Competitive Dynamics among Service SMEs
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In an effort to further our understanding of competitive dynamics, the three constructs of firm specialization, environmental munificence, and rivalry intensity are examined in relation to financial performance in service-intensive Small and Medium-Sized Enterprises (SMEs). Using a sample of physician organizations, direct and interaction relationships are empirically examined using multivariate regression analyses. Findings confirm a three-way interaction that exists among these factors in relationship to overall performance; this supports a more complex, configurations approach to competitive dynamics research, particularly among service-intensive SMEs.

Introduction
Competitive dynamics are the actions and counteractions taken by firms vis-à-vis their rivals (Fosfuri and Giarratana 2009; Canina, Enz, and Harrison 2005; Smith, Ferrier, and Ndofor 2001). Following Schumpeter (1934), research in competitive dynamics has recognized the importance of the “competitive context,” which advocates that “firm performance is not simply a function of the strategies and actions a firm undertakes but it must be understood relative to the strategies and actions of rivals” (Smith, Ferrier, and Ndofor 2001, pp. 319). In other words, organizations are innately interdependent.

Taking such an interdependence perspective and drawing on diverse streams of research, there have been numerous studies examining various aspects of the competitive context in relation to firm performance (e.g., Fosfuri and Giarratana 2009; Chen and Miller 1994; Smith et al. 1991). However, limitations in previous competitive dynamics research include a lack of specificity in a variety of industries and inadequate use of multiple theoretical perspectives (Smith, Ferrier,
Acknowledging these limitations, we take a multicontingency and configurational perspective to consider two classic strategic positioning decisions managers must make regarding their respective organizations: product/service selection given the customer target and choice of geographic location (Baum and Haveman 1997; Baum and Singh 1994). These interrelated decisions primarily depend on the organizational leader's performance expectations regarding the relationships between three specific factors: (1) the economic characteristics (i.e., resource availability) of the firm's environment, (2) the number and type of products/services the firm offers, and (3) the rivalry intensity of the firm's industry (Mazzeo 2002). Though each of these factors is intuitively related to firm performance and has been examined in previous literature, only a limited amount of research has examined them together or accounted for possible interactions (e.g., McGahan and Silverman 2006; Mintzberg 1978). Accordingly, it is beneficial to continue to examine the interdependencies that may exist between strategic and geographic positioning, particularly in industries that are more dependent on these key decisions for success (Smith, Ferrier, and Ndofor 2001). For instance, understanding the interdependencies between strategy and geography is particularly important in service-intensive industries because competition is generally localized and services must often be delivered directly to the consumer.

Specifically accounting for strategic and geographic positioning choices, previous research has shown particular attention to the lodging industry and issues surrounding differentiation and agglomeration (e.g., Canina, Enz, and Harrison 2005; Kalnins and Chung 2004; Chung and Kalnins 2001; Baum and Haveman 1997; Baum and Mezias 1992). Understandably, most of these studies have used an organizational ecology perspective (e.g., Baum and Oliver 1996; Romanelli 1989), placing primary emphasis on founding rates and organizational survival (e.g., Baum and Oliver 1996). However, by their very nature, population ecology studies are often limited in that they consider the population as the unit of analysis and therefore largely remove the organization itself as the focal point of study (Lomi 1995). Identifying this limitation, some researchers have taken an organizational level of analysis to address the issue of how organizations compete within a population or market setting (e.g., Baum and Haveman 1997).

These gaps in the literature suggest that there is a need for more competitive dynamics research examining service-intensive industries at the firm level of analysis. In response, the current study examines the competitive context of a large sample of physician organizations. Specifically, we focus on the critical strategic and geographic positioning choices in relation to rivalry intensity for these service-intensive Small and Medium-Sized Enterprises (SMEs). We focus on SMEs because size constraints exist for many service firms and this enhances the importance and impact of rivalry intensity from a regional standpoint. Although some recent literature has addressed related rivalry issues in SMEs, contributions to this point have primarily focused on internationalization and exporting practices of manufacturing firms (e.g., Julien and Ramangalaly 2003; Lu and Beamish 2001).

In this study, we primarily utilize contingency and configurations theories, which essentially argue that the fit between strategy, structure, and environmental factors will, together, provide a more clear explanation of performance variance than independently (Short, Payne, and Ketchen 2008; Wiklund and Shepherd 2005; Doty, Glick, and Huber 1993; Ketchen, Thomas, and Snow 1993). Additionally, we integrate several
other theoretical perspectives to evaluate the relationships between rivalry intensity, firm degree of specialization, environmental munificence, and firm performance. For instance, we make extensive use of population ecology (e.g., Hannan and Freeman 1977) and agglomeration (e.g., Canina, Enz, and Harrison 2005; LaFountain 2005; Fujita and Thisse 2002) theories to support our arguments.

After some initial theoretical development, four hypotheses are developed and empirically tested using multivariate regression techniques; these hypotheses essentially compare contingency and configurational models against two interrelated types of performance. In summary, we find a direct relationship between service specialization and firm performance but do not find moderating effects of munificence and rivalry intensity. However, we do find that a three-way interaction between service specialization, environmental munificence, and rivalry intensity does impact firm performance. Overall, the results of this study demonstrate that competitive dynamics, as demonstrated by the interaction among the different factors, are important indicators of service-intensive SME performance and that a configurations approach to competitive dynamics may be warranted in future research in this area.

