

AN AGENCY PERSPECTIVE ON HOTEL COMPETITIVE SET IDENTIFICATION

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## ABSTRACT

Competitive set identification is the first step in a hotel's competitive analysis, which is critical for strategy formulation and performance evaluation. Numerous studies have focused on the attributes and methods used for competitive set identification in the hotel industry. These studies provide managerial implications for the problem of how to identify competitive sets. Nonetheless, very few studies explore the variance of competitive sets across different types of hotel properties. Moreover, agency applications in the hospitality industry are surprisingly limited. This study aims to research the competitive set variance among hotels with different ownership structures and to explain the variance from the perspective of agency. Using a dataset from the U.S. hotel industry, four regression models test the four hypotheses about competitive sets identification. The results reflect four main findings: independent properties will have lower competitive set match-back than chain properties; corporate properties will have lower competitive set match-back than franchised properties; corporate properties will manipulate their competitive set to improve relative performance more than franchised properties; and corporate owned properties will manipulate their competitive set to improve relative performance more than corporate properties with management contracts. These findings provide important managerial implications for agency relationships in the hotel industry. Future research suggestions are also presented at the end of the article.

## BIOGRAPHICAL SKETCH

Jing Li was born on May 8<sup>th</sup>, 1989 in Qingdao, China. She graduated from her high school in 2008 and entered Qingdao University. During the four-year undergraduate program, she earned the scholarship for three consecutive years. In June 2012, she was conferred the Bachelor of Administration degree.

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## **1. Introduction**

Competitor identification is the first step for companies to generate strategy, recognize market position, and evaluate relative performance (Kim and Canina, 2010). Without this step, barely anything can be done for the competitive analysis that is critical to a company's development.

For the hotel industry, similar to other service industries, competitive analysis is of critical importance in intensely competitive environments. A competitive set is a group of competitors identified by a company, based on resource similarity and market commonality (Chen, 1996). In the hotel industry, indexes calculated based on a competitive set are the main indicators for evaluating properties' performance and are related to the reward system. Thus, the design of competitive sets affects not only strategy formulation but also properties' interests.

Competitive set identification is a complicated problem influenced by many factors. It varies significantly across different property types. Numerous studies currently center on the attributes used for hotel competitive set identification (Baum and Haveman, 1997; Canina and Enz, 2006; Clark and Montgomery, 1999) or the consideration process (e.g., de Chernatony, Daniels, and Johnson 1993; Porac and Thomas 1990). Additional studies have approached the issue of competitor identification accuracy (Baum and Lant, 2003; Kim and Canina, 2011). Nonetheless, very limited research has discussed the variance in competitive set design that exists among



hotels and the reasons behind it. Furthermore, no study has explained the variance from the perspective of agency theory.

In general, there are two main categories of hotel properties: chain hotels and independent hotels. The former usually have complicated networking nationally or globally, while the latter are owned and operated independently. Through the process of brand expansion, hotel chains choose multiple forms to govern their agents. In addition to self-owned forms, franchising and management contracts are the two forms used most commonly.

Although all three types of properties use the brand of a hotel company, they behave quite differently in many aspects because of different agency relationships between the agent and the principal. Corporate outlets, including corporately owned and managed properties, have vertical relationships with the principal company. Under this structure, agency problems arise as a result of conflict goals. According to agency theory, information asymmetry between the agent and the principal can cause moral hazard problems. For their own self-interest, agents might make less effort in their actions than desired. A franchising contract eliminates the moral hazard problem by aligning interests with the principal. As residual claimants, franchisees have more incentive to make effort in performance in order to maximize profits. Accordingly, hotels with different governance structures behave variously in their operations. They frequently have diverse styles regarding the design of competitive sets.

To fill the academic gap, this research focuses mainly on an analysis of competitive set variance across different hotel governance structures by using data from fourteen large cities in the U.S. The variance is measured by an indicator called the “match-up rate,” which reflects the degree to which a property’s competitive set gains match-back from its competitors. According to the models designed, the study examines whether independent hotels tend to have competitive sets with lower match-back due to knowledge and recognition scarcity and whether corporate hotels have lower competitive set match-back than franchised hotels due to agency problems.

