, and causally ambiguous among competitors (Barney 1991; Day 1994; Hunt 2000; Hunt and Morgan 1995, 1996, 1997; Hunt and Derozier 2004; Reed and DeFillippi 1990). "Causal ambiguity among competitors," or "inter-firm causal ambiguity," refers to the inability of competitors to fully understand the focal organization's competences on which the advantage is based (Hansen and Mitchell 2007; King 2007). The concept of causal ambiguity among competitors is central to the resource-based view (RBV), organizational learning, behavioral economics, and dynamic capabilities notions that resource-advantage theory draws upon (Barney 1991; Hunt 2000; Hunt and Derozier 2004; King 2007; Nelson and Winter 1982; Teece et al. 1997).

It is therefore theorized that resource specialization, characterized by the unique and tacit nature of the resources, their complexity and specificity, and the resulting cost and difficulty of acquiring them, can not only lead to time compression diseconomies but also create complex competences that competitors cannot fully comprehend (Barney 1991; Hunt 2000; Madhavaram and Hunt 2008). Over time, the specialized learning and know-how combined with assets that are costly or difficult to acquire increases human asset specificity (Williamson 1985). With the increase in human asset specificity, the knowledge from employee training and understanding becomes more tacit. And as the tacitness of the knowledge increases, it is more difficult for the knowledge to be shared verbally or in written form (i.e., it must be experienced to be understood). Thus, it would become more difficult for competitors to figure it out through written or verbal reports because they have not had the experiences that led to the tacit knowledge in the focal organization. Likewise, increased complexity makes it more difficult for competitors to sort out which combinations of resources constitutes the competence. As pointed out by Reed and DeFillippi (1990, p. 94) in reference to causal ambiguity among competitors, "there is a fundamental difference between having information and understanding it." Thus, consistent with extant conceptual work, we hypothesize that competence resource specialization should increase causal ambiguity among competitors regarding the focal organization's competences.

H1: The higher the competence resource specialization of the focal firm, the less the firm's competitors are able to comprehend the competence of the focal firm (i.e., there is an increase in causal ambiguity among the competitors).

Competitors' ambiguity to organizational competitiveness

Resource-advantage theory contains the Austrian economics position that competition is a knowledge-discovery process (Hayek 1945; Hunt 2000, 2012; Kirzner 1973). Thus, reducing competitors' knowledge about the firm's competence could make it more competitive. Indeed, competence causal ambiguity among competitors has been argued to be one source of maintaining competitive advantage through creation of barriers to imitation among competitors (e.g., Barney 1991; Hunt 2000; Porter 1985; Reed and DeFillippi 1990). Barriers to imitation such as causal ambiguity are proposed to be an important part of establishing competitive advantages as the efficacy of competences will otherwise likely erode as a result of changing market conditions (Day and Wensley 1988; Hunt and Morgan 1996).

One such barrier to imitation arising from competence causal ambiguity can be confusion by competitors regarding which competence-related concepts are antecedents and which are outcomes; Ryall (2009) provides for consideration the example of confusion regarding high powered sales incentive systems and an aggressive sales culture. A confused competitor might implement the incentive system (believed antecedent), hoping the sales culture will adapt and become more aggressive (believed outcome), when the competitor should have hired an aggressive sales force (real antecedent) and then adapted the incentive system (real outcome) to match the sales force. Thus in this example, when the antecedents and outcomes are switched in confusion, the believed outcome will not match that of the imitated strategy.

Another related way that causal ambiguity could be a barrier to imitation is when the firm's operating practices can be observed, but the influence relations that drive them are hidden from competitors (Ryall 2009). An example of visible operating practices based on hidden influences could be a supermarket attempting to copy Walmart's observable low price strategy, hoping that the retail pricing strategy will translate into improved margin for the supermarket. The reality is that observed improved margin occurs through the usually unobserved low cost distribution strategy even for the same purchase quantities (that the supermarkets cannot replicate) that allow Walmart to be initially more visibly profitable pursuing a low price strategy than its competitors.

In such cases, the resulting barriers to imitation could put the focal organization at a position of competitive advantage. Positions of competitive advantage are theorized to result in improved market competitiveness (Hunt 2000; Hunt and Morgan 1997). Therefore, we expect that inter-firm causal ambiguity among competitors is positively linked with long-term competitiveness.

H2: Competence causal ambiguity among competitors is positively associated with organizational competitiveness.

The moderating role of industry competitive intensity

According to resource-advantage theory, firms with lower relative resource-produced value are often at a competitive disadvantage when competition increases (Hunt and Morgan 1995). As the number of organizations competing increases, a given organization has to analyze much more information. Usually such an organization is not able to allocate more resources than before. Thus, it has less time per competitor to analyze and strategize regarding the competences of others. As industry competitive intensity increases, the differential competitive advantage generated by unique, difficult-to-duplicate tangible and intangible resources should become even more important and useful (Hunt 2000; Hunt and Morgan 1995, 1997).

Also, as competitive intensity increases, firms are more likely to benchmark and copy competitors as the firms must compete more directly with each other to continue to grow sales which would otherwise be divided into smaller portions among an increased number of competitors' market offerings. As Fang et al. (2008, p. 6) propose, "in industries with little competition, all firms—even those without rare or valuable resources—may generate acceptable profits, but as competition increases, differential resource advantages become more important drivers of firm value." Therefore, we posit that industry competitive intensity in the organization's core product industry positively moderates the proposed positive relationship between competence causal ambiguity among competitors and organizational competitiveness.

H3: Industry competitive intensity positively moderates the effect of competence causal ambiguity among competitors on organizational competitiveness.

The occurrence of resource lock-in

Resource-advantage theory contains the evolutionary economics position that path dependencies can occur in organizations, i.e., history matters (Hunt 2000, 2012; Teece 2007). While organizations seek to be able to reconfigure competences to address changing environments—termed dynamic capabilities (Teece 2007; Teece et al. 1997)—the acquisition and development of specialized resources is so difficult, costly, and time consuming that it might unintentionally preclude the organization from freely and effortlessly altering strategic direction (Hunt 2000; Liebowitz and Margolis 1995). Resource lock-in is defined as the path dependent limitation of a firm's strategic options resulting from earlier decisions, possibly such as the decision to specialize. Specialization breeds further efficiencies that in turn lead to greater specialization (Penrose 1959). As a result of the specificity, tacitness, and complexity of the resource specialization, the subsequent financial, efficiency, effectiveness, and temporal costs of changing paths can become

too dear for the focal firm (Hunt 2000). The resulting path dependent competences can restrict a firm's strategic options because of the time and cost associated with a shift in course (Hunt and Morgan 1996; Sterman and Wittenberg 1999; Vargo and Lusch 2004). Thus, the increased specialization might create a negative second-order effect (Levinthal and March 1993)—resulting in "resource lock-in" (Liebowitz and Margolis 1995) in which the firm can become locked in to its particular set of resources and path for the foreseeable future (Han et al. 2001; Madhavaram and Hunt 2008).

H4: Competence resource specialization is positively associated with resource lock-in.

The moderating role of commitment to learning

Commitment to learning, a significant topic of study in marketing research, is defined here as an attitude by which organizations discover how best to compete in the market (e.g., Baker and Sinkula 1999; Li and Calantone 1998; Sinkula 1994; Sinkula et al. 1997). This learning—such as feedback from customers, the observation of competitors, and the vigilant tracking of environmental changes—enables the firm to take steps to develop advantage-supporting competences (Hunt 2000; Sinkula 1994).

