Received: 26 May 2017 | Revised: 23 May 2019 | Accepted: 6 June 2019 | Published on: 5 August 2019

DOI: 10.1002/smj.3070

RESEARCH ARTICLE

STRATEGIC MANAGEMENT JOURNAL WILEY

How intra- and interfirm agglomeration affect new-unit geographic distance decisions of multiunit firms

Hyun-Soo Woo[1] | **Albert Cannella Jr**[2] | **Luiz Mesquita**[3]

[1]School of Business Administration, University of Mississippi, Oxford, Mississippi

[2]Mays Business School, Texas A&M University, College Station, Texas

[3]W. P. Carey School of Business, Arizona State University, Tempe, Arizona

Correspondence
Hyun-Soo Woo, School of Business Administration, University of Mississippi, 87 Galtney Lott Plaza, University, Oxford, MS 38677.
Email: hwoo@bus.olemiss.edu

Abstract

***Research Summary*:** Prior agglomeration research takes a competitive-level view, where any incumbent is considered as a rival by a new entrant in the same geographic market. Our study suggests an alternative corporate-level view, where entry by multiunit firms must consider sister units as well as rivals in the market. Theorizing about a sharing mechanism between sister units distinct from a spillover mechanism between rivals, we expect that multiunit firms locate new units nearer sister vis-à-vis rival units and that the size, quality, and organizational form of a new unit moderate these associations. Finally, we predict that multiunit firms establish new units distant from same-brand and same-market-segment sister units. We find robust empirical support from the geographic distance decisions of 10 multiunit hotel firms in 20 U.S. cities.

***Managerial Summary*:** Where should multiunit firms (e.g., fast-food chains, hotels) locate new business units relative to others? Current competitive-level-strategy perspective argues new units should locate "far-from-others" if they have superior capabilities (to avoid being imitated) and "near-others" if inferior ones (to better imitate others). We instead examine this phenomenon from a corporate-level-strategy perspective, regarding locally available synergies sister units can garner to better compete. We argue that new units locate nearer sister (i.e., business-units of same-parent firms) than rival units; that this effect is stronger if new units are larger, have better quality, and are company-operated rather than franchised; and that this base effect is weaker when sisters belong to same- rather

than different-brand companies of the same parent-firm. We provide supporting empirical evidence from the hotel industry.

KEYWORDS

agglomeration externalities, geographic distance decision, interfirm agglomeration, intrafirm agglomeration, multiunit firms

1 | INTRODUCTION

Why do firms in the same industry locate near each other?[1] This phenomenon, known as *agglomeration*, has received considerable attention from strategy scholars (e.g., McCann & Folta, 2008). Prior agglomeration research has implicitly taken a competitive-level view, where any incumbent firm is considered to be a rival by a new entrant in the same geographic market. This view, which we shall refer to as *interfirm* agglomeration (Ramos & Shaver, 2013; Rawley & Seamans, 2015), explains geographic distance decisions as driven by a spillover mechanism: if a new entrant perceives that it will benefit from incumbents via access to specialized know-how or scale-efficient resources made available in the local agglomerated area, it will locate nearby (Kalnins & Chung, 2004). In turn, if a new entrant expects to create such benefits, it will instead choose to locate far from incumbents in order to prevent valuable competitive resources from spilling over to local rivals (Shaver & Flyer, 2000).

The competitive-level view provides a vital theoretical lens to explain the geographic colocation of business units, but it is limited in two main ways. First, it presumes agglomeration among rivals, although anecdotal observation suggests that agglomerated areas can also include business units of same parent firms (henceforth, "sister" units). This latter concept, which we refer to as *intrafirm* agglomeration, remains relatively unexplored. A large number of industries—particularly those where goods are consumed locally, such as fast-food, health care, hotels, banking, drugstores, and many others—are characterized by a mix of sister and rival units located near one another (e.g., Garvin & Levesque, 2008; Kalnins, 2004a; Ramos & Shaver, 2013; Rawley & Seamans, 2015). Second, the spillover mechanism that the competitive-level view relies upon to explain geographic colocation choices by rivals does not explain geographic colocation between sister units. Business units from same-parent firms are not simply independent rivals, and often cooperate in unique ways to maximize benefits, both to themselves locally, and to their parent firms. If a competitive-level view posits that spillovers of agglomeration benefits to others in the same area are mostly undesirable, the view changes when the focus of interest is sister units. Unlike rivals, sister units actively promote internal know-how sharing as well as local resource pooling to increase scale efficiencies and specialization in key operational activities (Alcácer & Zhao, 2012; Golden & Ma, 2003). Hence, we currently lack a deep understanding of the internal sharing versus the external spillover mechanisms behind the respective colocation of sister and rival units.

[1]Our reference to the interfirm (or "competitive-view") agglomeration focuses on the geographic colocation of firms *in a single industry* and the benefits created thereby (i.e., Marshallian agglomeration). Another literature considers geographic colocation between firms *in different industries* and at different production stages (i.e., Jacobian agglomeration) and is based on a theoretical heritage and set of premises that are beyond the scope of our study. We refer interested readers to McCann and Folta (2008) and van der Panne and van Beers (2006) for comprehensive comparisons of these two agglomeration literatures.

To fill this gap, we build a corporate-level view of agglomeration. The corporate-level view provides a unique logic to explain the agglomeration of sister units, whereby the geographic distance decisions by same-parent firms are driven by a mechanism of internal resource development and sharing. At the local geographic level, this mechanism relates to internal allocations of know-how (e.g., coordination of local market and customer information) and operational assets (e.g., transfer of local tasks or resources), as well as efforts to coordinate competitive initiatives (e.g., protecting customer overflow to rivals, and serving more customers by sister units). As the internal sharing occurs directly between local sister units, the advantages are less likely to spill over to nearby rivals. This corporate-level view along with its underlying internal sharing mechanism help us predict—as a general effect—that when a multiunit firm opens a new establishment in *the same geographic market* where both rival and sister units already operate, it will locate the new unit closer to sister than to rival units.

The corporate-level view also predicts unique colocation effects that contrast with those we would observe from a competitive-level view. In the competitive-level view, early research argues that net contributor firms (hereafter contributor)—those that create more spillovers than they absorb—locate geographically farther from incumbents, regardless of their being sisters or rivals, while net beneficiary firms (hereafter beneficiary)—those that absorb more spillovers than they create—locate closer. In contrast, from a corporate-level view, firms will locate contributor units closer to sister than to rival units in order to more easily share internal resource benefits. Further, the corporate-level view suggests that rivalry can exist among sister units, and we expect that in the same geographic area, same-brand and same-market segment sister units suffer from greater rivalry relative to different-brand or different-market segment sister units. This corporate-level effect, hence, helps us predict that multiunit firms will locate new establishments farther from same-brand or same-market-segment sister units than from different-brand or different-market-segment sister units, to manage these negative intrafirm agglomeration effects.

To empirically validate our theoretical model on intra- versus interfirm agglomeration effects, we tracked 10 large multiunit firms in the U.S. hotel industry for 23 years (1991–2013), comparing the geographic distances of 1,649 new units they opened vis-à-vis incumbent rivals and sister units already operating in the same geographic area. We also consider that multiunit firms vary with regard to using same- or different brands and aiming at same- or different-market segments. Our data analyses provide robust support to our hypotheses. We join a nascent effort by scholars to examine location advantages based on corporate-level effects; although to our knowledge, ours is the first study to assess *intrafirm* agglomeration effects to predict the colocation of new establishments by multiunit firms vis-à-vis both incumbent rivals and sister units in *the same agglomerated market*. In the discussion section, we expand on these theoretical contributions, and discuss further implications for future research and management practice.

2 | A CORPORATE-LEVEL VIEW OF GEOGRAPHIC COLOCATION

2.1 | Competitive-level view versus corporate-level view

Specialized industries—where incumbents produce similar products—often involve rivals locating nearby due to agglomeration externalities—that is, benefits a firm attains by locating near rivals (Marshall, 2013; McCann & Folta, 2008; Wang, Madhok, & Li, 2014). The competitive-level view of agglomeration considers other local firms as rivals and suggests that colocation decisions are

mostly determined by a spillover mechanism. Some firms create and contribute externalities to rivals, but do not capture externalities as much, so they are net externality contributors. On the other hand, other firms capture more externalities than they contribute, so they are net beneficiaries. Prior studies suggest that size, quality, and organizational form (company-operation vs. franchise) are characteristics to determine whether firms are contributors or beneficiaries (e.g., Canina, Enz, & Harrison, 2005; Kalnins, 2004b, 2017; Shaver & Flyer, 2000). Key findings from the competitive-level view are that externality contributor firms (e.g., large size, high-quality, and company-run units) locate farther from incumbents to avoid benefitting rivals, whereas externality beneficiaries (e.g., small, low quality, and franchised units) more likely locate closer to them precisely to capture such externalities.

While this competitive-level view has provided many insights into the phenomenon of agglomeration, it is also limited in at least two ways. First, it explains geographic colocation between *rivals* (i.e., *interfirm* agglomeration) well, but it is less effective in explaining colocation between *sister* units (i.e., *intrafirm* agglomeration). Though incumbent sister units can also be viewed as rivals for market resources and customers, they are different from ordinary rivals as they belong to the same parent firm, and so have incentives to collaborate. As a large number of industries involve the colocation of sister and rival units near one another, it is unfortunate that research to date has not yet tackled the theoretical underpinnings of these distinct agglomeration effects. This then points to the second shortcoming, that is, the underlying logical mechanism that explains agglomeration by sister firms.

A corporate-level view in turn suggests some effects sister units may garner, which reside inside the firm. Indeed, prior research on corporate strategy argues that sister units of the same parent firms often collaborate to achieve mutual goals, internally sharing tasks, key activities, market information, and knowledge (Hill, Hitt, & Hoskisson, 1992; Kalnins, 2004a). Internal knowledge transfers between sister units have been known as a key activity of firms to gain competitive advantage across multiple markets. For example, in the hotel industry, Hilton International operates a corporate university to foster knowledge sharing between sister units, so as to transfer superior service practices across markets (Hallin & Marnburg, 2008). Similarly, Chuang and Baum (2003) explain that multiunit firms are likely to replicate successful operational routines and standardize them across multiple units. Operational synergies represent another key area that multiunit firms coordinate across markets. Operational synergy is created when firms efficiently coordinate and share duplicate activities and resources—for example, distribution, marketing, R&D, purchasing—across multiple units to achieve scale and scope efficiencies (Chatterjee, 1986; Helfat & Eisenhardt, 2004; Hitt, Hoskisson, & Kim, 1997; Sakhartov, 2017). Hill et al. (1992) argue that diversified firms benefit from their subsidiaries cooperating to create scope efficiencies, and show this effect follows corporate management systems, with centralized control, communication structures, and corporate-based compensation to unit managers.

We build upon this corporate strategy perspective to predict why sister units agglomerate geographically—that is, a corporate-level view of geographic colocation. A key distinction vis-à-vis prior research, however, is that earlier studies on multiunit firms stress the *across-market* standardization (or consistency) and coordination of operational activities among sister units, while our model builds new logic to explain *within-the-same-market* coordination of operational activities, which reflect stronger local responsiveness. Hence, in contrast to the prior studies on how multiunit firms compete better *across markets* (e.g., the internal transfer of key resources), our intent is instead to explore how a corporate-level view offers access to other *within-market* mechanisms that can explain *intrafirm* agglomeration. Below we further specify our theoretical elements.

2.2 | Geographic colocation from a corporate-level view

To begin, we formally define a unit as a single business establishment, such as a retail store or manufacturing plant (Greve & Baum, 2001). In turn, a multiunit firm is a parent firm operating several such establishments. For instance, a parent firm (e.g., Marriott International) may have many sister units across distinct geographic markets, while operating multiple units in each area. We consider both same and different brands of the same parent firm (e.g., *Residence Inn* and *Fairfield Inn Suites* belong to Marriott International) as sister units. This approach allows us to capture the gains that different brands create, while it also allows us to model the disparate competition effects of same- versus different-brand sister units. Thus, we formally define intrafirm agglomeration as the establishment of new units physically near other (sister) units of the same parent firm. In contrast, interfirm agglomeration refers to the establishment of new units physically near rival units, whether these are multi- or single-unit firms. Figure 1 illustrates the change in thinking when agglomeration components move from single- to multiunit firms and the corresponding intra- and interfirm agglomeration.