In addition, the study tests whether properties manipulate their competitive set to improve relative performance. Calculated based on the competitive set, relative performance plays an important role in hotel principal companies’ monitoring and evaluation of outlets. Hence, corporate outlets have an incentive to report better performance outcomes to the principal. It is possible that their selected competitive sets are biased to improve the relative performance, rather than reflecting real conditions. Nonetheless, situations may vary across different own-operation property structures. For those hotels under management agreements, bias can be eliminated or removed through the owner’s involvement. Franchised properties, in contrast, have more incentives to obtain more meaningful information about real conditions and, thus, have more objective competitive sets. This study employs four regression models to test the hypotheses and discusses the results in detail.

The study makes several contributions to enrich the current literature. First, the research explores the variance of hotel competitive set identification across different ownership structures. Second, this study advances the understanding of agency theory with the application to the hotel industry. Third, the study provides some insights in terms of hotel management contracts.

The remainder of the article is organized as follows. The second section provides a literature review on four topics: competitive set identification, agency theory, franchising, and hotel management contracts. In the third section, the combination of the four aspects of theory is used to develop four hypotheses concerning the relationship between hotel ownership structures and competitive set design. Next, the methodology designed for the research is described, and the data sample and all variables are introduced. Then, the four regression models employed and the results generated are presented, followed by a discussion of the results. The article ends with a summary of the conclusions, along with the limitations of this research and suggestions for future work.

## **2. Literature Review**

### **2.1 Competitive Set Identification**

Competitive analysis is a major component of marketing strategy generation (e.g., Aaker 1995; Czepiel 1992; Day 1990; Sudharshan 1995). The primary purpose of competitive analysis is to evaluate a company's position in a market and to try to keep ahead of competition through certain competitive advantages. In the whole process of such analysis, competitor identification is the first step before a firm can undertake other meaningful actions (Clark and Montgomery, 1999).

Similar to other service industries, the hotel industry relies significantly on competitive analysis to evaluate a property's performance and to generate specific competitive strategies. According to research, hotels usually identify six properties as their competitors, on average (Bergen and Peteraf, 2002). The selected competitors are called a "Competitive Set" and are used to evaluate the property's relative performance. Specifically, the Occupancy Index, the ADR Index, and the RevPAR Index are calculated based on the competitive set to directly identify the hotel's operational condition. Moreover, these indexes are usually treated as important indicators for evaluating a manager's performance.

Two approaches to competitor identification have been applied broadly across various industries. The first one is a supply-based approach that focuses mainly on the attributes of the

competing firm. According to this approach, competitors are identified based on the product or service provided, the strategy employed, the technology applied, and so on. For the hotel industry, these aspects might refer to rates, location, size, and proximity (Baum and Mezias 1992; Ingram and Inman 1996; Baum and Haveman 1997; Baum and Lant 2003).

The second approach is demand-based and focuses mainly on the attributes of the customer. Specifically, competitors are identified from customers' perspectives based on their purchasing behaviors (DeSarbo, Grewal, and Wind, 2006). The demand-based approach is more subjective compared to the supply-based approach. Under this approach, a competitive set is determined to a greater degree by a manager's perspective of the market. In addition, the research and analysis cost a hotel more than the supply-based approach. (Jin-young and Linda, 2010).

General process of competitive set identification can be divided into three stages. First, managers define the hotel's identity. Hotel's identity refers to a lot of factors that can reflect the property's characteristics. Basically, there are three main categories for these factors, including tangible factors, intangible factors and strategic factors. Tangible factors refer to the physical features of the property such as location, class and scale. These factors are relatively fixed and easy to recognize. Intangible factors are considered to be the brand image of the hotel. For instance, what is the style of the property and what kinds of guests does the property serve. Although intangible factors are not as recognizable as tangible factors, they are still not complicated to be identified. Strategic factors usually refer to mission and vision of hotels.

Nevertheless, not all properties have very clear mission and vision for development, especially for those properties with lower scale. It is much easier for chain hotels to recognize their missions and visions because of rich knowledge and experience. Independent hotels, however, are harder to identify clear missions and visions compared to chain hotels.

After defining the hotel's identity, the manager usually starts the phase of market screening for candidate competitors. In this stage, hotel managers are expected to be familiar with the information of regional properties. By thorough investigation on those properties and market condition, managers make a list of properties that have similar identities with their own. The second stage also requires managers' professional knowledge and experience. In addition, larger investment in market research will increase the accuracy and reliability of information gained, which is helpful to identify optimal competitors.

The last stage for competitive set identification is matching and selecting competitors. In this stage, managers make a final decision about which properties in the candidate list should be included into the competitive set. Ideally, managers are supposed to include properties that have the most similar identities with their own properties into the competitive set so that they can make more effective competitive analysis afterward. Nevertheless, managers not always choose to identify the most optimal competitive set. Relative performance of the property, indexes calculated based on the competitive set, are directly related to the incentive system in most hotel

companies, especially for those companies with hierarchical structures. Therefore, sometimes managers make the final decision which is in favor of the relative performance evaluation.