We have proposed that while competence resource specialization can help maintain an organization's competitiveness through causal ambiguity among its competitors, the specialization can also diminish the organization's ability to stay competitive through competence causal ambiguity among employees in the focal organization, resulting from resource lock-in. This seeming contradiction in outcomes gives rise to the question of what steps, if any, can an organization take to minimize the possible negative effects of competence resource specialization? One answer could be that—as competences are knowledge based—maintaining their efficacy might be possible through a commitment to learning. In fact, organizational learning has been said to be a competency-based source of competitive advantage, and perhaps the only sustainable source (e.g., Slater and Narver 1995; Stata 1989). Learning organizations are better able to track changes in the environment and determine how best to adapt to its dynamic nature (Slater and Narver 1995). They are better able to capitalize on knowledge acquired from the external environment (Cohen and Levinthal 1990; Kohli and Jaworski 1990; Narver and Slater 1990). Evidence of this type of suggested learning effect includes the finding by Atuahene-Gima (2005) that interfunctional coordination improves the impact of competence exploitation on performance. However, while his measures of exploitation refer to how much investment a firm has put into current processes, our focus on competence resource specialization and contribution is centered on the difficulty in developing the core competency, for which we argue that a commitment to learning reduces the negative impact of specialization on lock in and therefore ultimately improves performance.[3]

Through its commitment to learning, the organization can discover options that might not have been evident previously (Huber 1991). Through such discovery, it is hoped that the firm can decrease or prevent resource lock-in resulting from competence resource specialization. To summarize, we expect that an organization's commitment to learning enables it to mitigate the effects of resource specialization on resource lock-in.

H5: A commitment to learning negatively moderates the relationship between resource specialization and resource lock-in.

Competence causal ambiguity within the focal organization

Resource-advantage theory is premised on the view that an organization's information is imperfect and costly (Hunt and Morgan 1997). Part of this imperfection and cost comes from difficulties in maintaining organizational memory, defined here as "the collective beliefs, behavioral routines, or physical artifacts that vary in their content, level, dispersion, and accessibility (Moorman and Miner 1997, p. 93). As organizations become locked in to using particular resources and paths, the developed and acquired specialized knowledge that comprises capabilities can become embedded in organizational routines (Moorman and Miner 1997, p. 93; Nelson and Winter 1982), which (1) makes it difficult for management to identify the capabilities at later times (Day 1994, p. 38) or (2) results in the organization losing recognition of the unique value of that knowledge and memory of how it led to an advantage building competence (Levinthal and March 1993). While particular individual employees might not forget the connections between embedded resources/capabilities and competences, the organization itself may forget over time—as employees turn over and newer employees begin working for the organization after the capabilities have been embedded in routines and processes that the organization has become locked in to as the organization pursued specialization. The new employees may not understand the uniqueness or value of these capabilities and competences. Over time, few employees eventually remain (due to management and employee turnover) to appreciate what are the capabilities (that are necessary parts of the

[3] Extant research helps a firm see how it can find new competences so it doesn't have the rigidity problems associated with existing competences (e.g., Atuahene-Gima 2005). The present study, in a separate yet complementary thrust, shows how firms can try to retain the competitive advantage of existing competences in the presence of (often unobserved) problems associated with resource specialization. Thus, at its core, the paper adds to the stream on competence creation a different look at competence retention/renewal.

competence) that have been behaviorally routinized, becoming stored in physical artifacts (Moorman and Miner 1997). In summary, resource lock-in could result in competence causal ambiguity among employees inside the focal organization.

H6: Resource lock-in is positively associated with competence causal ambiguity among employees in the focal organization.

Focal organization employees' ambiguity to organizational competitiveness

In resource-advantage theory, marketplace positions of competitive advantage, termed "organizational competitiveness," are acquired by organizations developing unique combinations of resources (Hunt 2000, 2012; Hunt and Derozier 204; Hunt and Morgan 1995, 1996, 1997; Madhavaram and Hunt 2008). As further detailed in resource-advantage theory, these unique resource combinations or competences include capabilities, or intangible skills and knowledge. Firms and individuals have imperfect knowledge that is costly to come by (e.g., Hunt and Morgan 1995). Thus, a decrease in capabilities due to competence causal ambiguity among employees in the organization over time would likely decrease the ability of the organization to remain competitive. This could occur in a number of ways. Competence causal ambiguity among employees in the focal organization might increase the likelihood that specialized resources (leading to competences) that can yield competitive advantage are mislabeled as general resources (Williamson 1985). In such cases, management may fail to reinvest in these resources to strengthen and adapt them to environmental changes (King 2007), diminishing the competence's ability to help the organization remain competitive. Or, perhaps management may not realize the importance of these resources and fail to protect them and the key employee positions in which these resources reside. If such competitive advantage producing resources are forgotten, downsized, or outsourced, the organization risks losing control of them and therefore the ability to leverage them. For example, in response to turbulent times, several marketers "completely lost their capabilities due to downsizing" (Bolton 2010). Ryall (2009) suggests that part of a number of competences is the ability to see how resources should be aligned—that at times, competence related ambiguity can lead to the failure to see the alignment, resulting in misalignment. In any of these scenarios, the results could include eventually losing the ability to access the knowledge embedded in those functions, diminishing the returns available to the users of the resource (Wernerfelt 1984). In short, organizations forget what elements made them great and thus have difficulty continuing to repeat them and adapt them to changing market circumstances. Thus, we hypothesize that an increase in competence causal ambiguity among employees in the focal organizational is associated with a decline in organizational competitiveness.

H7: Competence causal ambiguity among employees in the focal organization is negatively associated with organizational competitiveness.

Competitiveness and performance

There is continuing interest in examining the relationship between market-oriented behaviors—such as competitiveness—and performance (Morgan 2012; Pelham and Wilson 1996). Resource-advantage theory proposes that marketplace positions of competitive advantage can result in superior firm performance. As competition is espoused by resource-advantage theory to be dynamic, a firm must regularly innovate both through the development of new market offerings and in its operations in order to compete successfully (Hunt 2000). Companies that retain competences/capabilities can become more market driven (Day 1994), improving anticipation of future needs for new products (Prahalad and Hamel 1990). As firms emphasize such products, the new products should represent a greater percent of total sales (Harmancioglu et al. 2009). Therefore, we expect to find that organizations that are able to maintain their competitiveness over the long-term will have a higher percentage of sales from new products. At the same time, we posit that being more competitive permits an organization to increase shareholder value by creating more market value than its replacement cost.

H8: Organizational competitiveness is positively associated with organizational performance.

The moderating role of organizational focus

Resource-advantage theory draws upon and is consistent with the market orientation literature (Hunt 2000; Hunt and Derozier 2004). Within the market orientation literature, the adapted marketing concept puts forth that an increased focus on marketing activities is associated with improved financial performance (Kohli and Jaworski 1990; Jaworski and Kohli 1993). According to Moorman and Rust (1999), the marketing function is also important to organizational performance beyond a market orientation. These authors suggest that the contributions of the marketing function are three distinct types of knowledge and skills: managing connections between customers and (1) products, (2) service delivery, and (3) financial accountability. As a result, an increased focus on marketing should improve performance, as it relates to both new product performance and financial performance (Moorman and Rust 1999). Consistent with

this idea, marketing research finds that marketing capabilities have a stronger impact on organizational performance than operations capabilities (Krasnikov and Jayachandran 2008). We note that this does not suggest that having operational capabilities is a negative. Either operations focus or marketing focus might result in a certain level of organizational performance resulting from competitiveness. However, it does suggest that focusing more heavily on marketing versus operations might be more beneficial, given the distinct knowledge and skills (of a marketing focus) in connecting customers and products and financial accountability (Moorman and Rust 1999). Thus, given that organizations have limited resources that must be allocated (Hunt 2000), we theorize that focusing more on marketing versus operations might incrementally improve (i.e., moderate) the relationships between a given level of organizational competitiveness and organizational performance.