When a firm plans to establish a new unit in any given geographic market where rival and sister units already operate, it must decide how closely to locate the new unit relative to these incumbents. If there were no differences between the external spillover mechanism of interfirm agglomeration and the internal sharing mechanism of intrafirm agglomeration, firms would tend to locate new units closer to (or farther from, if externalities are negative) both rival and sister units. If, on the other hand, the corporate-level internal sharing mechanism is different vis-à-vis the competitive-level external spillover mechanism, then geographic distance choices of a new unit to sister and rival incumbents will also differ.

2.3 | Geographic distance to sister units versus to rival units

2.3.1 | "Local" knowledge sharing

From a competitive-level view, a firm can be at a major loss if what it knows exclusively ends up spilling over to nearby rivals. However, a corporate-level view suggests that formal knowledge

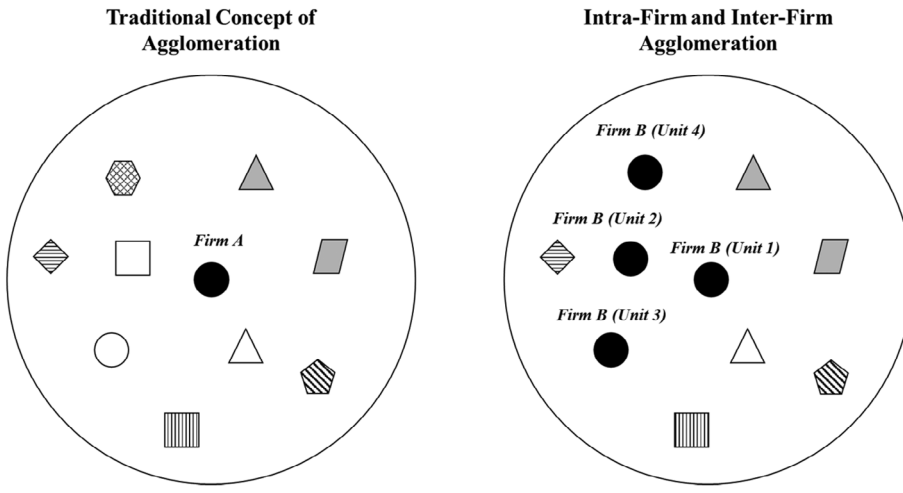

FIGURE 1 Comparison of agglomeration between single-unit and multiunit firms. *Note*: Each shape and pattern represents a unit or a firm. When the shape and the color are same, it means that those units belong to the same multiunit firm. While the left graph represents colocation of single-unit firms, the right graph represents multiunit firms, permitting both intra- and interfirm agglomeration

sharing between sister units is desirable (Alcácer & Zhao, 2012). When the knowledge flows more easily across units of the same parent firm than to units of rival firms, corporate parents can deploy a knowledge-sharing mechanism such that a new sister unit can quickly earn an edge vis-à-vis local rivals due to improved learning and know-how use. We agree internal knowledge sharing is helpful to multiunit firms, but argue this logic needs further specification for the agglomeration setting, to better explain why firms tend to colocate sister units in the same market.

The deployment of competitive intelligence systems offers an example of our logic. In the hotel industry, a parent firm can integrate its reservation system and share data through formal reporting lines and policies so that precise information on occupancy rates can aid sister units to coordinate local referrals with each other. Overall, the deployment of a common booking system across geographies can help a parent-firm replicate sources of success learned in one location onto another, by leveraging the parent-firm's internal systems to transfer routines across units. At a local level, however, the advantage occurs due to the capacity of the firm to surpass local rivalry. When a given hotel unit is overbooked for instance, it is customary to help customers by sending them to nearby hotels with available capacity (Kalnins, 2006). Specifically for colocated multiunit hotels, this means sending overflow to sister units only, so colocation helps bypass local rivals in last-minute bookings. This unique local market-level demand information tends to be shared directly between hotel managers in the hotel industry (e.g., Ingram & Roberts, 2000).

In addition to knowledge *sharing*, local competitive advantages also emerge when sister units *create* new routines that are location specific. Unlike the know how created in a given location that corporate firms then strive to replicate elsewhere, local learning among sister units gives rise to know-how specific to a single area which, due to cross-regional asymmetries, build local advantages not deployable into other areas the multiunit firm competes in. Local interaction by sister units can quickly give rise to unique tacit knowledge that cannot be easily codified and transferred elsewhere (Pinch, Henry, Jenkins, & Tallman, 2003; Polanyi, 1966). Localized tacit know-how is often experiential (i.e., it involves *learning-by-doing*, so it needs nearby imitation, personal validation, and immediate demonstration) and context dependent (i.e., it is facilitated by shared language and culture), so it is "non-ubiquitous" across sister units in different geographies and is developed as well as used locally (Bathelt, Malmberg, & Maskell, 2004). Further, as proximity facilitates face-to-face contact (Pinch et al., 2003), local managers can forge unique norms of camaraderie and keep informal tabs on favors and pledges-of-support, thus producing quicker and relationship-specific cooperative responses that supplement formalized corporate know-how sharing policies (Powell & DiMaggio, 1991; see also the empirical study of the Korean hotel industry, by Taegoo, Gyehee, Soyon, & Seunggil, 2013).

Examples of how the tacitness and the context-dependence of the value created with local know-how are many. Regional events and seasonal demand can make local know-how among colocated sister units distinct from those observed in units located elsewhere (Peiró-Signes, Segarra-Oña, Miret-Pastor, & Verma, 2015). For example, Marriott in Rio de Janeiro coordinates the promotion of Samba shows across local units (e.g., even those of different brands, such as *JW Marriott* for the upscale tourist, and the *Residence Inn by Marriott* for the business traveler) that are not useful to Marriott hotels in Tokyo's main business district. Casual and cheerful relational norms with patrons, suppliers, and other horizontal partners are developed and inculcated locally; and would not produce the same results (i.e., they may even be detrimental to business) elsewhere. Hence, compared to efforts and systems devised by the parent firm to formally transfer know-how across locations, which tend to standardize sources of competitive advantage, a corporate-level view of colocation highlights

locally embedded and idiosyncratic know how, and uniquely helps predict why sister units are motivated to co-locate.

2.3.2 | "Local" operational task and resource sharing

Prior corporate strategy research suggests that operational efficiencies emerge when the primary and/or support activities of a firm's value chain—for example, distribution, marketing, R&D, purchasing and other like tasks shared by that firm's multiple units, hence boosting scale and scope efficiencies (Chatterjee, 1986; Helfat & Eisenhardt, 2004; Hill & Hoskisson, 1987; Sakhartov, 2017). We extend this corporate-level view into the intrafirm agglomeration phenomenon. Intrafirm agglomeration enables the co-purchasing of key inputs and supplies that are similar across local units. The benefits arise not only in increased bargaining power with suppliers, but also in better inventory economies due to local warehousing and logistics. It is common practice for hotel chains to nationally share procurement systems for cleaning and food supplies, repair products, bed sets, and other items (e.g., Kothari, Hu, & Roehl, 2005), but local sharing adds to these corporate advantages when the resources procured are locally embedded. In the Napa Valley (California), local wineries ally with local hotel chains, boosting synergies not seen or replicated at a national level by regular parent-firm corporate sharing mechanisms (Porter, 1998).

Closer geographic proximity also helps reduce logistics costs and stock-out risks. For example, Kothari et al. (2005) found that in the hotel industry, colocated sister units often share transportation vehicles to support staff and customer travel to other units and airports. Further, staff loans, besides producing the know-how transfer benefits mentioned earlier, can help reduce fixed costs, improving operational efficiency (Sakhartov, 2017). As a result, these sharing practices encourage colocation given that proximity makes the resources more mobile.

The benefits of this local resource sharing are not trivial if we understand cost structures of hotel firms. For example, total labor costs, including salaries, bonuses, and other related expenses, accounted for 42.8% of the total hotel operation expenses, and was the largest expense component at U.S. hotels in 2015 (Mandelbaum, 2016, November 21). Hotel managers can effectively reduce labor costs by sharing their employees if sister units are nearby, hence further increasing the incentives for multiunit firms to locate new units near to incumbent sister units.

Taken together, the above arguments suggest that close location allows sister units to benefit from unique internal knowledge and resource sharing mechanisms (i.e., a corporate level view), which are not available to rivals who depend instead on the externally available spillover mechanisms (i.e., the well-known competitive-level view) or even made possible by standardizing corporate-level resource-sharing mechanisms. Therefore, we hypothesize that multiunit firms tend to locate new units closer to sister units than to rivals units.

> **Hypothesis 1:** *Given a geographic market where incumbent sister and rival units already operate, as geographic distance from a new unit becomes shorter, an incumbent firm is more likely a sister unit than a rival unit.*

2.4 | Contributor versus beneficiary

We now consider how a corporate-level view can add to what we already know about the geographic colocation phenomenon from a competitive-level view. As reviewed above, early agglomeration

studies classify firms as externality contributors or beneficiaries to predict where a new entrant will locate, either far from or close to incumbent units. This competitive-level view, however, does not distinguish incumbents in terms of their being rival or sister units. We argue this distinction is crucial to understand *intrafirm* agglomeration. A corporate-level view in this case suggests that sister units are not just rivals but also collaborators, coordinated by the same parent firm or even self-engaged in locally relevant coordination initiatives, so this distinction can greatly affect distance decisions.

To begin, building on early competitive-level view research, we take size, quality, and organizational form (company-owned vs. franchised) as unit-level factors to predict choices of multiunit firms regarding the location of new units in a geographic market already populated by sister and rival units. If a new unit is expected to be a net externality *contributor*, based on the logic of the competitive-level view, the parent firm will want to establish that new unit far from incumbent rivals. In addition, from a corporate-level view, we expect the net *contributor* new entrant to locate closer to sister units, since proximity to sisters enables the two units to jointly build and partake of an exclusive pool of knowledge and physical resources. We stress that this theoretical prediction differs from those in prior studies that consider only the competitive-view (e.g., Shaver & Flyer, 2000). If incumbents were always considered to be rivals, *contributor* new entrants would always choose to locate far from all incumbents, regardless of their being sister or rival units. The combinative effect of the two views implies a more specific colocation choice for the new unit. Recalling that size, quality, and company-operation versus franchise (as organizational form) determine whether the new unit is a net contributor or a net beneficiary, we hypothesize:

> **Hypothesis 2:** *Given a geographic market where incumbent sister and rival units already operate, a firm's new unit (a) size, (b) quality, and (c) company-operation rather than franchise (organizational form) will moderate the prediction in Hypothesis 1, so each will strengthen the likelihood that the close incumbent is a sister unit than a rival unit.*

2.5 | Geographic distances among sister units

While we expect that intra-firm agglomeration creates unique advantages based on the corporate internal sharing mechanism, we also think that it will raise unique disadvantages. A competitive-level view suggests that any colocated firms tend to increase local competition similarly. Arguably, sister units are not immune to within-company competition; though, based on a corporate-level view, we argue that the extent to which colocated sister units create local competition among themselves varies across distinct types of sister units. We believe that such variation occurs particularly through brand-specific and market-segment-specific rivalry.

Multiunit firms often operate business units under different brands to service not only the same but also different market segments (Kalnins, 2017). Different brands allow multiunit firms to target distinct market segments in the same geographic area (Morgan & Rego, 2009). Moreover, firms can also penetrate the same market segments with multiple brands as a natural way to grow their presence by differentiating products and services. Accordingly, multiunit firms can provide products or services differentiated across distinct brands to appeal to different target customers or even to different needs of the same customer. For example, in the hotel industry, according to a 2016 annual report, Marriott International operates the *Courtyard* and the *TownePlace Suites* brands, often in the same geographic markets, but specializes the former for business travelers while it tailors the latter for extended stay travelers.