The literature review above suggests that many aspects influence the identification of a hotel's competitive set. First, a well-designed competitive set requires rich professional knowledge and industrial experience. These are helpful for selecting more appropriate methods and attributes. Second, to capture "real competitors," it is necessary to invest heavily in market research to obtain more accurate information about supply and demand situations. Third, decisions about competitive sets can be affected by objective environments. For example, the density and homogeneity of regional markets can actually impact complications in the consideration process.

## **2.2 Agency Theory**

Agency theory is based on the relationship between the principal and the agent. When one party (the principal) delegates work to another party (the agent), agency relationships exist (Jensen and Meckling, 1976). When cooperating parties have different goals and divisions of labor, agency problems occur (Kethleen, 1989). The objective of agency theory is to determine the most effective contract for governing agency relationships (Bergen, Dutta, and Walker, 1992).

The theory includes several assumptions. First, both the principal and the agent are assumed to be self-interested. From the perspective of economic relationships, such self-interest could be seen as pursuing maximum profits. Self-interested motivation is at the origin of agency problems.

Another important assumption is information asymmetry. It is assumed that the principal's knowledge about the agent's characteristics and behaviors is incomplete. The agent has very detailed information about its operations situation. The principal usually has no access to such information (Jensen and Meckling, 1976). Moreover, sometimes the information that agents obtain from the principal is inaccurate and biased. To better control and monitor the agent, the principle will dedicate part of its budget to researching the agent. In this case, information is assumed to be a commodity that can be purchased.

The third assumption is that realized outcomes are affected by environmental factors. These factors are uncertain, unpredictable, and could bring certain risks to the business.

Based on these assumptions, the two main conflicts between the principal and the agent are different goals and risk preferences. A moral hazard problem may arise when the principal and the agent have such conflicts. To achieve its own goal and maximize profits, the agent may not completely perform all the actions required by the principal because such actions are incompatible with the goal and are more costly. To avoid this situation and motivate the agent to perform desired behaviors, the principal usually invests in monitoring systems and collects



information about the agent's behavior. Moreover, the principal may control the agent by writing contracts that evaluate and reward the agent based on performance.

Moral hazards may negatively influence companies that have a large amount of intangible assets (Eisenhardt, 1985). For the hotel industry, intangible assets account for a large proportion of the company's total assets. Hence, the principals of hotels are highly concerned with monitoring systems.

Accompanying the growth of business, companies have multiple options for governance structures to expand their brands. Previous studies (Brown et al., 2000; Pak, 2002) indicate that agency theory provides relative insights into alternatives of governance structures. Alternatives range from independent structures (Larson, 1992) to hierarchical structures (Anderson, 1995; Walker and Weber, 1984). In the hotel industry, brand owners can choose their property structures between corporate operation and franchising (Michael, 1999). Under corporate structures, hotel companies can either choose to own and operate properties by their own or to separate the ownership by signing management contracts.

### **2.3 Franchising**

In recent decades, franchised hotels have experienced significant growth as a proportion of the hotel business as a whole. In the U.S., over 50% of the hotels are franchised. With a franchise agreement, the franchisee purchases the right to use a certain trademark by paying franchise and royalty fees to the franchisor. According to the U.S. Department of Commerce, this is the kind of

franchising in which the relationship between franchisor and franchisee "includes not only the product, service, and trademark, but the entire business format itself-a marketing strategy and plan, operating manuals and standards, quality control, and continuing two-way communication." In this form of franchise, the franchisee benefits from the reputation of the brand name, while the franchisor obtains capital and expands its business.

According to agency theory, a moral hazard problem may arise due to goal conflicts and information asymmetry. The agent has incentives to reduce desired actions under a company-ownership structure (Eisenhardt, 1985). Nonetheless, franchising provides an effective method for solving this problem. The principal makes the agent a residual claimant under the franchising mechanism. The franchisee gains its proceeds after paying certain fees. In other words, the franchisee's compensation is directly related to its performance. In addition, the capital risk is transferred from the franchisor to the franchisee. Therefore, as the owner-manager, the franchisee has greater motivation to perform effectively, compared to company-owned units (Shane, 1998).