H9: Organizational focus on marketing versus operations moderates the relationship between organizational competitiveness and organizational performance.

Method

From a private database company we acquired access to key informants at 1,000 North American-based firms. Through the private database company's online software, we sent a questionnaire to the key informants. Participants were told: "Please note that the word '**competence**' here refers to the capabilities and employee knowledge that produce efficiencies, relational power, and competitive advantages. (*Ex: Walmart = distribution system that creates the cost advantage; not cost itself, Dell = having suppliers work alongside employees in factories streamlining production time, not just production time itself, etc.*) Please briefly describe the competence of your firm."[4] Participants were then asked to think about that competence when answering the rest of the questions in the survey.

A total of 462 questionnaires were completed, a 46.2% response rate. Of those completed, 169 of the respondents reported the name of the publically traded company for whom they worked, allowing us to use Tobin's q as a performance indicator.[5] Average organization size was 145 million dollars in assets. The organizations operated in several industries, as summarized in Table 1. Key informants were 42% female, 58% male, with an average age of 46.3 years and an average annual income of $91,633. Reviewing the indicated work titles (e.g., owner, CEO, controller, buyer, vice president, manager, department head), we found that 34% could be classified as corporate executive positions (oversight of products or processes) and 66% classified as management positions (oversight of people or products). As to the focus of the participants' work, 45% of the 169 respondents indicated they oversaw marketing functions for their firms, while the other 55% oversaw other functions (primarily operations, engineering, or information systems). Research indicates that mid-level managers on up to executive level positions are knowledgeable about competence-related phenomena because of their critical roles in the development and implementation of company strategy (e.g., King and Zeithaml 2001; Wooldridge and Floyd 1990).

Given the use of key informants, we attempted to control for the effects of possible common source bias through several procedural and statistical techniques mentioned in Podsakoff et al. (2003), as they mention that "there is no single best

Table 1 Sampling frame description

Primary Industry Classification	Searchable Public Firms		Initial All Firms	
	Count	Percent	Count	Percent
Manufacturing	39	23.1%	88	19.0%
Retail or Hospitality	47	27.8%	121	26.2%
Financial Services	31	18.3%	75	16.2%
Medical/Healthcare Services	12	7.1%	69	14.9%
Technology or Engineering	19	11.2%	55	11.9%
Utilities, Telecom, or Transport	21	12.4%	54	11.7%
Total	*169*	*100%*	*462*	*100%*
Department				
Respondent in Marketing Department	71	*42%*	166	36%
Respondent in Other Department[a]	98	*58%*	296	64%
Total	*169*	*100%*	*462*	*100%*
Position				
Executive (CEO, CFO, CIO, etc.)	11	*7%*	57	*12%*
Owner, Partner	2	*1%*	48	*10%*
Vice President	8	*5%*	20	*5%*
Controller, Buyer	4	*2%*	11	*2%*
Manager	51	*30%*	128	*28%*
Department Head	9	*5%*	22	*5%*
Supervisor	20	*12%*	54	*12%*
Other Corp Mgmt	64	*38%*	122	*27%*
Total	*169*	*100%*	*462*	*100%*

[a] The majority of "Other Departments" consisted of operations, engineering, and information systems

[4] After the data were collected, three independent raters classified all the reported competences. Approximately two-thirds of the reported competences were marketing focused, one-third were operations focused. We note that a split sample based on competence focus did not have a significant effect.

[5] As to the respondents who did not indicate the name of their company but filled out the questionnaire, we note that analysis of the model using the full dataset of 462 responses shows consistent results—with the exception of Tobin's q, which could not be calculated for them.

method for handling the problem" (p. 899). As to procedural remedies, the order of measurement of the variables in the survey were counterbalanced with separate cover stories for criterion versus predictor variables (to increase psychological separation of the variables), survey respondents were guaranteed anonymity, reverse coded indicators were included, and extensive pretesting was used. Additionally, we obtained predictor and criterion variables from different sources (industry turbulence, competitive intensity, industry growth, and Tobin's q financial data ratios were gathered separately from Standard and Poor's Compustat database), and we used objective dependent indicators (new product sales as a percent of firm business and Tobin's q).

As to statistical remedies, for Tobin's q, additional statistical remedies are unnecessary because the predictor and criterion variables come from different sources. For sales from new products, some (but not all) of the predictor and criterion variables come from different sources. Given that the variables cannot be measured in different contexts and the source of the possible bias cannot be identified, a single common method factor approach is used; see Podsakoff et al. (2003, p. 898, Fig. 1, Table 5, and Fig. 3a). A post hoc Harmon's single factor test showed that no single factor accounts for the majority of the variance in the unrotated factor matrix—explaining less than 30% of the variance, which is below the 50% threshold (Podsakoff and Organ 1986). Including the highest factor on the model as a control variable on all dependent variables did not produce a significant change in variance explained (Podsakoff and Organ 1986). And, a seemingly unrelated CFA marker variable explains only 1.4% of the variance (Lindell and Whitney 2001; Podsakoff et al. 2012). Last, we note that any potential method bias is not able to account for any statistically significant interaction effects (Podsakoff et al. 2012), and our model includes three interaction effects. Thus, common source bias does not appear to be a significant issue. Separately, extrapolation to nonrespondents based on analysis of three waves of earlier and later respondent descriptive statistics indicates no evident nonresponse bias concerns (Armstrong and Overton 1977).

Measurement

Prior to contacting respondents in the sampling frame, we first conducted two pretests of the construct scales. We pretested the scales using 25 executives enrolled in a graduate business course in the United States. We then refined the scales and tested them a second time using 30 executive enrolled in a graduate business course in Hong Kong. We then administered the questionnaire to the main sample.

The scales used to measure the constructs are measured with 5-point Likert-type scales (1=strongly disagree, 5= strongly agree). Scale items, measurement model statistics, reliability coefficients and average variance extracted, as they pertain to the main sample, appear in Table 2, and latent construct correlations are shown in Table 3.

Most competence-focused research is conceptual or case study based. Thus, competence resource specialization scale items were developed referring to Hunt (2000) and Williamson (1985). The five scale items include coverage of the tacitness (items 1 and 2), complexity (item 5), and specificity (items 3 and 4) elements of the construct. We note that factor loadings (in Table 2) indicate that "specificity" does not dominate the tacitness and complexity elements of the construct. Scale items for competence causal ambiguity among competitors were developed referring to King (2007), Hansen and Mitchell (2007), and Reed and DeFillippi (1990). Resource lock-in scale items were developed referring to Liebowitz and Margolis (1995), Sterman and Wittenberg (1999), and Hunt (2000). The scale items for competence causal ambiguity among employees in the focal organization were developed referring to King (2007), Hansen and Mitchell (2007), and Reed and DeFillippi (1990). Organization competitiveness scale items were developed referring to Barney (1991) and Hunt (2000).

As to moderators, the scale items for commitment to learning scale are the seven-item scale found in Baker and Sinkula (1999). Industry competitive intensity is calculated as a Herfindahl index using the Fundamentals Annuals data in Compustat by squaring each firm's market share in a given industry (defined as the four-digit SIC code related to the firm's primary product), taking the sum over all firms in that industry, and then subtracting this sum from 1 (Fang et al. 2008). Then, all the moderating variables are calculated following the guidelines of Chin et al. (2003)).