Hypotheses Development

From a competitive dynamics perspective, decisions are generally made based on the underlying philosophy that profits are created through the identification and exploitation of market disequilibrium and industrial change (Moore 1993; Rosen 1983; Kirzner 1973). Thus, opportunity recognition and the ability to capitalize on the available opportunities identified both become essential to the performance of the firm. Taking a similar perspective, Baum and Mezias (1992) and Baum and Haveman (1997) focus on a firm’s location relative to its competitiors and how the firm views differentiation. They found support for the existence of localized competition (Hawley 1950) and further concluded that a trade-off exists between (1) the benefits arising from the agglomeration and geographic economics associated with localizing one’s business in relation to its competitors, and (2) the subsequent increased competition and need for greater differentiation (Ellinger 1977). This complex interrelationship suggests three broad factors that are likely determinants in the success or failure of a service-intensive SME. First, the type of services offered vis-à-vis the firm’s competitors will essentially dictate the domain in which the organization competes within a given region. Second, the geographical economics of a particular region (i.e., munificence or resource availability) likely influence the ability of the firm to obtain the necessary resources from the environment to pursue various strategic activities. Third, the level of competition (i.e., the intensity of competitive rivalry) will influence available market share and limit strategic choices. The influence that each of these three factors has, either directly or indirectly, on firm performance is discussed in more detail in the next sections and form the basis for the hypotheses developed in this study.

Firm Specialization and Performance

Past research examining the firm specialization construct has provided support for the idea that specialization is a primary element of the strategy of the firm and is significantly related to firm performance (Shipilov 2006; Chrisman, Hofer, and Bolton 1988; Abell 1980). Here, we refer to specialization as the degree of focus placed on services; this generally follows similar studies of competitive scope, which is the extent to which an organization chooses to compete within a given industry. Porter
defines scope as “what segments of an industry a firm should serve and how it should serve them.” Specialized or focused strategies make a choice to service one, or a very few, selected segment(s) of an industry, whereas broad-targeted organizations service the entire industry, or at least a larger portion. Generally speaking, a basic dichotomy exists between (1) the increased competitive returns from specialism due to reduced excess capacity, and (2) the greater security of generalism as costs associated with the maintenance of excess capacity are reduced, resulting in the generation of higher sales volumes and revenue production. In other words, specialized firms tend to prosper through gaining experience associated with their specialization and maintaining less excess capacity (Barnett, Greve, and Park 1994). Such specialization can result in gaining cost advantages through efficiencies or increased differentiation (Haunschild and Sullivan 2003), where differentiation is the attempt to produce a product or service that is preferred over others in the market and can therefore elicit a greater profit through higher prices or increased sales (Porter 1985).

The target scope choice is dependent on the differences that exist among the segments of an industry; the increases in bureaucracy, more extensive networks, and inflexibility that come with a broad target approach often make serving multiple segments very difficult and costly. Due to the costs associated with these issues, the focused firm generally can more easily achieve sustained differentiation in its segment(s) as compared with the broad-targeted firm that must compromise at multiple levels (Porter 1985). Further, such advantages lead to higher levels of profitability in relative terms of dollar value per production unit. Thus, although a broadly focused firm will tend to gain and sustain larger market shares, the focused firm likely will demonstrate higher rates of returns. In other words, relative to assets, equity, or production units, focused firms are likely to come out on top, although their total values may not be as large (as with very large organizations serving a large market share). Also, risk is likely to be higher for focused firms because of limitations in market and/or product/service diversity.

Mixed results have emerged from studies in this area (e.g., Powers and Hahn 2004). However, the relationship between focus and performance is more easily observed in service firms as compared with manufacturing firms because services are typically performed at a regional or local level and there is less opportunity to take advantage of economies of scale. Focus facilitates service operations through concentration of firm efforts, investments, and controls. Such concentration can streamline operations to improve productivity and quality (Nayyar 1992). Additionally, because change is perpetual and the increasing acceptance (or expectance) of change and diversity is the reality of our continually developing service-based society, the pursuit of functional specialism via SMEs is particularly supported. Indeed, expansion of services into alternative segments may create difficulties in sustaining the flexibility and streamlined operations necessary for success in the original segment. Davidow and Uttal (1989) support this argument, demonstrating that focus strategies in service firms are likely to lead to superior performance.

Given these arguments, our first hypothesis focuses on service specialization among SMEs and is given as,

\[ H1: \text{For service SMEs, firm specialization is positively related to financial performance.} \]

Environmental Munificence as a Moderator

A significant amount of literature has supported a link between external environmental factors, organizational strat-
egy, and firm performance (e.g., Porter 1980; Scherer 1980). Numerous scholars have demonstrated that the success and probability of survival for a business can be linked to the availability of sufficient resources in the environment (e.g., Hambrick and D’Aveni 1988; Katz and Gartner 1988; Hannan and Freeman 1984; Stinchcombe 1965; Schumpeter 1934). The abundance or scarcity of resources available in an environment and its ability to sustain growth has been termed environmental munificence (Castrogiovanni 1991; Dess and Beard 1984).

Highly munificent environments are characterized by (1) an abundance of resources, (2) solid or high growth in demand, and/or (3) few or no environmental threats (Castrogiovanni 1991). Organizations operating in such environments have been found to be more flexible and produce more output than organizations operating under conditions of scarcity (Yasai-Ardekani 1989). Thus, a munificent region that allows a firm access to more resources is preferred (Cooper 1979) and will have a significant influence on the amount of future resources that will flow inward over time (Eisenhardt and Schoonhoven 1990; Carroll and Delacroix 1982). Indeed, the environment can be viewed as a source of resources, whereby environmental munificence can be considered synonymous with the availability of resources (Castrogiovanni 1991; Dess and Beard 1984).