Accordingly, we expect that localized competition will be more intense between same-brand and same-market-segment sister units than different-brand and different-market-segment sister units. Because different brands of the same parent firm target distinct market needs, the customer bases of each do not fully overlap. In contrast, if firms locate same-brand and same-market-segment sister units close to each other, they may end up competing for the same customers (Desiraju, 2004; Schmidt, 1994). Hence, the closer same-brand and same-market-segment sister units are to each other, the more intense localized competition is expected to be. In fact, multiunit firms often have utilized the concept of exclusive territories to keep same-brand units away from one another (Dutta, Bergen, & John, 1994; Kalnins, 2004b).

Competition between same-brand and same-market-segment sister units may also hinder the local internal sharing mechanism. Since they tend to compete over same target customer groups, their management teams are more likely to perceive each other as rivals and in turn hesitate to share key market knowledge and operational resources. Thus, it is possible that the local internal sharing mechanism may be less effective between closely located same-brand and same-market-segment sister units. On the other hand, since different-brand and different-market-segment sister units usually target distinct customers and market segments, they can operate without directly competing with each other. Hence, they are less likely to view each other as direct rivals, and so more willing to build the internal sharing mechanism described above.

> **Hypothesis 3:** *Given a geographic market where incumbent sister and rival units already operate,* as *geographic distance from a new unit becomes shorter, an incumbent firm is more likely a (a) different-brand and (b) different-market-segment sister unit than a same-brand or same-market-segment sister unit respectively*.

3 | METHODS

3.1 | Empirical setting: The U.S. hotel industry

We chose the U.S. hotel industry as a research context to test our hypotheses. This industry provides key advantages for studying the distance decisions of multiunit firms in terms of intra- and interfirm agglomeration. First, multiunit hotels (often called "chains") have multiple brands that target different product segments (e.g., luxury, upper upscale, upscale, upper midscale, midscale, and economy), and each brand has not only single but also multiple units across as well as within distinct geographic markets (Canina et al., 2005; Kalnins & Chung, 2004). Thus, besides interfirm agglomeration, intrafirm agglomeration frequently occurs between different as well as same hotel brands. For instance, 22 hotels of Wyndham Worldwide (hereafter Wyndham) operating under a variety of brand names were colocated in the Sandy Springs-Roswell area of Atlanta in 2010. Second, the hotel industry is frequently the subject of agglomeration research (Baum & Mezias, 1992; Canina et al., 2005; Kalnins & Chung, 2004; McCann & Vroom, 2010). Prior studies have not distinguished intra- from interfirm agglomeration, so our study offers an important step forward.

3.2 | Data and sample

Our major data source is Smith Travel Research (STR), a private firm that collects hotel information across the world. STR data cover over 98% of U.S. hotel establishments (Canina et al., 2005),

recording each hotel unit's historical census data since 1990. Data collected includes items such as the unit's establishment date, room size, product segment (i.e., quality), parent company, chain affiliation, governance structure (e.g., directly operated vs. franchised), and physical address. We used STR year-end historical census data to track the geographic distance decisions of 1,649 new units established by the major U.S. multiunit hotel chains over 23 years (1990–2013). We identified new units by comparing hotel data for every two adjacent years, so the analysis starts in 1991, with 1990 being the base year. We note that while we used a panel to identify our sample of new units, the sample we analyze is not a panel because each observation represents the establishment of a new unit and thus represents a one-time event.

STR granted us access to its historical census data, but limited our scope to 20 major U.S. cities. Hence, we identified a sample of 20 U.S. cities that are representative of the entire population of U.S. cities. To begin, we matched the STR market list with the U.S. census city list to facilitate the selection of a balanced set of cities. Then, among the matched cities, we computed the average population growth rate per city between 2000 and 2010 by using publicly available U.S. census data. Because our study focuses on the new unit geographic distance decisions (vis-à-vis incumbents) of multiunit firms, our samples must include new hotel establishments. We used population growth rate as an indicator of hotel demand growth (Metz, 2012). We then selected 20 U.S. cities using the following criteria: (a) we included both metropolitan and isolated cities to consider potential city-level location advantages that might attract new hotel units; (b) we excluded cities that experienced external shocks (e.g., Hurricane Katrina in New Orleans); and (c) we balanced high and low levels of population growth. A Kolmogorov–Smirnov test shows that the chosen 20 cities are not statistically different from the largest 1,000 U.S. cities in terms of population growth, supporting the representativeness of our sample (Gibbons & Chakraborti, 2011; Smirnov, 1939). Table 1 shows the 20 selected cities and some descriptive statistics.

Because we focus on the geographic distance decisions of multiunit firms, we limit our analyses to 10 of the largest multiunit hotels, all of which operate nationwide (see Table 2). These 10 large hotel firms comprise approximately 70% of the new hotel establishments in our study (2,029 out of 2,918), so we conclude they are representative of the industry. For final analyses, we used 1,649 of them because of missing values of our main variables.

A key empirical issue in our study is the setting of a geographic boundary to examine the physical distances of new establishments to both rival and sister incumbents. Prior studies have used administrative boundaries such as counties, zip codes, and states; albeit this approach has been criticized as artificial (Duranton & Overman, 2005; McCann & Folta, 2008). More recent studies have thus selected boundary determinants such as a fixed number of incumbent units (e.g., the 10 or 15 nearest units, see Kalnins, 2016). Accordingly, we adopt this latter approach, so for each new unit, we identify the 15 nearest incumbents for the main analysis.

3.3 | Main analysis

We use distance-based decision models (Duranton & Overman, 2005; Perryman & Combs, 2012), where geographic distance is the independent variable and the location decision is the dependent variable. Accordingly, we use a geographic distance from a new unit to incumbent units as the independent variable, while we set the incumbent types relating to sister or rival units for Hypotheses 1 and 2, and the incumbents for same-brand (same-market-segment) or different-brand (different-market-segment) sister units for Hypothesis 3 as dependent variables. If we assume that the decisions for Hypotheses 1, 2, and 3 are independent, we could use a probit or a logit model separately to test each hypothesis. However, multiunit hotels may consider these location decisions together (i.e., near rivals vs. same-

TABLE 1 20 cities for samples

City	State	Average population	Average population growth rate (%)	Total new establishments	Total city-year hotel observations
Detroit	Michigan	832,611	−24.8	137	7,837
Cleveland	Ohio	434,551	−16.7	80	3,929
Memphis	Tennessee	666,939	−5.9	145	4,461
Minneapolis	Minnesota	380,202	0.1	177	6,172
Omaha	Nebraska	406,683	0.4	71	2,215
Atlanta	Georgia	409,447	1.1	484	17,928
Kansas City	Missouri	449,563	4.2	168	5,361
Indianapolis	Indiana	798,010	5.0	162	5,194
Tucson	Arizona	505,516	7.1	62	3,059
Louisville	Kentucky	573,426	7.9	109	3,185
Columbus	Ohio	748,634	10.3	136	4,571
Nashville	Tennessee	569,293	10.3	167	6,052
Portland	Oregon	550,396	10.6	125	5,329
Jacksonville	Florida	784,304	11.9	144	4,895
Sacramento	California	444,798	14.4	107	6,671
Oklahoma City	Oklahoma	540,864	14.8	137	4,259
Colorado Springs	Colorado	388,287	15.9	60	2,455
Austin	Texas	724,717	17.7	172	4,557
Albuquerque	New Mexico	500,483	21.3	97	3,230
Charlotte	North Carolina	653,243	27.1	177	5,571
20 cities sample average		568,098			
U.S. top 100 cities average		581,341			

Note. Average population and average population growth rate per city were computed between 2000 and 2010 by using U.S. census population estimate data. In addition, the total number of new establishments and the total number of city-year hotel observations was considered between 2001 and 2013.

brand sisters vs. different-brand sisters), not separately. Thus, to control for any dependence between these three categorical (nominal) location outcomes, we employ a multinomial logit regression model that allows us to test our Hypotheses 1, 2, and 3 simultaneously (Greene, 2003; Long & Freese, 2001).

Since our analyses are run at the dyadic-level between a new unit and an incumbent, we matched each new unit with the 15 nearest incumbents. The benefit of the dyadic-level analysis is clear for our study since we can easily distinguish incumbents as rivals, same-brand (same-market-segment) sisters, or different-brand (different-market-segment) sisters for the multinomial logit regression model.

3.4 | Dependent variable

3.4.1 | Incumbent type

We classified each incumbent as a rival unit, same-brand (same-market-segment) sister unit, or different-brand (different-market-segment) sister unit, using information on parent company, chain

TABLE 2 List of the 10 large multiunit hotel firms in the sample

Multiunit hotel firm	Chain brands (total new establishments/total brand-year observations)		
Best western company	Best western (73/2,933)	Best western premier (1/6)	Best western plus (5/266)
Carlson Hospitality Company	Country Inn & Suites (76/1,031)	Radisson (4/521)	Park Plaza (0/23)
	Radisson Blu (1/1)		
Choice Hotels International	Ascend Collection (1/13)	Comfort Suites (88/1,026)	Rodeway Inn (10/713)
	Cambria Suites (5/25)	Econo Lodge (23/1,815)	Sleep Inn (57/694)
	Clarion (6/431)	MainStay Suites (3/33)	Suburban Extended Stay (47/445)
	Comfort Inn (85/2,507)	Quality Inn (29/1,651)	
Extended Stay Hotels	Crossland Economy Studios (11/166)	Extended Stay America (68/1,371)	
G6 Hospitality	Motel 6 (17/2,241)	Studio 6 (3/208)	
Hilton Worldwide	Conrad (1/8)	Hampton Inn (123/2,666)	Hilton Garden Inn (90/935)
	DoubleTree (2/27)	Hampton Inn & Suites (79/734)	Home2 Suites (5/7)
	Embassy Suites (22/874)	Hilton (15/663)	Homewood Suites (48/651)
Intercontinental Hotels Group	Candlewood Suites (52/507)	Holiday Inn Express (187/2,499)	Staybridge Suites (37/379)
	Crowne Plaza (2/361)	Hotel Indigo (6/38)	
	Holiday Inn (1/13)	InterContinental (4/58)	
LQ Management LLC	La Quinta Inns & Suites (41/1,464)		
Marriott International	Autograph Collection (0/21)	J. W. Marriott (2/35)	Residence Inn (65/1,693)
	Courtyard (94/2,208)	Marriott (19/1,094)	Ritz-Carlton (3/121)
	Fairfield Inn (96/1,505)	Marriott Conference Center (1/54)	Springhill Suites (43/489)
	Gaylord (1/6)	Renaissance (4/212)	TownePlace Suites (36/443)
Wyndham Worldwide	Baymont (22/744)	Ramada (12/1,146)	Travelodge (16/956)
	Days Inn (50/3,317)	Ramada Plaza (0/107)	Wingate by Wyndham (35/409)
	Hawthorn Suites by Wyndham (7/262)	Shell Vacations Club (0/2)	Wyndham (4/132)
	Howard Johnson (11/836)	Super 8 (73/3,584)	Wyndham Garden Hotel (0/141)
	Knights Inn (6/1,028)		Wyndham Vacation Resort (1/9)
	Microtel Inn & Suites (53/585)		

affiliation, and hotel class (i.e., economy, midscale, upper-midscale, upscale, upper-upscale, and luxury) in the STR census data. For multinomial logit regression, the different-brand (different-market-segment) sister unit was coded 2 as a base group, rival unit as 0, and same-brand (same-market segment) sister unit as 1. Comparing the base group (different-brand and different-market-segment sisters) with rival unit group and same-brand (same-market-segment) sister unit group, we can test Hypotheses 1, 2, and 3 in the same model.