The dependent variable organizational performance is measured with two (conveniently uncorrelated) measures of performance. The first measure is percent of sales from new products. It is numeric in nature: 0 to 100% in multiples of 10%. We asked the participants to assess their perceptions of new product performance similar to that found in previous studies (e.g., Menguc and Seigyoung 2006). The second measure is the Tobin's q ratio, computed using financial data contained in the Standard and Poor's Compustat database (see, e.g., Balasubramanian et al. 2005; Wang et al. 2009). The ratio divides market value by the replacement cost of current assets (Tobin 1969; Villavonga 2004). A ratio greater than 1 indicates that the firm creates more market value than its replacement cost and is thus increasing shareholder value. Tobin's q has gained wide acceptance as a measure of economic performance/shareholder value because it is forward looking, risk adjusted, comparable across firms, and well grounded in economic theory (Anderson et al. 2004; Villavonga 2004).

We include the control variable industry turbulence (on competence resource specialization). Resource-advantage theory also draws upon the market orientation literature premise

Table 2 Measures and loadings

COMPETENCE RESOURCE SPECIALIZATION (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.81; AVE=.50; sqrt AVE=.71
In reference to creating/acquiring the core competence in the firm over the past several years, to what extent do you feel that…	
…it has been difficult to acquire the necessary resources	0.87
…it has been costly to acquire the necessary resources	0.86
…it required a lot of "learning by doing" to develop it	0.70
…it required a lot of specialized training to develop it	0.70
…the resources put into the competence have a higher value (as a part of the competence) than they would if they were used for any other purpose	0.73
COMPETENCE CAUSAL AMBIGUITY AMONG COMPETITORS (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.83; AVE=.62; sqrt AVE=.79
In regards to your firm's competitors…	
…Competitors do not comprehend the competences that lead to the firm's advantage	0.90
…Competitors do not understand how basic resources work together to create the firm's competences	0.95
…Competitors could not learn how to effectively duplicate this competence by analyzing firm news and reports	0.88
…our firm does a good job at blocking competitors' competitive intelligence gathering attempts (about the firm)	0.81
RESOURCE LOCK-IN (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.89; AVE=.73; sqrt AVE=.85
In regards to competence creation in the firm over the past several years, to what extent do you feel that...	
… the firm has been locked into a course of action because of pursuing the current competence	0.70
… The firm has been unable to buy certain new technologies because they are incompatible with the firm's current technologies	0.74
… The firm just doesn't have the slack resources that it needs to be innovative	0.73
… Sometimes the firm cannot follow up with a good idea because of decisions made in the past	0.78
COMPETENCE CAUSAL AMBIGUITY AMONG EMPLOYEES IN THE FOCAL ORGANIZATION (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.94; AVE=.80; sqrt AVE=.90
In regards to coordination among the firm's departments or functions…	
…Other departments do not understand how the combinations of basic resources work together to create the core competences	0.91
…Other departments do not understand how our department contributes to the firm's competences	0.95
…Our firm does not involve many members from different departments in forming the firm's strategy	0.88
COMMITMENT TO LEARNING (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.94; AVE=.70; sqrt AVE=.84
The basic values of our organization include learning as a key to improvement	078
The sense around here is that employee learning is an investment, not an expense	0.91
Learning in my organizational is seen as a key commodity necessary to guarantee organizational survival	0.84
We send employees to seminars or short courses to bring back new ideas to the organization	0.79
We arrange seminars and classes to educate employees about important concepts and processes	0.83
The organization focuses efforts on regular training of employees	0.90
We seek to understand the reasons for the success or failure of previous projects	0.81
ORGANIZATIONAL COMPETITIVENESS (5 point scale; 1=strongly disagree, 5=strongly agree)	ICR=.96; AVE=.81; sqrt AVE=.90
To what extent do you agree that…	
…the firm has been able to maintain its competitive advantage	0.81
…the firm has maintained its competence	0.86
…the firm seems to always improve what it does best	0.91
…the firm always seems to have a leg up on the competition	0.89
…the firm regularly improves its competence	0.84

Table 2 (continued)

PERCENT SALES FROM NEW PRODUCTS (11 point scale; 0%, 10%,…, 100%)

To the best of your knowledge, roughly what percent of your firm's sales comes from new products (products less than 5 years old)?

MARKETING (VS. OPERATIONS) FIRM FOCUS

Scale index is arrived at by subtracting scale item 2 below (operations) from scale item 1 below (marketing), resulting in a difference in focus—with positive values reflecting more focus on marketing and negative values reflecting more focus on operations.

In regards to the firm's focus, to what extent do you feel the firm has more of a…

…marketing/customer focus (5 point scale; 1=strongly disagree, 5=strongly agree)

…operations/production focus (5 point scale; 1=strongly disagree, 5=strongly agree)

INDUSTRY TURBULENCE (ratio scale)

Industry turbulence = financial data ratio. Collected separately from Compustat database. See measurement section.

INDUSTRY COMPETITIVE INTENSITY (ratio scale)

Industry competition intensity = financial data ratio. Collected separately from Compustat database. See measurement section.

TOBIN'S Q (ratio scale)

Tobin's q = financial data ratio. Collected separately from Compustat database.

that knowledge is a more valuable resource for organizations located in industries that face higher industry turbulence (Hunt 2000; Jaworski and Kohli 1993; Slater and Narver 1994). Thus, according to Fang et al. (2008), firms' existing intangible resources are usually more fully leveraged in volatile industries than in stable industries. As a result, firms in more turbulent industries should by nature of that turbulence focus more on the specialization of resources that make up competences. Following the procedure of Fang et al. (2008), we calculate industry turbulence by first obtaining the standard deviation of sales in the firm's core product industry across the previous 4 years and then dividing it by the industry (based again upon a four-digit SIC code) sale average for those years.

Analysis: partial least squares with latent construct

We examined the proposed model using partial least squares (PLS) structural equation model analysis (Chin 1998a; Ringle et al. 2005). We selected PLS since it is well suited to simultaneously test multiple theorized causal relationships among the constructs when interaction effects exist and the sample size is less than 200 responses (e.g., Chin et al. 2003), as are the circumstances here. PLS requires a sample size containing at least 10 times the number of predictor variables that influence a criterion variable (Wixom and Watson 2001); the sample size here of 169 completed responses exceeds the necessary minimum value. Before proceeding, we note that

Table 3 ICR, AVE, and latent construct correlation matrix

Construct	ICR	AVE	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Industry Turbulence	–	–	–									
2. Competence Resource Specialization	0.81	0.50	0.13	**0.71**								
3. Causal Ambiguity among Competitors	0.83	0.62	0.14	0.31	**0.79**							
4. Industry Competition Concentration	–	–	−0.02	−0.03	−0.05	–						
5. Resource Lock-in	0.89	0.73	0.12	0.34	0.13	0.05	**0.85**					
6. Commitment to Learning	0.95	0.72	0.12	0.23	0.25	−0.02	−0.21	**0.97**				
7. Causal Ambiguity in Focal Firm	0.94	0.81	0.12	0.33	0.18	0.02	0.60	−0.25	**0.97**			
8. Organizational Competitiveness	0.96	0.81	0.08	0.07	0.22	−0.03	−0.44	0.02	−0.46	**0.97**		
9. Percent Sales from New Products	–	–	−0.17	−0.03	0.07	−0.10	−0.21	−0.03	−0.10	0.16	–	
10. Firm Marketing vs. Operations Focus	–	–	−0.12		0.01	0.02	−0.16	0.09	−0.16	0.08	0.08	–
11. Tobin's q	–	–	−0.07	0.15	0.20	−0.13	−0.22	−0.08	−0.15	0.18	0.09	0.14

All correlations of latent constructs are significant ($p<.01$). All AVE scores meet or exceed a .50 cutoff. Diagonal values (bold face) are the square root of the average variance extracted (AVE); all square roots of AVE are greater than correlations with other constructs. ICR, AVE, and square root of AVE are not reported (e.g., as seen by the "—") for single item constructs and interaction terms due to redundancy (e.g.,=1.00)

scale item terms were standardized and mean-centered prior to creating moderators. We performed a boot strap with 1,000 subsamples since PLS does not allow for statistical inference tests for path coefficients (Chin 1998b).