From an ecological perspective, firm success and survival is associated with the increased availability of necessary resources afforded by high environmental munificence (Hannan and Freeman 1977). This relationship should be especially powerful for SMEs, which may not have access to alternative sources of necessary resources that are available to larger firms. Additionally, the SME may be able to take advantage of opportunities that larger firms are often unable or unwilling to exploit within the environ-

ment because of the inherent limited ability of larger firms to adapt both internally and externally (Hannan and Freeman 1977; Penrose 1963). As a result, SMEs are likely to face lowered pressures of organizational inertia in comparison with larger, typically more bureaucratic firms and thus create greater dependence on the regional environment and the economic aspects it presents (Leibenstein 1968). Further, the nature of service firms’ delivery and sales processes suggests an enhanced impact of munificence above that of manufacturing firms.

Examining the influence of munificence on businesses, previous research supports an interaction effect between munificence and strategy in regards to firm performance. In their study of U.S. manufacturing companies, McArthur and Nystrom (1991) found munificence to have a significant positive impact on the strategy–performance relationship and further suggested the use of contingency models in future research of environmental variables. More specific to the current study, Carroll (1985) discussed the environment, the concentration of resources within it, and the dichotomy of specialization versus generalization from an ecological perspective. Using resource-partitioning theory, Carroll (1985) purports that specialists and generalists respond to market conditions differently and with varying levels of success. This idea implies a contingency relationship between the strategy pursued and environmental variables. Given the greater dependence of specialist organizations on market conditions, it seems that organizations utilizing this strategic approach will benefit more from a greater availability of resources. Thus, building on this contingency relationship we expect that an interaction effect will exist between firm specialization and munificence, where munificence serves as a moderator of the specialization–performance relationship. The second hypothesis then states,
H2: Environmental munificence will moderate the relationship between firm specialization and firm performance of service SMEs. All else equal, financial performance will increase with firm specialization, but at a faster rate with increased munificence.

Rivalry Intensity as a Moderator

Numerous scholars have empirically demonstrated that competitive activity varies across different regions (e.g., Haveman and Nonnemaker 2000). Additionally, past literature has shown that the structure of an industry affects the probability of long-term success for a firm (Yip 1982; Porter 1980). For instance, those following the density-dependent model of organizational ecology argue that the number of organizations in a population impacts the competitive interactions among firms and, thus, the entry and exit rates of organizations (Hannan and Freeman 1989). As Barnett and Hansen (1996, p. 140) state, “Evolutionary theorists have noted that an organization’s ‘fitness’ is best understood relative to that of other organizations (Hannan and Freeman 1984; Nelson and Winter 1982; Alchian 1950), or as something that ‘coevolves’ among organizations.” This outlook seems appropriate when discussing rivalry intensity and a specific strategic orientation such as level of specialization in service offerings.

Similarly, Canina, Enz, and Harrison (2005) concluded that when firms are part of a competitive cluster, higher levels of firm specialization result in higher levels of performance. Further, they discuss the issue of strategic orientation and conclude that the greater the difference between the strategic orientation of an individual firm and the average strategic orientation of the cluster, the greater the performance of that firm. The same idea was echoed by Giarratana and Fosfuri (2007) in their study, which confirmed the importance of portfolio-broadening strategies to the survival of firms in competitive and highly dynamic environments. In particular, their study noted that survival rates of firms increased with the practice of portfolio broadening. This reinforces the idea that firm success is directly related to the strategic orientation of the firm vis-à-vis other firms in the industry (Mazzeo 2002).

Expectations for the selection of a strategic orientation in relationship to specialization should be made based on the competitive environment (Porter 1980). The agglomeration of firms to a central location can be explained by the clustering activities identified in spatial economics models (Greenhut, Norman, and Hung 1987). Spatial economics models address the special allocation of population and employment/industry in a given region. Under this idea, goods are traded across a given space while firms and consumers function at separate locations. Canina, Enz, and Harrison (2005) followed a similar logic and found that agglomeration is especially common in service industries. Following this idea, differentiation activities are used to compensate for the rivalry of many firms in a given location. Spatial models have long been used to study issues related to product differentiation or variety and the influence of these and firm location on competitive pressures in a given industry or region (e.g., Hotelling 1929).

Past literature has also shown support for a generalist/specialist trade-off model, which is helpful in the examination of agglomeration activities of a specific industry region. Building from Carroll (1985) and supported by many others who empirically tested the model (e.g., Swaminathan 1995; Carroll and Swaminathan 1992), the generalist/specialist trade-off model explains the effects of increased firm concentration on the growth of competition and the
resulting actions of competing firms. With increased concentration, the likelihood of failure for generalist firms will increase, whereas the likelihood of failure for specialist firms will decrease. Further, Carroll (1985) acknowledged the important ramifications of increased differentiation by firms in an industry.

Given the previous arguments discussing rivalry intensity, we expect rivalry to function as a moderator of the specialization-performance relationship. Thus,

\[ H3: \text{Rivalry intensity will moderate the relationship between firm specialization and firm performance of service SMEs. All else equal, financial performance will increase with firm specialization, but at a faster rate with increased rivalry intensity.} \]

**Configurations of Firm Specialization, Environmental Munificence, and Rivalry Intensity**

The previous arguments make several implications as to the complexity and interrelatedness involving the three constructs of environmental munificence, service specialization, and rivalry intensity. Whereas our previous hypotheses suggest the existence of interaction effects, competitive dynamics suggests that these constructs may interact in more complex ways than simple bivariate interactions (Burton and Obel 1998; Meyer and Tsui 1993).