3.5 | Independent variables

3.5.1 | Geographic distance

To compute a dyadic geographic distance between a new unit and each incumbent, we converted address information for each hotel in the STR census data into the longitude and latitude data through Texas A&M geocoding services.[2] Then, we computed the shortest line between two units by using the STATA *geodist* command (Kim & Lim, 2014; Tomita et al., 2017).

3.5.2 | New unit size

We measured the size of a new unit by the number of hotel rooms offered (Baum & Haveman, 1997), as reported in the STR census data. Because the number of rooms was highly skewed, we log-transformed this variable. We also centered this variable to compute the interaction term with geographic distance.

3.5.3 | New unit quality

We measured the quality of a new unit based on STR's taxonomy for hotel class. Prior research shows that when a hotel unit is classified as upscale or above, it is perceived as an externality contributor to incumbents, but when its quality is lower than upscale, it is an externality beneficiary (Kalnins & Chung, 2004). We coded the quality of a new unit as 1 if its class was upscale or above (i.e., luxury, upper upscale, and upscale) and zero otherwise (i.e., hotels categorized by STR as upper midscale, midscale, and economy).

3.5.4 | New unit organizational form

We used the operation information in the STR census data to classify each hotel establishment as franchised or company operated. We coded franchised units as 0, and company-operated ones as 1 (Perryman & Combs, 2012).

3.6 | Control variables

3.6.1 | Economy-related variables

We control for unobservable economy-level effects by using year dummy variables. Customer demand for travel varies across years, creating correlations between the error terms in the same year's

[2]Texas A&M GeoServices provides a geocoding conversion service through http://geoservices.tamu.edu/. As a robustness test, we also used the longitude and the latitude data, which is provided in the STR census data, and the results are consistent with those reported here.

observations (Certo & Semadeni, 2006). For example, as negative external economy-related events occur, customer demand can fall sharply (Blake & Sinclair, 2003). Given the increased competition in periods of low demand, firms may want to avoid competition with rivals, so they locate farther from rivals. Similarly, in low demand periods, firms may also want to avoid within-firm competition between sister units. In this case, firms may seek to locate even farther from either rivals or sister units. Therefore, we included year dummy variables (Certo & Semadeni, 2006).

We also tried to control for specific time-varying effects using the U.S. gross domestic product in 2015 U.S. dollars in billions, the U.S. population in millions, and median age of the U.S. population per year. However, because these variables created significant multicollinearity (e.g., correlations greater than .9), we opted to simply use year fixed-effects.

3.6.2 | Market-related variables

First, we used dummy variables to control for city-specific unobservable factors. For example, cities can have different regulations with regard to new hotel establishments, such as specific rules for floor area ratios or minimum distances between properties to mitigate congestion (Joshi & Kono, 2009). These city-specific regulations might influence the geographic distances between new units and incumbents. Second, STR identifies six general locations based on distinct characteristics: small metro or town, airport, interstate, resort, suburban, and urban areas. The characteristics of these locations can influence distance decisions. For example, multiunit hotel firms may be unable to find property to establish new units in urban or airport areas because of property density but have less difficulty in suburban and small town areas. We included fixed effects for location category by using five location dummies (urban is the omitted category).

3.6.3 | Agglomeration-related variables

We control for the number of hotel units in each product segment in each geographic market for three reasons. First, Kalnins and Chung (2004) showed that the agglomeration effect is specific to each product segment of hotels (e.g., economy, midscale, upper-midscale, upscale, upper-upscale, and luxury). As more hotels with high quality (e.g., upscale, luxury, etc.) exist in a certain location, a new hotel is more likely to enter this location to benefit from agglomeration externalities (Kalnins & Chung, 2004). In turn, as more hotels are present near a newly established unit, average distances between them are shorter. Second, the number of hotels in each segment represents potential market opportunities. If there are few hotels in a certain segment, multiunit hotel firms may perceive opportunities to serve more customers by establishing new units. Third, the number of hotel units also can represent hotel density and market saturation in each market. As hotel density increases along with the number of establishments, hotel firms may find it harder to locate new units nearby. To control for these effects, we use the STR hotel class typology of six product segments (i.e., economy, midscale, upper-midscale, upscale, upper-upscale, and luxury) and computed the number of hotels in each geographic market defined as a market tract in the STR census data.[3] Therefore, we have six variables to represent the number of hotels in each product segment.

[3]STR uses the term "tract" to refer to geographic markets. For example, it subdivides Austin, Texas in five tracts: Central Business District, Northwest, Southwest, the U-290/I-35 area, and Round Rock/Georgetown. Our 20 city samples have 93 tract markets between 2000 and 2013, and the mean value of the number of hotels per tract-year is 48 and the *SD* is 21.

Another agglomeration-related variable we control for is the total number of same-brand hotel units of multiunit parent firms in geographic markets. As more same-brand units already exist in these markets, the firms are even less likely to locate new units near other same-brand units. We measured the number of same-brand units in the STR market tract of the new unit.

We also considered controlling for the presence of multioutlet franchisees, that is, firms or individuals that are franchised and have multiple units in agglomerated areas. While our study focuses on geographic colocation between units of the same parent company (i.e., intrafirm agglomeration), previous studies show that colocation can also be affected by common ownership of the units by a multiunit franchisee (Kalnins & Lafontaine, 2004; Kaufmann & Dant, 1996; Perryman & Combs, 2012). The STR Census data provide owner or owner company information for each hotel establishment, and we used the owner name information of each hotel in the STR Census data in an attempt to identify multioutlet franchisees. However, the data indicate that multioutlet franchisees do not have their other units among the nearest 15 incumbent samples when they establish new units. Therefore, we conclude that the presence of multioutlet franchisees is not a serious threat to our results as an omitted variable.[4]

3.6.4 | Establishment-related variables

Product differentiation has been considered an important factor in location distance decisions (Baum & Haveman, 1997; Freedman & Kosová, 2012). Following Baum and Haveman (1997), we use price and size Euclidean distances to control for this effect. STR assigns one of five price segments to each hotel (i.e., budget, economy, midscale, upscale, and luxury). Similarly, we assign a 5-point Likert scale to STR price segments (i.e., budget = 1, economy = 2, midscale = 3, upscale = 4, and luxury = 5) and compute price distances of a new establishment to incumbents as follows:

$$\text{Price distance}_i = \sqrt{\sum_{j \neq i} \left(P_i - P_j\right)^2}$$

where P_i is a price segment of a new hotel i, and P_j is a price segment of the nearest 15 incumbents from i. We also compute size distances of a new units to incumbents as follows:

$$\text{Size distance}_i = \sqrt{\sum_{j \neq i} \left(S_i - S_j\right)^2}$$

where S_i is the number of rooms of a new hotel i, and S_j is the number of rooms of the nearest 15 incumbents from i. Therefore, we compute separate price and size distance variables for samples of the nearest 15 incumbents.

[4]We want to highlight that in our data we have multioutlet franchisees in the same cities, but the same franchisees did not have incumbent units from their new unit within 15 nearest samples. Yet, we still include a dummy variable when a new hotel is owned by multioutlet franchisees in each city as a robustness test. Our results from this robustness test show consistent results with those of the main analyses.

4 | RESULTS

4.1 | Descriptive statistics

Table 3 reports descriptive statistics of the sample for the main analyses, including means, *SD*s, minimum and maximum, as well as correlations for all variables. As noted earlier, we initially identified a total of 2,081 new hotel establishments, but only used 1,649 of them because of missing values for some of the independent variables. Then, we matched the new hotels with the 15 nearest incumbents.

We found outliers in our samples in that some geographic distances between new hotels and the nearest 15 incumbents were too far. We checked that 1% of observations (248 of them) show geographic distances over 36.649 km (about 23 miles), and that 99% of all distances (24,487 observations) are lower than that distance. We considered the distance of 36.649 km to be a reasonable distance threshold between units within metropolitan areas. Outliers exist in our sample due to two reasons. First, the Texas A&M geocoding service shows hotel units on interstate highways in the sample of the closest metropolitan area, though their actual locations are far away. Second, Texas A&M geocoding service sometimes creates random conversion errors, according to its website.[5] For matters of face validity, we thus treated the 1% observations over 36.649 km as outliers and analyzed the multinomial models—discussed herein—without them. Our results are fully consistent with and without outliers, and we report results based on the full dataset in the Appendix S1. Hence, the total observations for the main analyses are 24,487.

We checked for potential multicollinearity by assessing correlation coefficients. We also deleted one independent variable at a time from our final analyses to check for changes in the signs and significance levels of the other variables (Grapentine, 1997; Slinker & Glantz, 1985). No significant concerns were noted among our key independent variables and interaction terms. Most correlation coefficients are lower than 0.6 except for interaction terms, and the signs and significance levels of independent variables were stable with and without interaction terms. Thus, we conclude multicollinearity is not a significant threat.

4.2 | Main analysis

Table 4 reports results of multinomial logit regression models for Hypotheses 1, 2, and 3a when the base group is the different-brand sister unit. Model 1 includes only the geographic distance variable with control variables to test Hypothesis 1 for the nearest 15 incumbent units. Models 2, 3, and 4 subsequently add interaction variables with the size, the quality, and the company operation dummy of the new hotel unit. Model 5 is the full model with all interaction variables to test Hypotheses 2a–2c. All models include 22 year-dummy variables (23 years), 19 city dummies (20 cities), and nine parent-firm dummies for the 10 multi-unit hotel firms in the sample. Thus, these models include fixed-effects that control for unobserved firm, city, and year heterogeneity. For Hypothesis 3b, we similarly analyzed multinomial logit regression models using the different-market-segment sister unit as the base group and report the results in Table 5.

We report the results of Hypotheses 1 and 3 first, since multinomial logit regression allowed us to test them together. Hypothesis 1 is supported. Geographic distance has a positive effect on whether incumbents are rival units as opposed to different-brand sister units in model 1 of Table 4 ($b = .021$;

[5]https://geoservices.tamu.edu/Services/Correction/

TABLE 3 Descriptive statistics for nearest 15 sample (Year dummy, city dummy, and parent firm dummy variables are excluded for the limited space)

	Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8
1	Incumbent types	0.150	0.521	0.000	2.000	1.000							
2	Airport	0.122	0.327	0.000	1.000	−0.001	1.000						
3	Interstate	0.071	0.257	0.000	1.000	−0.014	−0.103	1.000					
4	Resort	0.015	0.120	0.000	1.000	−0.007	−0.045	−0.034	1.000				
5	Small metro/town	0.015	0.120	0.000	1.000	−0.012	−0.045	−0.034	−0.015	1.000			
6	Suburban	0.667	0.471	0.000	1.000	0.003	−0.527	−0.392	−0.173	−0.172	1.000		
7	Number of luxury hotels	0.524	1.237	0.000	10.000	−0.002	−0.109	−0.049	0.257	−0.007	−0.182	1.000	
8	Number of upper upscale hotels	2.628	2.486	0.000	15.000	0.024	0.093	−0.145	0.135	−0.035	−0.308	0.456	1.000
9	Number of upscale hotels	5.044	3.934	0.000	28.000	0.024	0.053	−0.210	0.158	−0.040	0.032	0.403	0.372
10	Number of upper midscale hotels	8.227	5.329	0.000	28.000	0.004	−0.038	0.017	0.175	0.051	0.026	0.266	0.169
11	Number of midscale hotels	7.495	4.243	0.000	27.000	−0.019	0.067	0.098	0.167	0.043	−0.008	0.199	−0.010
12	Number of economy hotels	26.223	13.582	0.000	75.000	−0.030	−0.022	0.208	0.045	0.047	0.053	0.042	−0.166
13	Number of same brand hotels	0.586	0.972	0.000	7.000	−0.008	−0.124	0.192	0.010	0.185	0.007	−0.043	−0.056
14	Price distance	5.431	1.891	0.000	11.619	−0.071	0.032	0.009	0.031	−0.006	0.060	−0.128	−0.182
15	Size distance	368.270	394.196	68.147	10,723.531	0.023	0.018	−0.119	0.132	−0.053	−0.256	0.142	0.363
16	Size of a new hotel	−0.253	0.672	−4.774	3.193	0.005	0.032	−0.141	−0.003	−0.079	−0.111	0.121	0.221
17	Dummy for quality of a new hotel	0.286	0.452	0.000	1.000	0.033	0.059	−0.149	0.035	−0.077	−0.134	0.161	0.215
18	Dummy for company operation	0.104	0.305	0.000	1.000	−0.037	−0.010	−0.087	−0.008	−0.041	0.007	0.058	0.089
19	Geographic distance	4.447	5.645	0.000	36.649	−0.026	−0.161	0.340	−0.009	0.284	−0.030	−0.090	−0.205
20	Geographic distance × size	−0.693	4.308	−151.536	24.267	−0.007	0.056	−0.235	0.009	−0.205	0.057	0.060	0.129
21	Geographic distance × quality	0.790	2.017	0.000	29.076	−0.008	−0.013	−0.062	0.052	−0.048	0.017	0.041	0.001
22	Geographic distance × company operation	0.271	1.161	0.000	28.085	−0.036	−0.037	−0.037	0.003	−0.028	0.045	0.018	0.000