The analysis followed a two-stage approach (Lohmöller 1989). In the first stage, latent construct scores are estimated through an iterative process. For the first stage, the iterative estimation process continues until the changes in the sum of the outer weights are sufficiently low. Hair et al. (2011) offer 10^{-5} as a suggested low value. In the second stage, using ordinary least squares for each partial regression in the model, the final estimates of the coefficients are determined. This stage provides the path coefficients for the structural model.

Results

Measurement model validation

All individual scale items' composite reliability exceeds the 0.7 minimum value (Fornell and Larker 1981), and all item loadings are statistically significant at the .001 level. Average variance extracted (AVE) are equal to or above 0.50 (see Table 2). Discriminant validity of the constructs was established using two methods. First, cross loadings are not an issue; each item loads on the intended construct and not another construct (Hulland 1999). Second, the square root of the AVE exceeds the inter-item correlation values for each construct (Fornell and Larker 1981). Internal composite reliabilities (ICR) are between .81 and .96 (Gerbing and Anderson 1988), surpassing the suggested .7 minimum to indicate sufficient reliability (Nunnally 1978). Table 2 includes the mean, standard deviation, factor loadings, AVE, and ICR for each of the constructs. Table 3 contains the latent variable correlations.

Structural model and hypotheses

Standardized path coefficients are shown in Fig. 2. We find support for the proposed model. As to the top half of the model, the path between competence resource specialization and competence causal ambiguity among competitors is positive and significant (path coefficient=0.36, t=3.85, $p<$ 0.001) supporting H1. The path from competence causal ambiguity among competitors to organizational competitiveness is also positive and significant (path coefficient= 0.23, t=2.58, p<0.001) supporting H2. Moreover, the path of H2 (competence causal ambiguity among competitors to organizational competitiveness) is moderated by industry competitive intensity as indicated by the moderator path coefficient (path coefficient=0.14, t=1.96, p=.05) and change in R^2 (from R^2=0.29 without the moderator to R^2= 0.31 with the moderator when the path from ambiguity within the firm to competitiveness is included; or from R^2=0.04 without the moderator to R^2=0.09 with the moderator when the path from ambiguity within the firm to competitiveness is not included). Thus, we find support for H3. As observable in Fig. 3, spotlights at one standard deviation above and below the mean of organizational competitiveness show that the difference in relationship between competence causal ambiguity among competitors and organizational competitiveness diminishes when industry

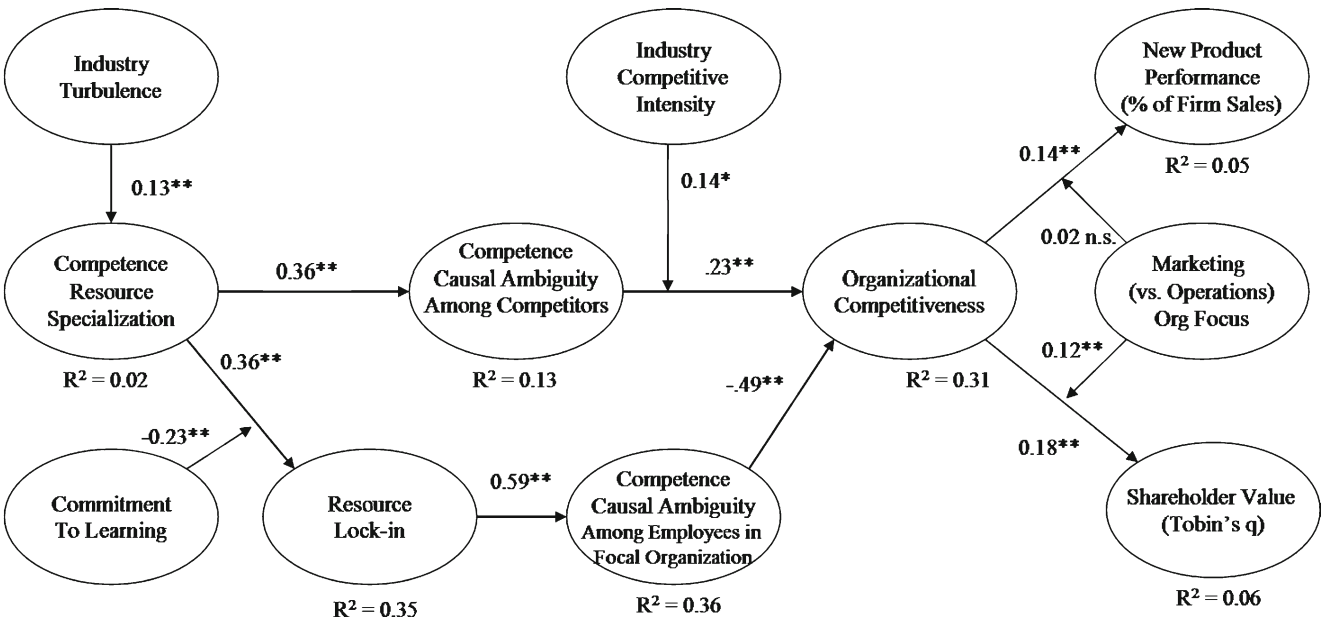

Fig. 2 Structural model. Note: * p<.05, ** p<.01, n.s.=not significant (p>.10). Paths are standardized. Industry turbulence is used as a control variable here in the structural analysis (i.e., it is not as part of the conceptual model). It is more fully described in the methods section

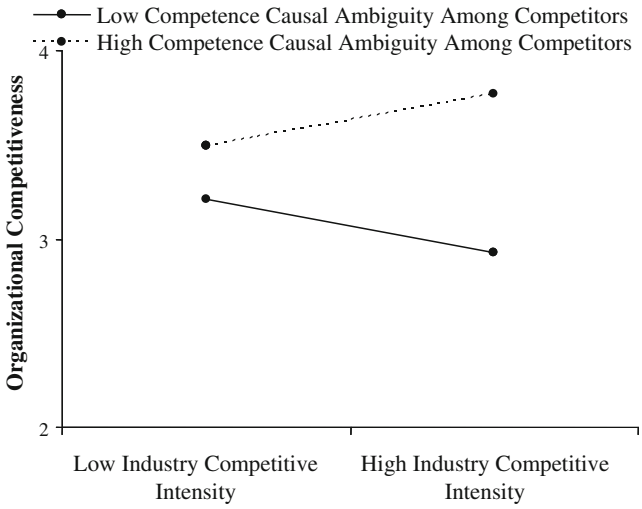

Fig. 3 The moderating effect of industry competitive intensity on the relationships between competence causal ambiguity among competitors and organizational competitiveness. Note: When industry competitive intensity is higher, higher competence ambiguity among competitors is associated with increased organizational competitiveness. However, when industry competitive intensity is lower, competence causal ambiguity among competitors is less important as it relates to organizational competitiveness