Leading these arguments is the idea that the external environmental factors of munificence and rivalry are not fully separate constructs. In other words, the ecological dynamics of organizational populations are influenced by the availability of resources in an environment (Baum and Mezias 1992). The interaction between these variables has been alluded to with the creation of the commonly used environmental hostility variable. Environmental hostility refers to the intensity of rivalry within an industry as well as the extent to which resources are readily available or scarce in a given industry environment (Miller and Friesen 1983). Increased environmental hostility can be very threatening to SMEs because of limited resources and an inability to survive poor managerial decisions (Covin and Slevin 1989).

This relationship between the level of environmental munificence and the rivalry within an industry has been exhibited repeatedly in the literature. For instance, research has shown that highly munificent environments providing an adequate amount of available resources will attract new firm founders, resulting in increased levels of competition (Romanelli 1989). Thus, the availability of resources in an environment can have a dramatic influence on the presence and strength of competition. For instance, in an environment characterized with a low level of munificence, a population ecology perspective suggests that “pressures of environmental selection will intensify” (Goll and Rasheed 2005, p. 1007). In other words, the inflow of new competition will eventually force the market to reach a state at which organizations are competing for a finite amount of resources insufficient for supporting the entire community of competing organizations (Hrebeniak and Joyce 1985). Ultimately, the strongest survive and the weaker are eventually “selected” out.

Though these arguments suggest that an interaction effect is likely to exist between munificence and rivalry intensity, our previous arguments propose that these environmental factors primarily influence the ability of the firm to prosper using a specific strategic orientation (Covin and Slevin 1989). This is particularly likely when considering service-intensive SMEs due to their regionalized customer base and the face-to-face nature of the services being pro-
vided. Tushman and Romanelli (1985) identified that convergence upon an accepted strategic orientation and a resistance to change can be associated with increased social and structural complexity. Thus, the resulting inertial pressures limit the flexibility of these firms. However, SMEs tend to be less rigid in their processes (Cooper 1979; Mintzberg 1978) and more flexible and willing to embrace strategic change (Hannan and Freeman 1984). It is this flexibility and willingness to adapt that enables SMEs to capitalize on changing market conditions, even in the presence of a highly competitive environment. Despite the willingness to change, SMEs may have to forfeit certain strategies due to insufficient firm-level resources (Romanelli 1989; Sandberg and Hofer 1987; Carroll 1984; Hannan and Freeman 1977). Thus, this introduces an element of environmental determinism into the success of the firm, as the success of a firm's strategy is dependent on the resources available. Following these ideas, firms in a highly competitive and agglomerated industry can be expected to achieve the greatest performance when resources are readily available and the firm becomes more specialized.

Another prominent perspective that may inform our understanding of competitive dynamics in service-based SMEs is multimarket contact theory. While multimarket contact theory primarily argues for the inducement of mutual forbearance in situations where there is a high degree of contact across multiple markets (e.g., Baum and Korn 1996), some of the arguments are specifically applicable to our study of service SMEs. Primarily, we note how studies in this area make sophisticated arguments regarding the interaction of firm strategies (i.e., diversification) and rivalry with organizations in common markets. As Haveman and Nonnemaker (2000) argue, organizations are subject to physical constraints and geography has a significant influence on competitive activity. Further, there is an explicit argument that managers act strategically in their choice of markets (Li and Greenwood 2004). Thus, market choice is a critical action in defining a firm's competitive position vis-à-vis real and potential rivals (Haveman and Nonnemaker 2000).

Taking into account these various perspectives, a configurations approach seems reasonable in that the interrelationship among these three constructs should provide a more complete explanation of the variance in firm performance (Short, Payne, and Ketchen 2008). Essentially, configurations theory argues that some firms fit better than others within a given context and will demonstrate higher levels of success. Thus, a configurational perspective of the three interrelated elements discussed in the previous sections would suggest that sets of service SMEs would emerge as higher performing, given the combined influence of strategy and environmental situation. Thus, building on previous arguments, H4 states:

\[ H4: \text{Service SME performance is better explained by the configurations of firm specialization, environmental munificence, and rivalry intensity rather than separately. Thus, relative to other firms, financial performance is highest among firms with high levels of specialization, high levels of environmental munificence, and high levels of rivalry.} \]

\[ \text{Of course there are service industries that do not require face-to-face interaction with customers; the financial services industry is one example. For our purposes, however, we are assuming a traditional service industry.} \]
Research Methodology
Sample and Data
To test the hypotheses we needed a specific service industry characterized by regionalization and composed of nondiversified SMEs with a variance in specialization and generalization. The medical group or physician organization industry seemed to fit these requirements well, as exemplified in previous studies of a similar nature (Payne, Davis, and Blair 2007; Blair and Payne 2000). Data were collected from two separate sources of information. The munificence and population data come from the 1997 U.S. Census Economic Data. These variables were arranged by county because many service SMEs tend to be regionally focused and located within a highly fragmented industry that varies greatly in rivalry intensity and munificence across regions. The specialization and performance data were gathered from the annual Cost Survey (1997) distributed by the Medical Group Management Association (MGMA), the largest professional organization of medical groups in the United States. A medical group is defined as a firm with three or more physicians.2

The cost data were originally collected by MGMA using a questionnaire delivered to a single key person within the medical group, usually the top manager or CEO. Therefore, because we were not directly involved with the design, distribution, or reporting of these data, we must treat them as archival data. MGMA reports that the original survey questionnaires and definitions were mailed to a total of 4,546 MGMA member organizations; there were 1,357 questionnaires returned, and after reviewing for completeness and eligibility, 1,126 questionnaires were retained for a net response rate of 24.8 percent. Our final sample consists of 1,030 firms after limiting the original sample to just SMEs—defined here by the number of physician full-time equivalents (FTEs) being less than 50. Medical groups typically have 5–12 support personnel per physician FTE, so most organizations likely have between 15 and 500 employees total; this fits the definition of SMEs as given by the American Small Business Administration (compare Lu and Beamish 2001). Additionally, all firms had annual net revenues of $44 million or less, which falls under the established cutoff of $50 million for SMEs.