	Variable	9	10	11	12	13	14	15	16	17	18	19	20	21
10	Number of upper midscale hotels	0.524	1.000											
11	Number of midscale hotels	0.299	0.597	1.000										

TABLE 3 (Continued)

	Variable	9	10	11	12	13	14	15	16	17	18	19	20	21
12	Number of economy hotels	−0.019	0.427	0.556	1.000									
13	Number of same brand hotels	0.002	0.276	0.195	0.301	1.000								
14	Price distance	−0.024	0.079	0.138	0.102	−0.036	1.000							
15	Size distance	0.080	−0.081	−0.170	−0.222	−0.135	−0.082	1.000						
16	Size of a new hotel	0.165	0.033	−0.060	−0.185	−0.189	0.095	0.283	1.000					
17	Dummy for quality of a new hotel	0.199	0.077	−0.036	−0.163	−0.193	0.169	0.227	0.412	1.000				
18	Dummy for company operation	0.052	−0.071	−0.072	−0.114	−0.127	−0.013	0.178	0.253	0.068	1.000			
19	Geographic distance	−0.181	0.009	0.023	0.120	0.240	0.023	−0.147	−0.183	−0.189	−0.111	1.000		
20	Geographic distance X Size	0.152	0.072	0.005	−0.089	−0.204	0.118	0.119	0.592	0.237	0.138	−0.462	1.000	
21	Geographic distance X Quality	0.089	0.097	0.033	−0.027	−0.101	0.223	0.040	0.194	0.619	0.003	0.103	0.210	1.000
22	Geographic distance X Company operation	0.009	−0.043	−0.044	−0.056	−0.079	0.054	0.051	0.139	0.013	0.685	0.033	0.137	0.067

$p = .001$). This result implies that a multiunit hotel firm establishes new units closer to sister units than to rivals.

Hypothesis 3 on different types of sister units are also supported. We suggested that as geographic distance from a new unit is shorter, the likelihood that incumbents are different-brand relative to same-brand sister units for Hypothesis 3a and that they are different-market-segment relative to same-market-segment sister units for Hypothesis 3b increase as well. In Table 4, geographic distance consistently has a positive effect on whether incumbents are same-brand as opposed to different-brand sister units in model 1 ($b = .105$; $p = .000$), so Hypothesis 3a is supported. In Table 5, geographic distance also has a positive effect on whether incumbents are same-market-segment as opposed to different-market-segment sister units in model 6 ($b = .029$; $p = .005$), so Hypothesis 3b is also supported. These findings mean that a multiunit hotel firm is likely to establish new units farther from same-brand and same-market-segment sister units than different-brand and different-market-segment sister units.

To understand our results for Hypotheses 1 and 3 more intuitively, we additionally analyzed *t*-tests comparing geographic distances between different incumbent types from a new establishment. The mean values for geographic distance are 3.604 km for different-brand sister units, 4.465 km for rival units, and 10.864 km for same-brand sister units. *T*-tests show that the distance to different-brand sister units is statistically shorter than rival ($p < .01$) and same-brand sister units ($p < .001$). Similarly, the mean values for geographic distance are 3.647 km for different-market-segment sister units, 4.465 km for rival units, and 5.274 km for same-market-segment sister units. Again, *t*-tests show that the distance to different-market-segment sister units is statistically shorter than those for rival ($p < .01$) and same-brand sister units ($p < .001$). Therefore, *t*-tests also support Hypotheses 1 and 3.

Our Hypotheses 2 on contributor versus beneficiary are partially supported. We argue that the main effect of geographic distance is stronger when the size of the new unit is large (Hypothesis 2a), the quality is high (Hypothesis 2b), and the new unit is company operated rather than franchised (Hypothesis 2c). For Hypothesis 2a, there is a positive and significant moderation effect of size in model 5 ($b = .016$; $p = .047$). For Hypothesis 2b, the moderation effect is also positive in model 5 ($b = .057$; $p = .007$). Lastly, for Hypothesis 2c, there is no statistical evidence on the moderation effect of company operation (as opposed to franchise) in model 5, so it is not supported ($b = -.021$; $p = .632$). In sum, only Hypotheses 2a and 2b are supported, but Hypothesis 2c is not.

Because multinomial logit regression models are nonlinear, the interpretation of coefficients requires care. As prior studies recommend (Hoetker, 2007), we used graphic presentation to check the main effect of geographic distance and the moderation effect of the size in Figure 2 and the quality of the new unit in Figure 3. Particularly, we computed and drew predicted probabilities of incumbents being same-brand sister, different-brand sister, and rival units over geographic distances from model 5. Figures 2a–b and 3a–b show that the predicted probabilities for sister units in general decline over geographic distance, but Figures 2c and 3c show that the probability for rival units increases. These figures together mean that new units are more likely to be established closer to sister units than rival units. Figures 2a–b and 3a–b further show that the main effect strengthens as a new unit's size is larger and quality is higher, so the simple slopes for sister units become steeper.

The effects of control variables are as we expected and relatively consistent across models. First, the number of hotels in product segments has the expected effects. As the number of hotels increases, especially in the luxury segment, new units tend to be established farther from rival units (closer to sister units). On the other hand, we observe the opposite effect as the number of upscale hotels

TABLE 4 Results of multinomial logit regression with different-brand sister unit as a base group

Base group: Different-brand sister	Model 1		Model 2		Model 3		Model 4		Model 5	
	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*
Geographic distance	0.021	0.105	0.028	0.110	0.014	0.096	0.021	0.106	0.020	0.102
(Hypotheses1 and 3a)	(0.006)	(0.014)	(0.007)	(0.015)	(0.006)	(0.014)	(0.006)	(0.014)	(0.007)	(0.016)
	[0.001]	[0.000]	[0.000]	[0.000]	[0.026]	[0.000]	[0.001]	[0.000]	[0.005]	[0.000]
Geographic distance × Size of a new hotel (Hypothesis 2a)			0.021	0.017					0.016	0.012
			(0.007)	(0.016)					(0.008)	(0.017)
			[0.003]	[0.280]					[0.047]	[0.477]
Geographic distance × Quality of a new hotel (Hypothesis 2b)					0.066	0.111			0.057	0.111
					(0.020)	(0.051)			(0.021)	(0.052)
					[0.001]	[0.031]			[0.007]	[0.034]
Geographic distance × company operation (Hypothesis 2c)							0.012	−0.152	−0.021	−0.196
							(0.047)	(0.145)	(0.045)	(0.145)
							[0.798]	[0.292]	[0.632]	[0.176]
Economy/firm-related controls										
Year dummy	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Firm dummy	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Market-related controls										
City dummy	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Airport	−0.182	−1.361	−0.181	−1.356	−0.186	−1.397	−0.181	−1.361	−0.185	−1.401
	(0.129)	(0.670)	(0.129)	(0.670)	(0.129)	(0.671)	(0.129)	(0.669)	(0.129)	(0.671)
	[0.159]	[0.042]	[0.161]	[0.043]	[0.149]	[0.037]	[0.159]	[0.042]	[0.152]	[0.037]

TABLE 4 (Continued)

Base group: Different-brand sister	Model 1		Model 2		Model 3		Model 4		Model 5	
	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*
Interstate	−0.214	−0.672	−0.205	−0.664	−0.192	−0.635	−0.213	−0.696	−0.189	−0.655
	(0.167)	(0.575)	(0.167)	(0.575)	(0.167)	(0.575)	(0.167)	(0.575)	(0.168)	(0.575)
	[0.200]	[0.243]	[0.220]	[0.249]	[0.251]	[0.270]	[0.201]	[0.227]	[0.260]	[0.255]
Resort	−0.180	−0.058	−0.183	−0.057	−0.218	−0.124	−0.182	−0.027	−0.212	−0.077
	(0.289)	(1.034)	(0.289)	(1.034)	(0.289)	(1.037)	(0.289)	(1.035)	(0.290)	(1.038)
	[0.534]	[0.955]	[0.526]	[0.956]	[0.451]	[0.905]	[0.529]	[0.979]	[0.465]	[0.941]
Small metro/town	−0.003	−1.767	0.041	−1.730	0.063	−1.681	−0.001	−1.797	0.085	−1.692
	(0.317)	(0.750)	(0.318)	(0.750)	(0.318)	(0.750)	(0.317)	(0.750)	(0.318)	(0.750)
	[0.993]	[0.018]	[0.898]	[0.021]	[0.843]	[0.025]	[0.997]	[0.017]	[0.790]	[0.024]
Suburban	−0.212	−0.436	−0.225	−0.445	−0.230	−0.474	−0.212	−0.436	−0.236	−0.481
	(0.114)	(0.479)	(0.115)	(0.480)	(0.115)	(0.480)	(0.114)	(0.479)	(0.115)	(0.480)
	[0.063]	[0.363]	[0.049]	[0.354]	[0.045]	[0.324]	[0.063]	[0.362]	[0.039]	[0.317]
Agglomeration-related controls										
Number of luxury hotels	0.092	0.282	0.095	0.285	0.096	0.295	0.092	0.277	0.097	0.290
	(0.030)	(0.111)	(0.030)	(0.111)	(0.030)	(0.112)	(0.030)	(0.111)	(0.030)	(0.112)
	[0.002]	[0.011]	[0.002]	[0.011]	[0.001]	[0.008]	[0.002]	[0.012]	[0.001]	[0.009]
Number of upper upscale hotels	−0.005	−0.072	−0.005	−0.072	−0.003	−0.067	−0.005	−0.072	−0.003	−0.066
	(0.015)	(0.056)	(0.015)	(0.056)	(0.015)	(0.056)	(0.015)	(0.056)	(0.015)	(0.056)
	[0.738]	[0.197]	[0.741]	[0.196]	[0.834]	[0.233]	[0.738]	[0.199]	[0.824]	[0.237]
Number of upscale hotels	−0.016	0.053	−0.016	0.053	−0.016	0.053	−0.016	0.052	−0.016	0.052
	(0.010)	(0.035)	(0.010)	(0.035)	(0.010)	(0.035)	(0.010)	(0.035)	(0.010)	(0.035)
	[0.104]	[0.132]	[0.113]	[0.131]	[0.106]	[0.135]	[0.104]	[0.138]	[0.112]	[0.140]

TABLE 4 (Continued)