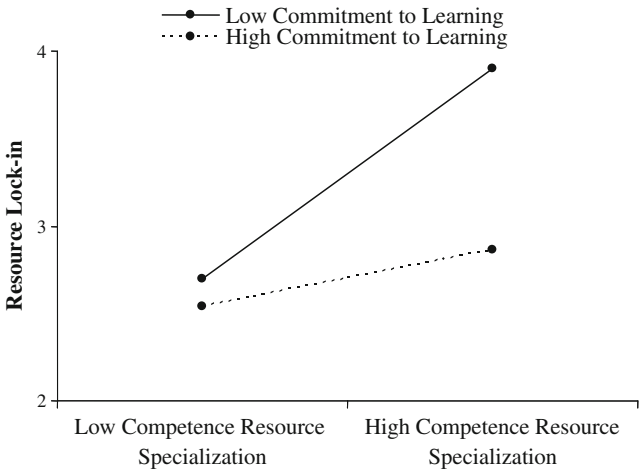

Fig. 4 The moderating effect of commitment to learning on the relationship between competence resource specialization and resource lock-in. Note: When competence resource specialization is low, commitment to learning does not have much effect on the relationship. But when specialization is high, then there is a significant difference in resource lock-in between organizations that have a low versus high organizational commitment to learning. Thus, commitment to learning is important to focus on (to reduce lock-in) when specialization is high

competitive intensity is lower. However, when industry competitive intensity is higher, the relationship between competence causal ambiguity among competitors and organizational competitiveness is stronger.

As to the bottom half of the model (the connection of specialization, lock-in, competence ambiguity among employees in the focal organization, and competitiveness), the results support H4, H5, H6, and H7. In support of H4, the path from competence resource specialization to resource lock-in is positive and significant (path coefficient= 0.36, t=4.70, p<0.001). Consistent with H5, commitment to learning negatively moderates the relationship between resource specialization and resource lock-in, as evident by the path coefficient (path coefficient= −0.23, t=4.00, p<0.001) and change in R^2 (from R^2=0.11 without the moderator to R^2=0.35 with the moderator). As seen in Fig. 4, spotlights at one standard deviation above and below the mean of resource lock-in show that the difference in relationship between competence resource specialization and resource lock-in diminishes when commitment to learning is higher. However, when commitment to learning is lower, the relationship (between competence resource specialization and resource lock-in) is much stronger. In short, less commitment to learning results in a stronger translation from specialization to lock-in, which firms want to avoid. In support of H6, the path from resource lock-in to competence causal ambiguity among employees in the focal organization is positive and significant (path coefficient=0.59, t=10.52, p<0.001). And, in support of H7, the path from competence causal ambiguity among employees in the focal organization to organizational competitiveness is negative and significant (path coefficient= −0.49, t=8.21, p<0.001). Post hoc additional analysis indicates that causal ambiguity among employees in the focal organization—in isolation—explains 21% of the variance (R^2 value) of organizational competitiveness, whereas causal ambiguity among competitors explains 4%—in isolation—or 9% with just the accompanying industry competitive intensity moderator. Thus, while establishing causal ambiguity among competitors is important, attempting to minimize ambiguity within the focal organization appears to be perhaps even much more important.

As to the right side of the model, the path from competitiveness to percentage of organizational sales from new products is positive and significant (path coefficient=0.14, t=2.79, p<0.001) and the path from competitiveness to shareholder value (i.e., Tobin's q) is positive and significant (path coefficient=0.18, t=3.58, p<0.001), both consistent with H8. In relation to H9, we find mixed support. The path coefficient from organizational competitiveness to new product performance does not appear to be moderated by the focus on marketing versus operations in the focal organization (path coefficient=.02, t=4.12, p=0.20). Potential reasoning is mentioned in the limitations section. However, the path coefficient from organizational competitiveness to shareholder value is moderated by the focus on marketing versus operations in the focal organization, as evident by the moderator path coefficient (path coefficient=0.12, t=4.00, p<0.001) and change in R^2 (from R^2=0.03 without the moderator to R^2=0.06 with the moderator; see Fig. 5).

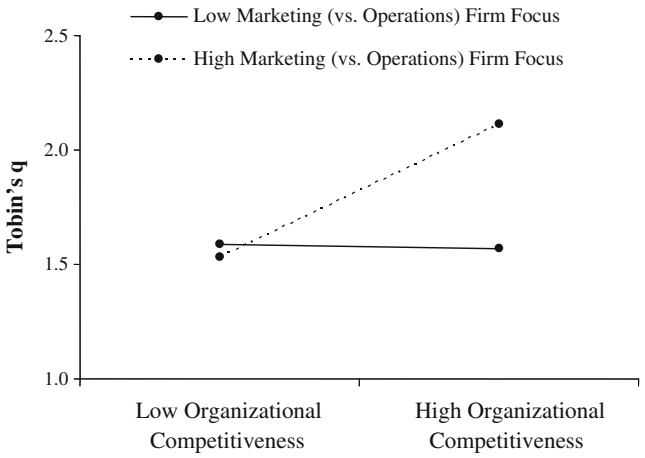

Fig. 5 The moderating effect of firm focus on marketing (vs. operations) on the relationship between organizational competitiveness and shareholder value (Tobin's q). Note: A marketing focus appears to be important in the association between organizational competitiveness and shareholder return. When an organization has more of a focus on operations versus marketing, there appears to be no increase in shareholder return (Tobin's q) associated with the level of organizational competitiveness. However, when an organization has more of a marketing versus operations focus, then higher organizational competitiveness is associated with a higher shareholder return in the form of Tobin's q

Effect size is evaluated through Cohen's (1988) f^2 value with 0.02, 0.15, and 0.35 revealing a small, medium, or large effect size of the endogenous variable (Henseler et al. 2009). In reference to the endogenous variables, the f^2 for competence ambiguity among competitors (f^2=0.15), resource lock-in (f^2=0.54), competence ambiguity among employees in the focal organization (f^2=0.56), and organization competitiveness (f^2=0.37) can all be classified as medium or large. The f^2 for new product performance (f^2=0.04) and shareholder value (f^2=0.03) can be classified as small. There are obviously many factors that influence the two outcome variables that are not included in the model. And, as pointed out by King (2007), organizational issues are intrinsically messy; especially give the impact of temporal and spatial distance in examining links between competences and performance outcomes. Thus, we are not surprised to discover a small, yet statistically significant variance explanation of financial outcome variables consistent with prior research.

Discussion, implications for managers, and future research

Competitiveness has long been a focal topic in marketing research. Examining a large number of organizations in multiple industries, we find that competence resource specialization can have both a positive and negative effect on organizational competitiveness. It is commonly accepted that the development of specialized resources in competences can create competence causal ambiguity among competitors, which in turn has a positive effect on organizational competitiveness. However, little attention has been paid to the negative effects of competence resource specialization.

A major contribution of this study is that we demonstrate that competence resource specialization can indeed result in the negative outcome of resource lock-in that leads to competence causal ambiguity among employees in the focal organization, which in turn has a negative effect on organizational competitiveness. While some discussion of lock-in has appeared in conceptual work in the industrial organization and strategy literatures, marketing has not adequately addressed this important topic. In doing so within the context of competence retention, we also fill a gap in the marketing literature on organizational memory (see, e.g., Moorman and Miner 1997). Our data capture the phenomenon, and our results show how it can negatively impact organizational competitiveness. We find, ironically, that efforts to develop competitive competences may at times, and in some situations, limit a firm's adaptability in the face of market changes. Furthermore, we show that this lock-in may result in a dysfunctional causal ambiguity among managers within the firm, such that key decision makers may lose the understanding of how the organization's competences have led to its competitiveness.