Variables and Measures
Table 1 gives descriptive statistics and correlations for the independent, dependent, and control variables. No two variables are significantly related beyond the 0.6 level, and a VIF diagnosis further confirms that multicollinearity is not a severe issue (Hair et al. 1998; Webster 1998). Means and standard deviations shown for dependent variables are those prior to modifications (e.g., transformations).

Independent and Moderating Variables. The 1997 Economic Data gives the actual number of physician clinics in a given county, the county population estimate for 1997, and the amount of retail sales per capita by county. Retail sales per capita is used to measure the level of

2A single industry study allows for direct control of industry-related performance effects (Dess, Ireland, and Hitt 1990), and this particular industry allows us to focus only on regional service offerings rather than products or services that are detached from the end user. Strategy research suggests that a richer understanding of industry products and resources can be achieved by limiting a study to a single industry (Mehra and Floyd 1998; Peteraf and Shanley 1997), and as Ferguson, Deephouse, and Ferguson (2000) suggest, testing a single industry sector may further extend this control.
Table 1
Descriptive Statistics and Correlations

| Variables                         | Mean  | S.D.  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
|----------------------------------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Size (FTEs)                      | 12.01 | 10.65 |     |     |     |     |     |     |     |     |     |     |
| IPA Member                       | 0.42  | 0.49  | -0.101** | |     |     |     |     |     |     |     |     |
| Managed Care %                   | 12.91 | 14.25 | 0.028 | 0.183*** | |     |     |     |     |     |     |     |
| Hospital Concentration           | 3.19  | 1.28  | -0.012 | 0.020 | 0.003 | |     |     |     |     |     |     |
| Skilled Nursing Facility         | 0.0008 | 0.0005 | -0.016 | 0.034 | 0.148*** | 0.149*** | |     |     |     |     |     |
| Specialization (S)               | 3.19  | 1.28  | -0.276*** | 0.259*** | 0.058† | 0.049 | -0.085** | |     |     |     |     |
| Rivalry (R)                      | 0.0008 | 0.0005 | -0.106*** | 0.080** | 0.038 | 0.188*** | -0.028 | 0.099** | |     |     |     |
| Munificence (M)                  | 10.54 | 3.53  | -0.018 | -0.031 | -0.015 | 0.041 | -0.010 | 0.113*** | 0.128*** | |     |     |
| Return on Assets (ROA)           | 24.53 | 216.46 | -0.131*** | 0.207*** | 0.015 | 0.036 | -0.084** | 0.387*** | 0.043 | 0.021 | |     |
| Profitability per Provider (PPP) | 307,000 | 178,000 | -0.101** | 0.122*** | -0.012 | 0.114*** | -0.077* | 0.426*** | 0.088** | 0.045 | 0.472*** | |

*aN = 1,030.

S.D., standard deviation.
†p ≤ .10.
*p ≤ .05.
**p ≤ .01.
***p ≤ .001.
socioeconomic prosperity in the county. Thus, the amount of spending per capita provides an estimate of the overall munificence in the region. Given the regional nature of the study and the agglomeration issues discussed previously, we felt that a measure of per capita sales effectively removed regional size issues while successfully representing the pool of resources available to a firm. Past research has followed similar paths in their measurement of environmental munificence as they have used operationalizations that included various socioeconomic indicators (Osborn, Hunt, and Jauch 1980), population measures (McPherson and Smith-Lovin 1988), and other sales growth measures (e.g., Hambrick and D’Aveni 1988; Dess and Beard 1984).

Theoretical arguments and empirical findings have often linked the number of competitors in a market with higher levels of competition (Hannan and Freeman 1989; Scherer 1980). Hence, we operationalize rivalry intensity by taking the number of physician organizations located within the county and dividing it by the overall county population. This determines the density of competing services in the region so that the greater the concentration, the more intense the rivalry. In effect, this measure captures the extent to which regional competition is present, with higher levels of rivalry intensity being represented by a higher ratio of firms per region. County definitions have been found to generate markets close to those based on patient-origin methodologies (Alexander, Morrisey, and Shortell 1986) and have been utilized in previous studies (e.g., Boeker et al. 1997).

The degree of firm specialization was taken from the MGMA Cost Survey data, which questioned, “What was the practice type? (Check only one option.).” The responses of “single specialty (with or without primary care),” “multispecialty with primary and specialty care,” “multispecialty with primary care only,” and “multispecialty with specialty care only” were initially available. However, because almost all firms were categorized as either “single specialty” or “multispecialty with primary and specialty care” and the order of these types could not be adequately explained, we created a dichotomous variable. Therefore, all firms were classified as either single specialty, providing only one type of care (e.g., gastroenterology or cardiology), or multispecialty.

**Dependent Variables.** Two performance variables were used in the analyses: (1) return on assets (ROA), and (2) profitability per provider. ROA and profitability per provider (PPP) are each measured using separate financial questions from the MGMA cost survey data, but with a common numerator—the “net revenue of the organization prior to disbursement to providers.” Utilizing this variable in performance measurements more accurately predicts actual financial performance than net income because physician organizations often are very “cash-lean,” choosing to disperse any profits to the owners or partners prior to reporting final accounting figures. Previous research has used similar measures for performance in physician organizations (Payne 2006; Ketchen, Thomas, and Snow 1993).