Base group: Different-brand sister	Model 1		Model 2		Model 3		Model 4		Model 5	
	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*
Number of upper midscale hotels	−0.012	−0.021	−0.013	−0.022	−0.013	−0.025	−0.012	−0.021	−0.014	−0.025
	(0.009)	(0.030)	(0.009)	(0.030)	(0.009)	(0.030)	(0.009)	(0.030)	(0.009)	(0.030)
	[0.179]	[0.483]	[0.125]	[0.456]	[0.126]	[0.412]	[0.177]	[0.491]	[0.103]	[0.402]
Number of midscale hotels	−0.004	0.014	−0.004	0.014	−0.005	0.013	−0.004	0.013	−0.005	0.011
	(0.010)	(0.037)	(0.010)	(0.037)	(0.010)	(0.037)	(0.010)	(0.037)	(0.010)	(0.037)
	[0.662]	[0.703]	[0.669]	[0.702]	[0.629]	[0.730]	[0.663]	[0.730]	[0.638]	[0.760]
Number of economy hotels	0.005	−0.020	0.005	−0.020	0.005	−0.021	0.005	−0.020	0.005	−0.021
	(0.003)	(0.012)	(0.003)	(0.012)	(0.003)	(0.012)	(0.003)	(0.012)	(0.003)	(0.012)
	[0.082]	[0.081]	[0.082]	[0.083]	[0.089]	[0.073]	[0.081]	[0.084]	[0.089]	[0.075]
Number of same brand hotels	0.060	0.796	0.064	0.800	0.066	0.807	0.060	0.795	0.068	0.807
	(0.033)	(0.079)	(0.033)	(0.079)	(0.033)	(0.079)	(0.033)	(0.079)	(0.033)	(0.080)
	[0.068]	[0.000]	[0.051]	[0.000]	[0.046]	[0.000]	[0.067]	[0.000]	[0.040]	[0.000]
Establishment-related controls										
Price distance	0.161	0.078	0.159	0.076	0.155	0.067	0.160	0.085	0.155	0.075
	(0.017)	(0.060)	(0.017)	(0.060)	(0.017)	(0.060)	(0.017)	(0.060)	(0.017)	(0.061)
	[0.000]	[0.197]	[0.000]	[0.206]	[0.000]	[0.269]	[0.000]	[0.158]	[0.000]	[0.215]
Size distance	0.000	−0.000	0.000	−0.000	0.000	−0.000	0.000	−0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	[0.896]	[0.737]	[0.747]	[0.760]	[0.821]	[0.762]	[0.882]	[0.656]	[0.746]	[0.686]
Size of a new hotel	0.003	−0.256	−0.069	−0.309	0.007	−0.247	0.003	−0.262	−0.046	−0.284
	(0.042)	(0.130)	(0.051)	(0.172)	(0.042)	(0.130)	(0.042)	(0.130)	(0.051)	(0.176)
	[0.940]	[0.049]	[0.175]	[0.073]	[0.864]	[0.057]	[0.935]	[0.043]	[0.376]	[0.107]

TABLE 4 (Continued)

Base group: Different-brand sister	Model 1		Model 2		Model 3		Model 4		Model 5	
	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*	Rival *b/SE/p*	Same-brand sister *b/SE/p*
Dummy for quality of a new hotel	0.021	0.417	0.030	0.423	−0.156	0.033	0.021	0.413	−0.124	0.017
	(0.069)	(0.301)	(0.069)	(0.302)	(0.086)	(0.379)	(0.069)	(0.302)	(0.089)	(0.386)
	[0.766]	[0.166]	[0.666]	[0.161]	[0.072]	[0.930]	[0.765]	[0.172]	[0.163]	[0.964]
Dummy for company operation	−0.076	0.052	−0.062	0.064	−0.059	0.083	−0.102	0.478	−0.009	0.626
	(0.117)	(0.467)	(0.117)	(0.468)	(0.117)	(0.468)	(0.152)	(0.569)	(0.150)	(0.582)
	[0.514]	[0.911]	[0.599]	[0.892]	[0.618]	[0.859]	[0.501]	[0.401]	[0.954]	[0.281]
Constant	1.607	−7.157	1.611	−7.156	1.664	−7.066	1.607	−7.132	1.657	−7.037
	(0.310)	(1.677)	(0.310)	(1.677)	(0.311)	(1.679)	(0.310)	(1.675)	(0.311)	(1.678)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	24,487		24,487		24,487		24,487		24,487	
Log Likelihood	−6,699.121		−6,695.430		−6,692.878		−6,698.133		−6,690.023	
Chi square	1,217.770		1,225.151		1,230.255		1,219.746		1,235.965	

*SE*s in parentheses; *p*-values in brackets.

TABLE 5 Results of multinomial logit regression with different-market-segment sister unit as a base group

	Model 6	
Base group: Different-market-segment sister	**Rival** *b/SE/p*	**Same-market-segment sister** *b/SE/p*
Geographic distance (Hypothesis 3b)	0.013	0.029
	(0.007)	(0.010)
	[0.088]	[0.005]
Economy/firm-related controls		
Year dummy	Included	Included
Firm dummy	Included	Included
Market-related controls		
City dummy	Included	Included
Airport	−0.126	−0.205
	(0.147)	(0.267)
	[0.393]	[0.443]
Interstate	0.047	0.181
	(0.199)	(0.324)
	[0.814]	[0.577]
Resort	0.059	0.069
	(0.326)	(0.601)
	[0.855]	[0.908]
Small metro/town	0.408	0.079
	(0.401)	(0.546)
	[0.309]	[0.886]
Suburban	−0.084	−0.003
	(0.130)	(0.240)
	[0.515]	[0.989]
Agglomeration-related controls		
Number of luxury hotels	0.045	−0.062
	(0.034)	(0.059)
	[0.189]	[0.290]
Number of upper upscale hotels	0.016	0.060
	(0.018)	(0.030)
	[0.365]	[0.045]
Number of upscale hotels	−0.031	−0.039
	(0.011)	(0.019)
	[0.006]	[0.039]
Number of upper midscale hotels	−0.012	0.006

TABLE 5 (Continued)

	Model 6	
Base group: Different-market-segment sister	**Rival** *b/SE/p*	**Same-market-segment sister** *b/SE/p*
	(0.010)	(0.017)
	[0.224]	[0.726]
Number of midscale hotels	−0.002	0.011
	(0.012)	(0.019)
	[0.856]	[0.545]
Number of economy hotels	0.007	−0.004
	(0.004)	(0.006)
	[0.067]	[0.549]
Number of same brand hotels	0.079	0.297
	(0.040)	(0.055)
	[0.048]	[0.000]
Establishment-related controls		
Price distance	0.114	−0.106
	(0.020)	(0.033)
	[0.000]	[0.001]
Size distance	−0.000	−0.001
	(0.000)	(0.000)
	[0.447]	[0.001]
Size of a new hotel	−0.121	−0.308
	(0.059)	(0.079)
	[0.042]	[0.000]
Dummy for quality of a new hotel	0.083	0.262
	(0.082)	(0.137)
	[0.310]	[0.057]
Dummy for company operation	−0.083	0.027
	(0.134)	(0.239)
	[0.537]	[0.911]
Constant	2.450	0.278
	(0.372)	(0.613)
	[0.000]	[0.650]
Observations	24,487	
Log Likelihood	−7,447.878	
Chi-square	1,100.998	

*SE*s in parentheses; *p*-values in brackets.

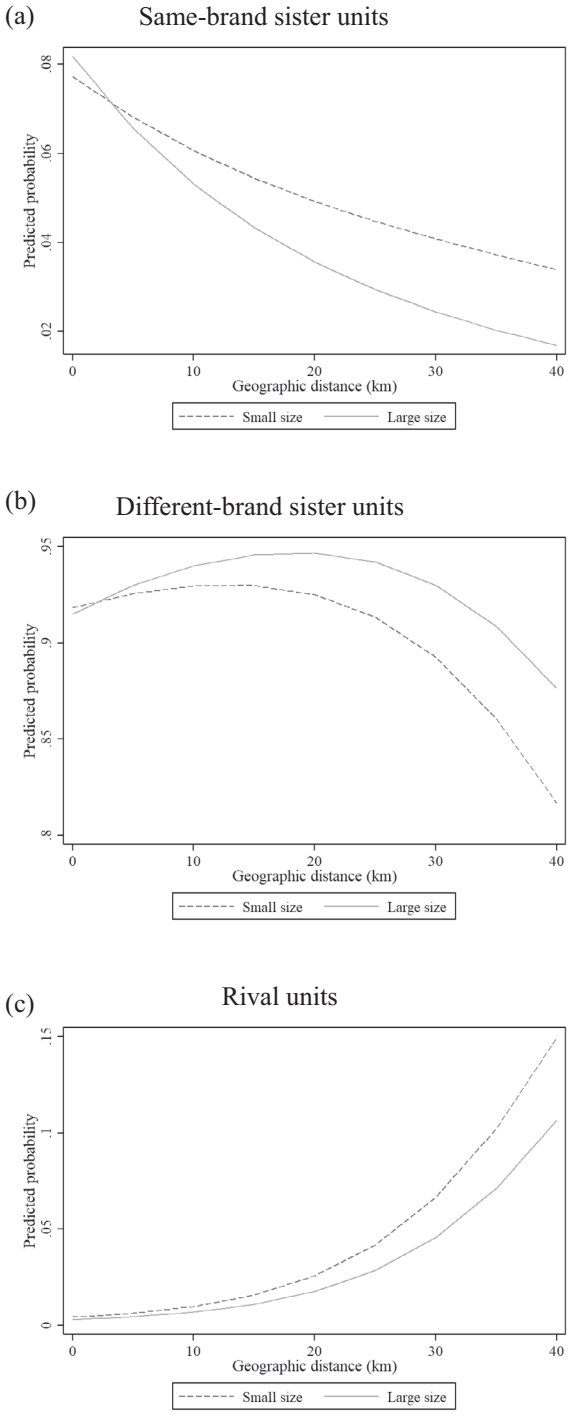

FIGURE 2 Moderating effects of a new unit's size. (a) Same-brand sister units, (b) different-brand sister units, (c) rival units

increases. Although we did not categorize product segments of new hotel units, these varying agglomeration effects in different product segments are consistent with those reported by Kalnins and Chung (2004). Second, we find that price distance has a positive effect, while size distance has no effect on whether incumbents are sister units. Similar to results in Baum and Haveman (1997),

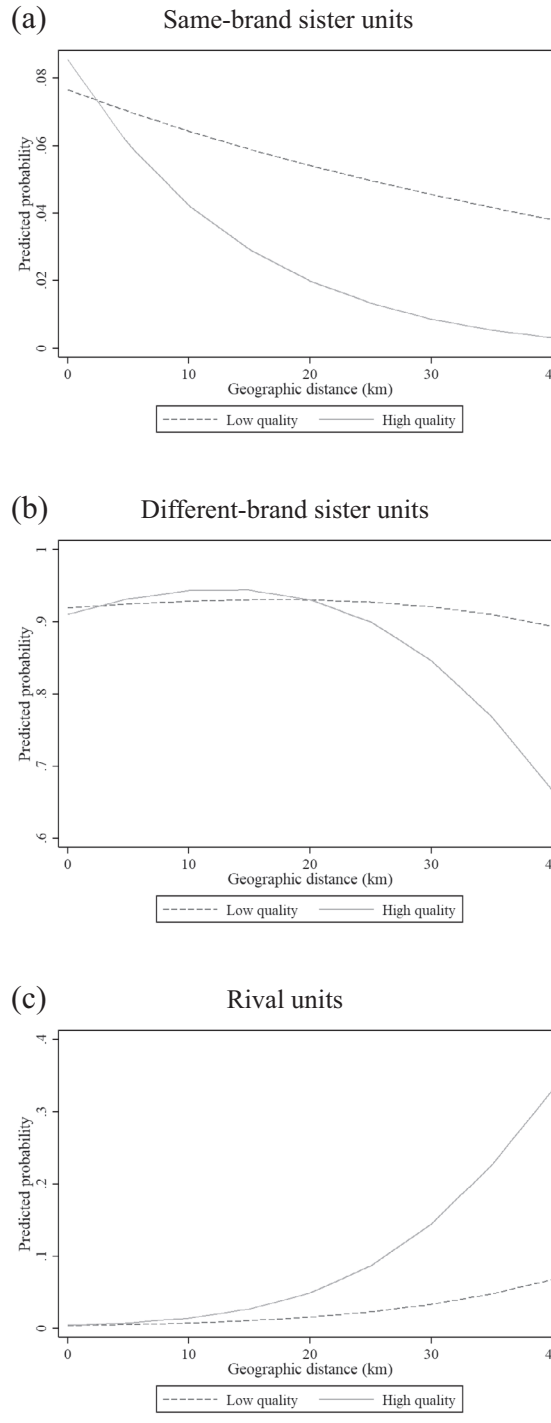

FIGURE 3 Moderating effects of a new unit's quality. (a) Same-brand sister units, (b) different-brand sister units, (c) rival units

our findings imply that when hotel firms make choices about the two product dimensions (price and size) of new units, they try to differentiate such new units by one dimension (price in our analyses) but not by the other (size).