We also show that companies can mitigate the negative effects of competence resource specialization through an organizational commitment to learning. This study reaffirms the work of Sinkula and his colleagues (e.g., Sinkula 1994; Sinkula et al. 1997) that as competences evolve from a knowledge discovery process, those organizations that learn faster and better than their competitors through a commitment to learning are more likely to gain positions of competitive advantage. One possible reason is that learning organizations are less likely to get caught in competency traps by remaining vigilant to changes in the competitive environment. In this study, we empirically demonstrate that a commitment to learning can limit resource lock-in, which thereby limits the amount of subsequent competence causal ambiguity among employees in the focal organization. Organizations with a commitment to learning may therefore be quicker to recognize new opportunities in the market as well as the diminishing future value of existing competences, i.e., they may explore better and recognize sooner the useful limits of exploitation.

The support for hypotheses related to industry control factors and mediating variables underscores the importance of industry influences, such as industry turbulence and competitive intensity, as they relate to market orientation concepts. Slater and Narver (1995) demonstrate the value of market orientation in turbulent industries. In such industries, successful firms leverage their intangible resources, those that tend to be tacit, complex, and unique or specific. Turbulence requires

firms to be agile and to focus on the development and acquisition of resources that can be leveraged to achieve positions of competitive advantage. The role of difficult-to-duplicate tangible and intangible resources becomes even more important as the intensity of competition in an industry increases (Hunt 2000; Hunt and Morgan 1995, 1997). An example of the former might be a large scale manufacturing facility, while the latter might include a powerful brand or extensive distribution network. The results of our study show that causal ambiguity among competitors has an even greater impact on competitiveness in industries where the competitive intensity is higher. We find that more competitive firms are more innovative than their competitors based on the percentage of sales from new products.

Another control factor examined was the incremental firm level focus on marketing versus on operations. Consistent with Krasnikov and Jayachandran (2008), our results indicate that organizations that are more focused on marketing than on operations will better leverage their competitiveness into shareholder value. That is, the results support the marketing concept that undergirds market orientation and the resource-advantage theory of competition (Hunt and Derozier 2004; Kohli and Jaworski 1990; Narver and Slater 1990).

Managerial implications

Commitment to learning Focusing on implications of the moderators in the model, we first observe that multiplying through the path coefficients, the total effect of specializing in a competence appears negative under conditions of low commitment to learning, but positive under conditions of high commitment to learning. Thus, managers must be aware that efforts to develop specialized competence resources can have unintended negative consequences in the pursuit of long term advantage, unless the pursuit of these competences is paired with a corresponding commitment to learning. At times, such negative consequences may be an unfortunate but necessary result of leveraging and acquiring the resources necessary to establish positions of competitive advantage. However, our findings suggest that firms can mitigate some of the negative consequences through an ongoing commitment to learning. Marketing managers therefore need to become more aware of the unintended consequences of their actions and strive to maintain a learning-based agility that will enable the firm to adapt to changing environmental conditions. This is important, because our results suggest that there can be an effect of the resulting level of organizational competitiveness on both new product performance and shareholder value.

Industry turbulence Firms competing in industries marked by high turbulence indicate a stronger need to focus on the specialized resources necessary to develop the competences that will enable them to achieve positions of competitive advantage (Hunt 2000). According to resource-advantage theory, it is only through an ongoing commitment to the specialized resources upon which competences are built that firms can continue to sustain competitiveness in turbulent industries. While it is an important control variable in the model, we note that additional testing indicated that turbulence was not a significant moderator of any of the relationships in the model. However, we caution that turbulence can take many forms. This model only included one representation. Other forms that were not included may have other effects on various relationships.

Industry competitive intensity While the positive effect of causal ambiguity among competitors has been proposed several times in the literature to be a valuable barrier to imitation, we find that under conditions of higher industry competitive intensity such ambiguity can be even more valuable. Our results suggest that this inter-firm causal ambiguity is, in part at least, a result of competence resource specialization. Thus, managers of firms in highly competitive industries should focus on the development and acquisition of the type of specialized resources that can lead to competences. Moreover, these managers might consider what other activities could help increase competence causal ambiguity among their competitors. It is not unreasonable to suggest that causal-ambiguity-creation might include activities such as competitive dis-intelligence and misinformation about their own competences (while also engaging in the generation, dissemination, and responsiveness to information about what are the competences of their competitors and how they are developed). The benefits of this approach to competitive intelligence suggest that a stronger company market orientation might help a company surmount its competitors' barriers to imitation while trying to establish its own barriers. Consider, for example, the case of Boeing and Airbus' accusations about misleading claims by each other in pursuit of super jumbo jets, subsidies, etc., at one point leading Aerobus to invest in developing a super jumbo jet size that Boeing was actually not pursuing (e.g., Esty and Ghemawat 2002).

Marketing (versus operations) organizational focus Managers should be aware of the importance of organizational focus on marketing versus on operations. Many types of competences were included in this study. Categorization of competence focus did not have a significant role anywhere in the model. Thus we observe that both marketing and operation related competences had similar effects (reading the model from left to right) from competence resource specialization through organizational competitiveness. However, we also observe that the strength of the effect of

organizational competitiveness on shareholder return appears to be moderated by the differential focus of the organization on marketing versus on operations. That is, we found that organizations which are focused more on marketing versus operations somehow are able to better translate competitiveness into shareholder return. In contrast, organizations which are focused more on operations versus marketing somehow are not as able to translate competitiveness into shareholder return. We suggest that perhaps this finding is a reflection of the benefits espoused in the marketing concept that was formalized in the market orientation notion (e.g., Kohli and Jaworski 1990). Thus in this study we found that regardless of the particular thrust of a particular competence, managers in organizations should ensure that they have a substantive focus on marketing if they want to be able to translate competitiveness into superior shareholder return.

Study limitations

We readily acknowledge that there are many other factors that might influence organizational competitiveness beyond what one study could cover. In this study, we focused on the specialized investment in resources that are intended to result in competences leading to competitive advantage. Future studies might consider other characteristics of resources that might influence competitiveness. For example, resource lock-in as a type of rigidity would seem to work in opposition to the fluidity suggested in the notion of dynamic capabilities. Research that empirically models the concept of dynamic capabilities and relates it to elements put forth in this paper would, we suggest, be of great value. Further work also should be done to understand the nature and extent of the different causal ambiguities that coexist within the market setting and their effect on competitiveness. Additionally, the nature of the competitive advantage, such as cost-based advantage or value-based advantage, might shape the effect of a proposed model on competitiveness.

The narrowing of focus of performance in general to new product performance specifically was nevertheless on the overall relationship, looking at estimation of new products (overall) as a percent of firm sales. Thus, incremental and radical new products were not distinguished, but such a separation could be examined in future research. This distinction might explain why the marketing focus moderator did not significantly impact new product performance. Should such distinctions be made, we speculate that perhaps a marketing focus might have more of an impact on radical new product performance where more understanding of customer and competitors is required (reflecting an exploration orientation); whereas it might have less of an impact on incremental new product performance where an operations focus is required (reflecting a time to market emphasis). Likewise, there was no distinction made between the exploration-exploitation trade-off in product innovation and the potential differential effects on shareholder. Distinction could also be made among the multiple types of turbulence that companies might face, as only one form of industry turbulence was included in this study. In a similar vein, contrast of SIC versus NAICS codes could be undertaken to see if there are any classification changes that affect the strength of the relationships. The descriptions of the competences provided by the respondents appeared to all be marketing or operations focused, which limits the ability to examine how different types of competences might, of themselves, impact the strength of the relationships in the model.