ROA was included because of its predominance as the measure of business performance in the strategic management and entrepreneurship literature and its ability to detect the overall performance of very diverse organizations (Rumelt 1991). Further, ROA is an especially useful performance measure given the industry of study in the current analysis (e.g., Payne 2006; Wang et al. 2001). Two responses were combined to derive the ROA performance indicator—“net practice revenue prior to distribution to providers” was divided by “total assets” where total assets include current, non-
current, and all other assets. Similarly, we derived the PPP measure by taking a ratio of “net practice revenue” to the total “number of FTE physicians." This measure allows us to examine income relative to the actual production unit of the organization—the physician. Both dependent variables were transformed using Tukey’s normalization to satisfy the assumptions of regression modeling.

Control Variables. Size, in many forms, has been a long-term element of study in organizations (e.g., Kimberly 1976) and has been used as a proxy for complexity, formalization, and/or centralization (Hall 1999). The size of a firm can be conceptualized as the sheer size of the organization (e.g., number of personnel or market share). In regards to the use of size in relation to strategy and entrepreneurship, traditional views have been based on the Profit Impact of Market Strategy data finding that increases in market share (i.e., larger firms) will result in greater profitability (Chen and Hambrick 1995). Contrary to these views are arguments that low-share (i.e., small) organizations can be successful given their use of certain strategies such as creative segmentation, targeted R&D, or focused pricing or quality (Woo and Cooper 1981; Hamermesh, Anderson, and Harris 1978). Thus, to control for such relationships, the number of physician FTEs is included even though the sample has already been limited to a great degree through its focus on SMEs.

In addition to size, we also controlled for four additional factors. First, we included a binomial variable depicting if the medical group was part of an independent practice association (IPA) or not. IPAs are formal alliances between various medical groups used primarily to collectively negotiate contracts with insurance companies. Generally speaking, firms that are part of an IPA will get higher levels of compensation for procedures and have more patients in their covered network; these differences could heavily influence income and profitability. Whether or not the firm is part of an IPA was taken from the MGMA Cost Survey.

Second, we controlled for the percentage of managed care in the county. Managed care plans have long been a significant factor in health care delivery and represent different methods of payment as well as ways of competing. These data were taken from the 1997 Health Care Financing Association Medicare Managed Care Data. Finally, we controlled for the concentration of both hospitals and skilled nursing facilities (SNFs) because these types of organizations often serve as substitutes, buyers, and suppliers for medical groups. As with the rivalry intensity variable, we used the number of organizations in the respective counties; this information was also taken from the 1997 Economic Data.

Empirical Analyses and Findings

Based on extensive previous use and effectiveness (e.g., Wiklund and Shepherd 2005), hierarchical regression analyses are used here to test for the effects of service specialization in relationship to munificence, rivalry intensity, and performance. As shown in Table 2, for each step of the analysis, a new model with the next higher order interaction is given. The $R^2$ can then be evaluated to determine if an interaction effect exists above that of the direct effects (Cohen and Cohen 1983). Also, according to recommendations made by Cortina (1993, p. 918), we included quadratic terms in the interaction models “to control for possible nonlinear effects and thus rule out alternative explanations for findings.” In addition to the hierarchical analysis, we also employed a multivariate regression technique to account for the two separate yet interrelated dependent variables. The MVREG command in
## Table 2
Multivariate Regression Analyses: Separated Dependent Variables

<table>
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<th>Variable</th>
<th>ROA</th>
<th>PPP</th>
<th>ROA</th>
<th>PPP</th>
<th>ROA</th>
<th>PPP</th>
<th>ROA</th>
<th>PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 2</td>
<td>Model 3</td>
<td>Model 3</td>
<td>Model 4</td>
<td>Model 4</td>
</tr>
<tr>
<td>Size (FTEs)</td>
<td>-3.66***</td>
<td>-2.87***</td>
<td>-0.62</td>
<td>0.67</td>
<td>-0.81</td>
<td>0.46</td>
<td>-0.77</td>
<td>0.64</td>
</tr>
<tr>
<td>IPA Member</td>
<td>6.44***</td>
<td>3.75***</td>
<td>3.75***</td>
<td>0.61</td>
<td>3.68***</td>
<td>0.57</td>
<td>3.67***</td>
<td>0.62</td>
</tr>
<tr>
<td>Managed Care %</td>
<td>-0.12</td>
<td>-0.52</td>
<td>-0.30</td>
<td>-0.91</td>
<td>-0.23</td>
<td>-0.85</td>
<td>-0.06</td>
<td>-0.85</td>
</tr>
<tr>
<td>Hospital Conc</td>
<td>1.49</td>
<td>4.07***</td>
<td>0.20</td>
<td>2.79**</td>
<td>0.17</td>
<td>2.70**</td>
<td>0.30</td>
<td>2.74**</td>
</tr>
<tr>
<td>SNF Conc</td>
<td>-3.18**</td>
<td>-3.14**</td>
<td>-2.66**</td>
<td>-2.52*</td>
<td>-2.14*</td>
<td>-1.82†</td>
<td>-2.14*</td>
<td>-1.82†</td>
</tr>
<tr>
<td>Specialization (S)</td>
<td>10.88***</td>
<td>13.36***</td>
<td>0.91</td>
<td>1.18</td>
<td>6.52***</td>
<td>9.66***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivalry (R)</td>
<td>1.71†</td>
<td>1.76†</td>
<td>-0.59</td>
<td>-0.43</td>
<td>-1.27</td>
<td>0.28</td>
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<td></td>
</tr>
<tr>
<td>Munificence (M)</td>
<td>-0.82</td>
<td>-0.48</td>
<td>-1.38</td>
<td>-1.23</td>
<td>-1.91†</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivalry²</td>
<td>0.62</td>
<td>0.40</td>
<td>0.73</td>
<td>0.06</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Munificence²</td>
<td>-0.29</td>
<td>-2.08*</td>
<td>0.06</td>
<td>-1.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>S × M</td>
<td>1.26</td>
<td>1.69†</td>
<td>0.86</td>
<td>2.57**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S × R</td>
<td>1.03</td>
<td>1.03</td>
<td>0.86</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S × M × R</td>
<td>2.57**</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.066</td>
<td>0.045</td>
<td>0.167</td>
<td>0.194</td>
<td>0.170</td>
<td>0.200</td>
<td>0.172</td>
<td>0.196</td>
</tr>
<tr>
<td>Δ R²</td>
<td>0.101***</td>
<td>0.149***</td>
<td>0.003</td>
<td>0.006*</td>
<td>0.005†</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>14.37***</td>
<td>9.71***</td>
<td>25.12***</td>
<td>30.28***</td>
<td>17.06***</td>
<td>20.87***</td>
<td>18.94***</td>
<td>22.26***</td>
</tr>
</tbody>
</table>