4.3 | Robustness checks

We checked for the robustness of our results with several tests. First, we used alternative average distances from new units to incumbents as the level of analysis. Although the dyadic distance allows us to clearly categorize incumbents into rivals and sister units, this approach would increase the number of observations per new unit, and each observation would have the same independent and control variables, consequently lowering the *SE*s of the estimates of interest. To resolve this problem, we ran a robustness test by using the average distance from a new unit to the different types of incumbents and included new unit fixed effects. In addition, using new hotel unit fixed effects allows us to exclude the threat from nonindependence problems between observations per new hotel establishment. The results of this robustness test are consistent with those reported here.

Second, we also used alternative range-based samples, such as incumbents within 5 and 10 km, for a robustness check. Range-based samples limit the maximum distances from new hotels to 5 and 10 km, so it can also minimize the threat from outliers. We observe that the results are still consistent with those reported above.

Third, we used a Heckman two-stage approach to check for potential sample selection concerns (Heckman, 1979; Wooldridge, 2006). Unlike other endogeneity sources (e.g., omitted variables), sample selection can create endogeneity bias when the samples are selected by the effects of independent variables (Certo, Busenbark, Woo, & Semadeni, 2016). In our study, we use newly established hotel units as our sample, and it is possible that a hotel firm can decide not to establish new hotels if properties with close distances to sister units or rivals in a given area are not available. Put differently, the sample selection process might be influenced by geographic distance. This process can create a sample selection bias by increasing the probability of observing more new hotel establishments close to sister units or rivals. Hence, the geographic distance variable might be endogenous in our models. To address this concern, we ran Heckman two-stage probit models (Wooldridge, 2010), using the average distances from new units to incumbents. The first stage models whether a firm establishes a new unit in the geographic market. We compute the inverse Mills ratio from the first stage and include it in the second-stage model (our analysis of interest). We use two exclusion restrictions (instruments)—the number of hotel unit failures in the same geographic market and the number of hotel units of the parent firm in that market. Those market-related variables may influence whether multiunit firms establish new units in given geographic markets, but are unrelated to whether the units established are sister or rival ones. The results are fully consistent with those in the main analysis. We thus conclude that sample selection bias is not a serious threat to our analyses.

5 | DISCUSSION AND CONCLUSION

5.1 | Contributions

Our study makes two contributions to the agglomeration literature. First, we incorporate a corporate-level lens into agglomeration research and point to unique local corporate-level resource sharing opportunities that we believe are mostly captured by colocated sister units, and for this reason can be used to predict agglomeration between business units of same-parent firms. Prior agglomeration studies based on a competitive-level view have implicitly assumed that colocated incumbents, even sister units, within agglomerated areas are all rivals. However, the corporate-level view proposed here allows us to consider multi-unit firms—a common but often overlooked type of organization competing within and across multiple geographic locations—as key components of agglomeration. The corporate-level strategy literature, focused on topics such as multiunit firms, diversification, mergers,

and acquisitions, suggests that sister units are not just rivals but also collaborators who coordinate tasks and resources to achieve common goals. Hence, our study calls for a distinction between *interfirm* and *intrafirm* agglomeration effects, which, respectively, refer to colocation by rival and sister units of multi-unit firms.

We are not the first to consider corporate-level mechanisms as drivers of multiunit firm operations. In fact, Alcácer and Zhao (2012) and Alcácer, Dezső, and Zhao (2015) demonstrated that firms with multiple units can better source know how and transfer it *across geographic markets*, thereby garnering local advantages vis-à-vis local rivals. The success of Ford Motor Company in Brazil's automotive market, starting in the late 1950s, when it outcompeted local brands based on core competencies (i.e., technologies, marketing skills, and design quality) it had honed in the U.S. home market (Addis, 2010), offers a potent illustration of this argument. However, we believe ours is the first study to bring a corporate-level view to the study of local agglomeration research, that is, colocation effects *within the same geographic markets*, differentiating interfirm from intrafirm agglomeration effects. In particular, we argue that geographic colocation between sister units (i.e., intrafirm agglomeration) relies on an *internal resource sharing* mechanism that sister units partake in to develop location-specific knowledge and operational resources to improve efficiencies with colocated sister units, while geographic colocation between rivals (i.e., interfirm agglomeration) relies on the *spillover* mechanism by which rival units *externally* benefit from knowledge and resource externalities made available by all firms. In addition, whereas a competitive-level view considers the spillovers between rivals to be undesirable (especially to the contributor firm) but unavoidable, a corporate-level view proposes that the sharing between sisters is not only desirable but also needs to be promoted. We believe that these important differences extend our understanding of the theoretical motivations driving the geographic colocation phenomenon from a competitive-level view to a more complete view that also includes corporate-level drivers, insofar as the spillover mechanism between rivals and the sharing mechanism between sister units differ to the point that it affects location distance choices for new establishments of multi-unit firms vis-à-vis rival and sister incumbent units.

Our study also elaborates on the previous findings of geographic distance decisions—findings that have relied heavily on the competitive-level view. Prior agglomeration studies have concluded that firms locate their new, externality-contributor units (in contrast to their externality-beneficiary units) farther from incumbents. They do not want to strengthen incumbents, as rivals, by spilling over knowledge and resources from the contributor units into rivals. In contrast, from a corporate-level view, our study finds that firms seek to locate their new contributor units closer to incumbent sister units than to rivals. By doing so, incumbent sister units can benefit from internal sharing of knowledge and resources from contributor units but also prevent spillovers to rivals at the same time.

Our study also provides a complementary view on the internal knowledge sharing literature. Prior studies have mostly focused on internal knowledge sharing *across* markets, so the multiunit firms should build the internal informational link to spread best practices between sister units across different geographic markets. Consequently, this sharing mechanism tends to result in standardized or consistent operating practices across such markets. On the other hand, our study explores internal sharing between sister units *within* the same market. The difference is that such internal sharing mechanism helps sister units respond to local market idiosyncrasies, and cobuild (local) uniqueness. Local markets are relatively heterogeneous in terms of consumer preferences, demand seasonality, local competition, and input procurement from suppliers. Then, geographic proximity is likely to facilitate frequent interaction between sister units and allow them to share distinct know how, not found in other geographies, and less mobile operating resources (e.g., physical assets or local

employees). Therefore, our corporate-level view on the *within-market* sharing mechanism complements the traditional *across-market* one.

While our study on a corporate-level view receives strong empirical support from data analyses in the hotel industry, which is a popular research setting for agglomeration studies (e.g., Canina et al., 2005; Kalnins, 2016; McCann & Vroom, 2010), prior agglomeration studies also highlight that scholars should not generalize theories across different types of agglomeration (McCann & Folta, 2008). Particularly, agglomeration research has distinguished between demand-side agglomeration in the service and retail industries (e.g., hotel industry) and supply-side agglomeration (industrial clusters) in manufacturing and technology-intense industries (e.g., biopharmaceutical industry). Thus, knowledge spillover (e.g., key manufacturing and technology-based know how) is considered a main driver of the location decisions in supply-side agglomeration settings (Alcácer & Chung, 2007), while consumer-related resource spillover (e.g., marketing and employees) has an equivalent clout in demand-side agglomeration settings (Kalnins & Chung, 2004).

Based on such distinctions, we accordingly clarify that our study and empirical evidence are based on demand-side agglomeration settings (i.e., the hotel industry). This fact implies that although our corporate-level view logic receives empirical support, the impact of specific internal sharing mechanisms between sisters can vary between the two types of agglomeration. For example, internal technology-based knowledge sharing may be more dominant for sister units in supply-side agglomeration settings (e.g., manufacturing and technology-based industries), whereas internal operating resource sharing may be more so in demand-side agglomeration settings (e.g., the retail and service industries).

We suggest that our study opens new avenues for future research to explore these agglomeration types as a boundary condition and to identify other unique sharing mechanisms between sister units, derived from a corporate-level view, in supply-side agglomeration settings.

5.2 | Managerial implications

Our findings also provide important implications for managerial practice. In many retail and service industries, such as health care delivery, dry cleaners, fast food restaurants and hotels, firms usually face significant challenges when they establish new units close to sister units. One of them is direct competition with sisters particularly when they belong to same chain brands. For this reason, it is well known that some firms explicitly or implicitly set exclusive territories for sister units (Kalnins, 2004b). However, firms want to establish more sister units when they identify growth opportunities in certain geographic markets, consequently placing them closer to each other and intensifying competition between them. On the other hand, if they do not capture these opportunities, it gives rival firms an opportunity to do so. Our study offers a view on how to solve at least part this dilemma, using multiple chain brands and targeting multiple market segments in the same geographic markets. Our findings show that multiunit firms in the hotel industry tend to locate their new units close to incumbent sister units—using either different brands or different market segments. By establishing different-brand or different-market-segment sister units close to each other, firms may capture growth opportunities before rivals do, but also minimize competition threats from territorial encroachments between sister units.

6 | CONCLUSION

In conclusion, we develop theory and hypotheses to illustrate the geographic distance decisions from a corporate strategy perspective and compare distances from new units to rivals and to various sister units. A corporate-level view allows us to understand different theoretical motivations (e.g., operational efficiencies, coordination of competitive activities from knowledge sharing, and brand-specific competition) driving the geographic colocation phenomenon and to find different results that a competitive-level view of agglomeration cannot predict. Our study is among the first to explicitly investigate how multiunit firms make geographic distance decisions from a corporate-level perspective, as they choose to establish new units in geographic markets already shared by incumbent rival and sister units.

ACKNOWLEDGEMENTS

We would like to thank Sea-Jin Chang and three anonymous reviewers for their helpful comments and valuable suggestions.

REFERENCES

Addis, C. (2010). *Taking the wheel: Auto parts firms and the political economy of industrialization in Brazil*. University Park, PA: The Pennsylvania State University Press.

Alcácer, J., & Chung, W. (2007). Location strategies and knowledge spillovers. *Management Science*, *53*(5), 760–776. https://doi.org/10.1287/mnsc.1060.0637

Alcácer, J., Dezső, C., & Zhao, M. (2015). Location choices under strategic interactions. *Strategic Management Journal*, *36*(2), 197–215. https://doi.org/10.1002/smj.2214

Alcácer, J., & Zhao, M. (2012). Local R&D strategies and multilocation firms: The role of internal linkages. *Management Science*, *58*(4), 734–753. https://doi.org/10.1287/mnsc.1110.1451

Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, *28*(1), 31–56. https://doi.org/10.1191/0309132504ph469oa

Baum, J. A. C., & Haveman, H. A. (1997). Love thy neighbor? Differentiation and agglomeration in the manhattan hotel industry, 1898-1990. *Administrative Science Quarterly*, *42*(2), 304–338. https://doi.org/10.2307/2393922

Baum, J. A. C., & Mezias, S. J. (1992). Localized competition and organizational failure in the manhattan hotel industry, 1898-1990. *Administrative Science Quarterly*, *37*(4), 580–604. https://doi.org/10.2307/2393473

Blake, A., & Sinclair, M. T. (2003). Tourism crisis management: US response to september 11. *Annals of Tourism Research*, *30*(4), 813–832. https://doi.org/10.1016/S0160-7383(03)00056-2

Canina, L., Enz, C. A., & Harrison, J. S. (2005). Agglomeration effects and strategic orientations: Evidence from the US lodging industry. *Academy of Management Journal*, *48*(4), 565–581.