Also, as earlier noted, the suggested impact of dynamic capabilities should be somewhat contradictory to that for resource lock-in. However, the concept of dynamic capabilities was not included in the model. Given that commitment to learning diminished the effect of resource specialization on resource lock-in, future research could examine in more detail the relationship between commitment to learning and dynamic capabilities. At the same time it should be noted that a firm might be committed but not learn well—which could also influence the effects of the commitment to learning construct.[6]

Additionally, we note that the results of this cross sectional study are consistent with the proposed causal relationships in the research hypotheses. We suggest the possibility that experimental or longitudinal investigation would possibly be very helpful in explaining additional variance, but these approaches were much less feasible given the difficulty in persuading time-strapped corporate executives to provide detailed information on the same variables at multiple points in time or permit experimentation on the constructs across their organizations (see Kohli 2012). Given the difficulty, in general, of obtaining organization data relevant to the topic of competences, most research is conceptual or case study in nature. While this study provides some initial evidence to assist in the examination of the proposed relationships, additional research that manipulates the causal relationships suggested in the hypotheses would be of great value.

Research directions

Despite the aforementioned managerial implications of this research, several gaps in understanding continue to exist that could be addressed by additional research. Overall, analysis of a more comprehensive competence-competitiveness relationship (addressing both creation and decay) addresses a

[6] We appreciate this suggestion by one of the anonymous reviewers.

key conceptual sticking point upon which the future of marketing strategy (as more than merely a servant of the current competitor-centric focus) may pivot. Little work on this aspect of marketing strategy has been attempted, and progress in this regard could energize further marketing strategy research. We describe a number of these opportunities in this section (in no particular order).

A first opportunity for future research centers on further investigation of the competence resource specialization concept that includes the concepts of tacitness, complexity, and specificity. More items might be considered in future research to more fully capture these three elements as developed in previous conceptual work.

A second set of opportunities relates to the concept of resource lock-in, which has received limited attention to date in marketing (Hunt 2000). Is resource lock-in related to or synonymous with resource exploitation? The focus in our study was not on particular competences, nor was it on resource exploitation versus exploration, neither of which were evaluated in the study. Initially, it might seem that resource lock-in would usually result from the firm seeking to exploit its investment in these resources and to gain efficiencies by institutionalizing its competences into operations, policies, procedures, and systems (cf, Nelson and Winter 1982). Overemphasis on exploitation of existing knowledge can create a distinctive competence trap by reinforcing those competences to the exclusion of exploration for valuable new knowledge (Atuahene-Gima 2005; Levinthal and March 1993). Without regular investment in strengthening, adapting, and renewing that competence, the inherent value it provides the firm may diminish over time or even disappear (Teece et al. 1997). However, specialization could theoretically occur in advancement of *either* exploitation or exploration. As put forth previously, the firm might focus on specialization of current products/services to the exclusion of other new possibilities, i.e., exploitation. Yet specialization can also result in breakthroughs that lead to new product development and thus a focus on exploration. Indeed, further research questions emerge: Can resource exploration occur at times without resource specialization? And when it cannot, is the specialization still associated with resource lock-in?

The topic of resource lock-in also introduces the question on sunk costs and slack resources. Some may interpret the findings reported herein to be in support of the idea that it is not an issue of sunk costs influencing decision making, but rather one of insufficient slack resources and time to choose new directions. As a result of this path dependency, some might argue that the financial, efficiency, effectiveness, and temporal costs of changing paths can become too dear for the focal firm (Hunt 2000). However, others may look at this issue differently. More investigation into the nature of lock-in would further our understanding of marketing decisions ranging from new product development to new market entry. For instance, further research questions might include the following: Are there conditions when internal causal ambiguity arising from resource lock-in might not matter? In contrast to dynamic capabilities, does internal causal ambiguity matter in establishing or generating value from "temporary capabilities"—defined as very short term advantages (i.e., an alternative or lack of sustainable advantage) due to rapid technology changes or other disruptions quickly undermining the advantages that resulting from the capabilities—mentioned by, e.g., Sirmon et al. (2010)? Or, might there be situations in which managers do not need to know that what they are doing is right as long as they keep doing it?

A third opportunity for future research relates to the finding that the internal causal ambiguity path has more than twice the effect on competitiveness than that of the external ambiguity path. While this finding highlights how important the negative effect is (i.e., the effect sizes are also consistent with this), it indicates potential for additional moderators that were not included in this study that might deepen scholarship. This study did examine the moderating effect of industry competitive intensity. However, we believe there are opportunities for additional research investigating a wide range of potential moderators that were not examined. Thus we ask: Under what moderators might the relative strengths of the two paths be different? Might concepts such centralization, silo building, reward systems misalignment, managerial apathetic motivation, job turbulence, structural flux, etc., magnify the negative impact of internal causal ambiguity on competitiveness? Or, might concepts such as a storytelling culture, entrepreneurial orientation, trust, meeting orientation, etc., help to diminish the negative impact?

Fourth, with this new conceptualization of the role of causal ambiguity as it relates to competences and competitiveness, we open new possibilities for conceptualizing the value-*retaining* organization, i.e., as more than a value "creation" engine. Drawing upon the organizational memory literature (see, e.g., Moorman and Miner 1997; Walsh and Ungson 1991; Walsh 1995), we argue that while the existence of this role of competence retention may have been tacitly accepted in marketing strategy research, the conventional wisdom has uncritically assumed that well-managed organizations will attend to competence decay, thus assuming away a critical source of variation that would be more inclusive of those *inside* the entity who contribute to value retention or dissipation. A great deal of under-examined variance in competitiveness and performance may likely be identified due to this reconceptualization. This contribution should further be expected to prompt development of a rich empirical literature, expanding to more deeply examine this claim.

Fifth, this research challenges externally focused marketing strategy as the conventional wisdom in many theories of

competitiveness, by placing competence retention (versus competence creation only) at the center of firm performance. Competence creation would thus move from a sole focus to a comprehensive focus on a new theoretical claim which includes both competence creation and competence decay: that superior competence creation and retention would lead to superior firm value generation. We also have reason to believe that the moderator of marketing versus operations firm focus might have some bearing on marketing research on firm value generation. Resource-advantage theory speaks of "efficiency" *and* "effectiveness" advantages (Hunt 2000). Would organizational marketing focus usually align more with effectiveness and operations focus align more with efficiency? This is a significant question, because a theoretical doorway is thus opened for new approaches to the human enterprise of organizing to accomplish various value-generating objectives, and as a result, could open new research pathways to examine the boundaries (e.g., more value? less value?) of these theoretical claims.

Conclusion

Resource-advantage theory argues that "the creation and maintenance of firm capabilities are the key for understanding the wealth of both firms and nations" (Hunt 2000, p. 80). In this article, we outline and examine the nature of some of the maintenance tasks that marketing strategists should also attend to: competence maintenance and retention tasks that can operate to arrest or ameliorate the decay of causally ambiguous resource competences. We confirm a positive path where competence ambiguity among competitors enhances new product performance and shareholder value; and we also identify and confirm a negative path where resource lock-in and competence ambiguity among employees in the focal organization can damage these outcomes. According to the results, organizations can minimize the negative path through increased organizational commitment to learning. At the same time, the path from organizational commitment to shareholder return can be magnified by increasing the focus more on marketing versus operations in the organization. We also observe that the effect of the classic barrier to imitation of competence causal ambiguity among competitors on organizational competitiveness appears to be more important for organizations in industries with higher competitive intensity than for firms in industries with lower competitive intensity. On the basis of this study we can both confirm research potential related to competence resource specialization and—given the clarity of the empirics—suggest that the reservoir of further research opportunity remains largely untapped. We therefore hope that in marketing research, this study can serve as a catalyst for additional exploration of constructs related to competences and competitiveness.

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