*a p ≤ .10.
* † p ≤ .05.
** †† p ≤ .01.
*** ††† p ≤ .001.

a: t coefficient reported, N = 1,015.

b: ROA, return on assets; PPP, profitability per provider.
STATA 9.0 allows for the testing of multiple equations simultaneously where there are two or more related dependent variables being tested by the same independent variables. Thus, we could report a composite $F$ test for each independent variable; these results are shown in Table 3. The control variables were first entered as the base model. Not surprisingly, size is found to have a statistically significant relationship to both dependent variables. Also, the IPA variable demonstrated a strong significant relationship to both dependent variables, whereas the hospital and SNF concentration variables showed significance across one or both of the models. These relationships are supported across both equations by the significant $F$ tests demonstrated on Table 3. The second model for each dependent variable includes the independent variables of level of specialization, environmental munificence, and rivalry intensity. This second model dramatically increased the level of explained variance for both dependant variables ($p < .001$). Results specifically show a statistically significant relationship for level of specialization ($p < .001$), suggesting that firm performance increases as firms become more specialized. This lends support to H1. Although rivalry intensity showed marginal significance in both of

### Table 3

**Multivariate Regression Analyses: $F$ Test Results$^a$**

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size (FTEs)$^b$</strong></td>
<td>7.63***</td>
<td>0.66</td>
<td>0.66</td>
<td>0.78</td>
</tr>
<tr>
<td>IPA Member</td>
<td>21.20***</td>
<td>7.38***</td>
<td>7.12***</td>
<td>7.03***</td>
</tr>
<tr>
<td>Managed Care %</td>
<td>0.15</td>
<td>0.42</td>
<td>0.37</td>
<td>0.40</td>
</tr>
<tr>
<td>Hospital Conc</td>
<td>8.34***</td>
<td>4.27*</td>
<td>4.03*</td>
<td>4.05*</td>
</tr>
<tr>
<td>SNF Conc</td>
<td>6.88**</td>
<td>4.92**</td>
<td>2.19†</td>
<td>2.92†</td>
</tr>
<tr>
<td>Specialization (S)</td>
<td>110.01***</td>
<td>0.88</td>
<td>51.76***</td>
<td></td>
</tr>
<tr>
<td>Rivalry (R)</td>
<td>2.20</td>
<td>0.20</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>Munificence (M)</td>
<td>0.35</td>
<td>1.26</td>
<td>2.80†</td>
<td></td>
</tr>
<tr>
<td>Rivalry$^2$</td>
<td>2.30</td>
<td>0.21</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Munificence$^2$</td>
<td></td>
<td>1.67</td>
<td>1.47</td>
<td></td>
</tr>
<tr>
<td>$S \times M$</td>
<td></td>
<td>0.67</td>
<td></td>
<td>3.43*</td>
</tr>
</tbody>
</table>

$^a$ $F$ value.

$^b$ FTE, full-time equivalent.

† $p \leq .10$.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$. 

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the models in these analyses, it did not show a statistically significant relationship in the multivariate regression results shown in Table 3.

The third model tests for the moderating influence of munificence and rivalry intensity on the firm specialization–firm performance relationship. The results on Tables 2 and 3 provide no evidence supporting the existence of a two-way interaction effect for either of these relationships. So there is no evidence to support H2 or H3. The fourth model accounts for the three-way interaction of specialization, munificence, and rivalry intensity. Interestingly, the separate tests of the dependent variables demonstrate mixed results; the three-way interaction demonstrates marginal statistical significance for the ROA dependent variable but not for the PPP variable. However, the multivariate F test does show statistical significance ($p < .05$) for the three-way interaction. Thus, H4 is supported.

**Discussion of Study Findings**

These findings demonstrate that the specialization decision choice for service SMEs is particularly important to overall financial performance in this context. We also see that this decision is somewhat dependent on the regional environmental factors of munificence and rivalry intensity, but only in combination. Thus, the analysis beyond main effects provides additional clarity for this model. Further, a contingency approach examining two-way interaction models fails to provide any additional information beyond that of the main effects models. However, the concomitant consideration of specialization, munificence, and rivalry provides a better understanding of the interrelationships present. This method follows a configurational approach, which simultaneously considers the three-way interaction of all variables, resulting in a more informative model.

It seems that though an increase in the level of specialization tends to increase with performance in most cases, more generalist firms may outperform specialists in certain environmental situations. The most obvious situation where this will occur is when there is little rivalry in a market that is burdened by a scarcity of available resources. The broad implication is that a configurations perspective is the most telling way of predicting performance. Initial evidence of the configurational nature of these predictors is seen in Model 4, using ROA as the dependent variable ($p < .01$), and when the two forms of performance are considered together. Together, we see that there is a very complex interrelationship between these three factors, and each serves to place restrictions on SMEs as well as present opportunities. This is particularly intriguing given the surprisingly limited findings related to the main effects and bivariate contingency relationships.