Certo, S. T., Busenbark, J. R., Woo, H.-S., & Semadeni, M. (2016). Sample selection bias and heckman models in strategic management research. *Strategic Management Journal*, *37*(13), 2639–2657. https://doi.org/10.1002/smj.2475

Certo, S. T., & Semadeni, M. (2006). Strategy research and panel data: Evidence and implications. *Journal of Management*, *32*(3), 449–471. https://doi.org/10.1177/0149206305283320

Chatterjee, S. (1986). Types of synergy and economic value: The impact of acquisitions on merging and rival firms. *Strategic Management Journal*, *7*(2), 119–139. https://doi.org/10.1002/smj.4250070203

Chuang, Y.-T., & Baum, J. A. C. (2003). It's all in the name: Failure-induced learning by multiunit chains. *Administrative Science Quarterly*, *48*(1), 33–59. https://doi.org/10.2307/3556618

Desiraju, R. (2004). Costs and benefits of inducing intrabrand competition: The role of limited liability. *Marketing Science*, *23*(3), 429–450. https://doi.org/10.1287/mksc.1040.0049

Duranton, G., & Overman, H. G. (2005). Testing for localization using micro-geographic data. *The Review of Economic Studies*, *72*(4), 1077–1106. https://doi.org/10.1111/0034-6527.00362

Dutta, S., Bergen, M., & John, G. (1994). The governance of exclusive territories when dealers can bootleg. *Marketing Science*, *13*(1), 83–99. https://doi.org/10.1287/mksc.13.1.83

Freedman, M. L., & Kosová, R. (2012). Agglomeration, product heterogeneity and firm entry. *Journal of Economic Geography*, *12*(3), 601–626. https://doi.org/10.1093/jeg/lbr022

Garvin, D. A., & Levesque, L. C. (2008). The multiunit enterprise. *Harvard Business Review*, *86*(6), 106–117.

Gibbons, J. D., & Chakraborti, S. (2011). *Nonparametic statistical inference* (5th ed.). Boca Raton, FL: Chapman & Hall/CRC.

Golden, B. R., & Ma, H. (2003). Mutual forbearance: The role of intrafirm integration and rewards. *Academy of Management Review*, *28*(3), 479–493. https://doi.org/10.2307/30040735

Grapentine, T. (1997). Managing multicollinearity. *Marketing Research*, *9*(3), 10–21.

Greene, W. H. (2003). *Econometric analysis* (5th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Greve, H. R., & Baum, J. A. C. (2001). Introduction: A multiunit, multimarket world. In J. A. C. Baum & H. R. Greve (Eds.), *Multiunit organization and multimarket strategy* (Vol. 18, pp. 1–28). London, England: Elsevier Science Ltd..

Hallin, C. A., & Marnburg, E. (2008). Knowledge management in the hospitality industry: A review of empirical research. *Tourism Management*, *29*(2), 366–381. https://doi.org/10.1016/j.tourman.2007.02.019

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153–161. https://doi.org/10.2307/1912352

Helfat, C. E., & Eisenhardt, K. M. (2004). Inter-temporal economies of scope, organizational modularity, and the dynamics of diversification. *Strategic Management Journal*, *25*(13), 1217–1232. https://doi.org/10.1002/smj.427

Hill, C. W. L., Hitt, M. A., & Hoskisson, R. E. (1992). Cooperative versus competitive structures in related and unrelated diversified firms. *Organization Science*, *3*(4), 501–521. https://doi.org/10.1287/orsc.3.4.501

Hill, C. W. L., & Hoskisson, R. E. (1987). Strategy and structure in the multiproduct firm. *Academy of Management Review*, *12*(2), 331–341. https://doi.org/10.5465/amr.1987.4307949

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of Management Journal*, *40*(4), 767–798. https://doi.org/10.5465/256948

Hoetker, G. (2007). The use of logit and probit models in strategic management research: Critical issues. *Strategic Management Journal*, *28*(4), 331–343.

Ingram, P., & Roberts, P. W. (2000). Friendships among competitors in the sydney hotel industry. *American Journal of Sociology*, *106*(2), 387–423. https://doi.org/10.1086/316965

Joshi, K. K., & Kono, T. (2009). Optimization of floor area ratio regulation in a growing city. *Regional Science and Urban Economics*, *39*(4), 502–511. https://doi.org/10.1016/j.regsciurbeco.2009.02.001

Kalnins, A. (2004a). Divisional multimarket contact within and between multiunit organizations. *Academy of Management Journal*, *47*(1), 117–128. https://doi.org/10.2307/20159564

Kalnins, A. (2004b). An empirical analysis of territorial encroachment within franchised and company-owned branded chains. *Marketing Science*, *23*(4), 476–489. https://doi.org/10.1287/mksc.1040.0082

Kalnins, A. (2006). Markets: The US lodging industry. *Journal of Economic Perspectives*, *20*(4), 203–218.

Kalnins, A. (2016). Beyond manhattan: Localized competition and organizational failure in urban hotel markets throughout the United States, 2000–2014. *Strategic Management Journal*, *37*(11), 2235–2253. https://doi.org/10.1002/smj.2578

Kalnins, A. (2017). Pricing variation within dual-distribution chains: The different implications of externalities and signaling for high- and low-quality brands. *Management Science*, *63*(1), 139–152. https://doi.org/10.1287/mnsc.2015.2334

Kalnins, A., & Chung, W. (2004). Resource-seeking agglomeration: A study of market entry in the lodging industry. *Strategic Management Journal*, *25*(7), 689–699. https://doi.org/10.1002/smj.403

Kalnins, A., & Lafontaine, F. (2004). Multi-unit ownership in franchising: Evidence from the fast-food industry in texas. *RAND Journal of Economics*, *35*(4), 747–761.

Kaufmann, P. J., & Dant, R. P. (1996). Multi-unit franchising: Growth and management issues. *Journal of Business Venturing*, *11*(5), 343–358. https://doi.org/10.1016/0883-9026(96)00057-2

Kim, K., & Lim, H. (2014). Country-specific experience, host country government corruption, and outward foreign direct investment by korean textile firms. *Journal of Applied Business Research*, *30*(4), 1123.

Kothari, T., Hu, C., & Roehl, W. S. (2005). E-procurement: An emerging tool for the hotel supply chain management. *International Journal of Hospitality Management*, *24*(3), 369–389. https://doi.org/10.1016/j.ijhm.2004.09.004

Long, J. S., & Freese, J. (2001). *Regression models for categorical dependent variables using stata*. College Station, TX: Stata Press.

Mandelbaum, R. (2016, November 21). An examination of hotel labor costs. *Hotel Management*. Retrieved from https://www.hotelmanagement.net/operate/examination-hotel-labor-costs

Marshall, A. (2013). *Principles of economics* (8th ed.). Hampshire, England: Palgrave Macmillan.

McCann, B. T., & Folta, T. B. (2008). Location matters: Where we have been and where we might go in agglomeration research. *Journal of Management*, *34*(3), 532–565. https://doi.org/10.1177/0149206308316057

McCann, B. T., & Vroom, G. (2010). Pricing response to entry and agglomeration effects. *Strategic Management Journal*, *31*(3), 284–305. https://doi.org/10.1002/Smj.805

Metz, D. (2012). Demographic determinants of daily travel demand. *Transport Policy*, *21*, 20–25. https://doi.org/10.1016/j.tranpol.2012.01.007

Morgan, N. A., & Rego, L. L. (2009). Brand portfolio strategy and firm performance. *Journal of Marketing*, *73*(1), 59–74. https://doi.org/10.1509/jmkg.73.1.59

Peiró-Signes, A., Segarra-Oña, M.-d.-V., Miret-Pastor, L., & Verma, R. (2015). The effect of tourism clusters on US hotel performance. *Cornell Hospitality Quarterly*, *56*(2), 155–167. https://doi.org/10.1177/1938965514557354

Perryman, A. A., & Combs, J. G. (2012). Who should own it? An agency-based explanation for multi-outlet ownership and co-location in plural form franchising. *Strategic Management Journal*, *33*(4), 368–386. https://doi.org/10.1002/smj.1947

Pinch, S., Henry, N., Jenkins, M., & Tallman, S. (2003). From 'industrial districts' to 'knowledge clusters': A model of knowledge dissemination and competitive advantage in industrial agglomerations. *Journal of Economic Geography*, *3*(4), 373–388. https://doi.org/10.1093/jeg/lbg019

Polanyi, M. (1966). The logic of tacit inference. *Philosophy*, *41*(155), 1–18. https://doi.org/10.1017/s0031819100066110

Porter, M. E. (1998). Cluster and the new economics of competition. *Harvard Business Review*, *November-December*, 77–90.

Powell, W. W., & DiMaggio, P. J. (1991). *The new institutionalism in organizational analysis*. Chicago, IL: University of Chicago Press.

Ramos, M. A., & Shaver, J. M. (2013). When individual locations affect the choice of multi-location acquisition targets. *Strategic Organization*, *11*(2), 125–155. https://doi.org/10.1177/1476127012466649

Rawley, E., & Seamans, R. (2015). *Intra-firm spillovers? The stock and flow effects of collocation*. (Columbia Business School Research Paper No. 15-2). https://ssrn.com/abstract=2544518

Sakhartov, A. V. (2017). Economies of scope, resource relatedness, and the dynamics of corporate diversification. *Strategic Management Journal*, *38*(11), 2168–2188. https://doi.org/10.1002/smj.2654

Schmidt, T. (1994). An analysis of intrabrand competition in the franchise industry. *Review of Industrial Organization*, *9*(3), 293–310. https://doi.org/10.1007/bf01025726

Shaver, J. M., & Flyer, F. (2000). Agglomeration economies, firm heterogeneity, and foreign direct investment in the United States. *Strategic Management Journal*, *21*(12), 1175–1194.

Slinker, B. K., & Glantz, S. A. (1985). Multiple regression for physiological data analysis: The problem of multicollinearity. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology*, *249*(1), R1–R12.

Smirnov, N. V. (1939). Estimate of deviation between empirical distribution functions in two independent samples. *Bulletin Moscow University*, *2*(2), 3–16.

Taegoo, T. K., Gyehee, L., Soyon, P., & Seunggil, L. (2013). Social capital, knowledge sharing and organizational performance: What structural relationship do they have in hotels? *International Journal of Contemporary Hospitality Management*, *25*(5), 683–704. https://doi.org/10.1108/IJCHM-Jan-2012-0010

Tomita, A., Vandormael, A. M., Cuadros, D., Slotow, R., Tanser, F., & Burns, J. K. (2017). Proximity to healthcare clinic and depression risk in South Africa: Geospatial evidence from a nationally representative longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, *52*(8), 1023–1030. https://doi.org/10.1007/s00127-017-1369-x

van der Panne, G., & van Beers, C. (2006). On the marshall-jacobs controversy: It takes two to tango. *Industrial and Corporate Change*, *15*(5), 877–890.

Wang, L., Madhok, A., & Li, S. X. (2014). Agglomeration and clustering over the industry life cycle: Toward a dynamic model of geographic concentration. *Strategic Management Journal*, *35*(7), 995–1012. https://doi.org/10.1002/smj.2141

Wooldridge, J. M. (2006). *Introductory econometrics: A modern approach* (3rd ed.). Mason, OH: Thomson South-Western.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). Cambridge, MA: MIT Press.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

How to cite this article: Woo H-S, Cannella Jr A, Mesquita L. How intra- and interfirm agglomeration affect new-unit geographic distance decisions of multiunit firms. *Strat Mgmt J*. 2019;40:1757–1790. https://doi.org/10.1002/smj.3070