Given the findings provided earlier, attention must be given to the idea of “regions of excellence,” where highly specialized firms agglomerate in certain areas in such a way that they, together, draw consumers because of their recognized expertise as a whole. Thus, despite high rivalry, specialization and regions of munificence allow for the highest levels of performance. Such regions are found in other industries and represent firms that utilize resources provided by related suppliers and purchased by readily available buyers in small, extremely dense regions. Indeed, previous studies support these findings. Canina, Enz, and Harrison (2005) demonstrated that in the lodging industry, performance is highest in areas where market clusters exist with firms pursuing highly differentiated strategies.

Access to technology (or other resources) may also serve as a key reason for the creation of these “regions of excellence.” If very specialized organizations have the need for specific tech-
nologies in order to operate and cannot afford (or do not wish) to acquire such technologies on their own, alternatives must be considered. For instance, strategic alliances and other interfirm relationships have shown to be effective ways to gain access to technology or other sources of competitive advantage (Juma and Payne 2004; Dyer and Singh 1998).

In the case of the sample used in this study, hospitals have historically served as the technological center of the health care industry and physicians tend to agglomerate around them for use of their specialized products or services (e.g., magnetic resonance imaging). Indeed, we see that the hospital concentration variable is significantly and positively related to performance in the full model, Model 4 \((p < .05)\). Perhaps medical groups located in or near hospitals are able to take advantage of the available technology. This type of arrangement is particularly true for SMEs, which likely have more capital and/or space restrictions in their operations. Additionally, these medical groups may be more likely to perform operations or other more intense treatments, which secure higher returns. Other service-intensive firms and industries may also exhibit some of these same characteristics and have been shown to value collaborative relationships for these reasons.

Indeed, additional consideration must be given to the potential for collaboration among competitive firms. Competitors, in some cases, can work together to gain bargaining power or control over mutually required resources. Physician organizations (i.e., sole proprietorships or medical groups) exhibit this sort of behavior through their involvement in IPAs. As previously mentioned, IPAs are loose affiliations of individual physicians or smaller medical groups who use collective bargaining power to gain access to better payment schemes and provider deals. Though they work together under the IPA for negotiation, each practice operates separately and remains a competitor with the others. Our results demonstrate strong support for IPA membership, particularly in regards to ROA \((p < .01)\). Though beyond the scope of this study, future research should address the value of these cooperative alliances and how they impact different measures of performance.

**Limitations**

A number of limitations exist within the methods and data; many can be attributed to the nature of the secondary data used. Because the data were gathered independently, a secondary analyst has no ability to improve upon many of the uncertainties often associated with it. Sampling, question development, device design, pretesting and pilot testing are all beyond any control of the secondary researcher. Thus, the type and operationalization of the variables used in this study may be questioned. One specific variable that was unavailable, and therefore a substantial limitation, was the relative market share held by each organization. Market share could have led to interesting findings because of the study’s present findings regarding financial performance. Utilizing an alternative variable for performance, such as market share, in future studies would be beneficial. Further, several studies have utilized measures based on the segmentation of market share in an industry to determine the rivalry intensity in a given environment. Additionally, the unavailability of other organization-level control variables limits our ability to rule out some alternative explanations and tends to lower the variance explained. Some potentially useful control variables that would be useful in future studies include firm age, growth rate, and alliances.

As stated previously, true firm strategy cannot be limited to simply a specialization/generalization variable. However, medical groups are often restricted in making price adjustments or...
other similar strategic changes because of the limitations that are placed on health care providers through the governmental regulation and insurance carrier requirements. Typically, the reimbursement scheme to be used is as much characterized by generalization or specialization as any alternative classification because the payment received is largely based on the amount of resources needed to deliver the service and determined by a third-party payer. Future research should look simultaneously at this and alternative strategic measures to better understand these findings.

Another limitation is the study’s cross-sectional nature, which limits the researcher from empirically demonstrating causality. A longitudinal study or data pooling over multiple years would be beneficial. A third limitation associated with this study is external validity. Because organizations within a single service-based industry are used, the explanatory power of any findings can only be applied to other industries with caution. Future studies could replicate and extend on this research in another industry segment or group of industries to determine if similar findings exist in other environmental or industrial settings. Some industries may be better adapted to such a study than others. For instance, used auto dealerships or law firms may be appropriate because these types of firms tend to be regionalized and small. They also tend to agglomerate in specific areas of a region and differ greatly in level of specialization.

While these limitations are hindrances, the rarity and value of this sample tends to overshadow them. The study of service SMEs has suffered in the strategy and entrepreneurship literature in part due to the inability of researchers to gather a significant amount of objective performance data to test these and other strategic relationships. Reliance on subjective data has been the norm, and though such studies are very necessary and valuable, they have their own biases and limitations. The sample for the current study allows the authors to move beyond these commonly confronted data limitations in testing hypotheses in a very unique setting.

Conclusions

This study has extended the understanding of service SMEs in regards to competitive dynamics. Resource identification and availability, product/service selection given the customer target, and choice of geographic location vis-à-vis direct competitors are all keys to firm performance (Baum and Singh 1994). We find that the relations among these different factors are very complex and interrelated. In these data, we find that performance is influenced largely by strategy as demonstrated by specialization. Further, this influence is enhanced in areas of high rivalry and high munificence; this supports a configurations perspective, which should be considered a basis for future research in this area.

References