Many studies provide theoretical support for using agency theory to explain franchising. Combs and Ketchen suggested that a company would be more likely to franchise its property if there is an increase in geographic dispersion. When the agent is distant from the principal, it becomes harder and more costly to monitor the agent. In this case, in terms of monitoring,

franchise units cost much less compared to company-owned outlets. A similar theory was also asserted by Brickely, Dark, and Weisbach in 1991 and by Lafontaine in 1992.

In addition to being explained by agency theory, franchising can also be explained by resource scarcity (Hsu, Jang, and Canter, 2010). Tons of studies suggest that franchising is an effective way for franchisors to gain necessary resources (Hunt, 1973; Hunt & Nevin, 1974; Norton, 1995; Oxenfeldt & Thompson, 1968). Minkler asserted that as the owner of a trademark, the core issue is to research local market conditions when enters a new market. Nonetheless, the process of collecting information about local markets, including suppliers, customers, and competition conditions, may cost a company a great deal, and the cost would grow with increased volatility and unfamiliarity of the local market.

Compared to the owners of trademarks, franchisees usually have superior local market knowledge because they are more familiar with the market and more experienced in local issues (Minkler, 1992; Norton, 1988; Shane, 1998). Hence, the costs of market research and analysis can be reduced to some degree (Minkler, 1992).

To summarize, franchising is a quite effective way for companies to expand their brands and create values. Currently, franchising is increasingly adopted as an expanding strategy in the hotel industry.

Despite the obvious advantages of franchising, previous studies also suggest problems that might arise for franchised properties. Some research indicates that franchising might have

negative impact on service quality. In 2000, Michael's study states that the percentage of franchised properties in hotel chains is negatively related to the brand's quality. Similarly, a study shows hotel chains with larger percentages of franchised properties tend to have worse performance in terms of occupancy and daily rate (O'Neil, Mattila, 2004). Another study reveals that the high degree of franchising has negative effect on hotel's guest satisfaction (O'Neil, Mattila and Xiao 2006). Mathewson and Winter argue that opportunistic behaviors might occur in franchising structure due to franchisees' economic incentive. Franchised properties "free ride" the reputation and brand value of the hotel company with reduced service quality. The freeriding problem of franchisees can cause decreases in overall quality of the whole chain system (Brickley and Dark, 1987).

## **2.4 Hotel Management Contracts**

A hotel management contract is a distinct form that a hotel brand uses to expand by separating ownership and operation (Eyster, 1977). Under a management contract, the owner bears all the economic risks, while the operator is responsible for operating the property. The owner and the operator have an inherent conflict of interest. The owner's focus is on the financial performance of the property in order to obtain a maximized return on the investment. The priority of the operator, however, is to promote the company's reputation and to increase the brand value (Schlup, 2004).

Early management contracts were quite simple and straightforward. Moreover, the provisions were relatively favorable to operators by limiting the contract terms and termination clauses. Since the 1980s, the content of management contracts has become more sophisticated, with the increase of both parties' experience (Deroos, 2010). The performance termination clause is a typical example.

Owners want to have the power to terminate a contract when a property shows poor performance. Performance termination provisions give owners the right to terminate contracts under certain criteria and situations. The most important element of these provisions is the definition of performance targets. The Gross Operational Profit (GOP) and the RevPAR Index are two indicators used most commonly in current management contracts. The RevPAR Index is calculated based on the competitive set on which both parties agree. If the property underperforms on the agreed standards for consecutive years (usually two or three years), the owner has the right to terminate the contract.

To make up for a scarcity of industrial knowledge, owners can hire third-party consulting companies or asset managers for assistance. Currently, asset managers are increasingly involved in the daily operations and management of properties and provide owners with useful information about asset values (Singh, Kline, Ma, and Beals, 2012). The involvement of consulting companies and asset managers give owners more bargaining power in negotiations with operators and can effectively avoid operator-bias behaviors.

### **3. Theory and Hypotheses**

Company identity is the first step in competitor identification. During this stage, managers define the hotel's brand image and target markets clearly for further market analysis. In general, chain hotels usually reflect clearer corporate recognition because of a longer establishment history and standardized service. Independent hotels, in contrast, are less likely to have a distinct brand image and development strategy. Without clear and distinct corporate recognition, it is harder for managers of independent hotels to identify their competitors because they cannot identify which properties share similar characteristics with their hotels.

Disadvantages for independent hotels also include capital and resources. Competitive analysis requires a large investment in market research. The global or national networks of hotel chains allow them to benefit from shared information and knowledge. Local operators are secured to access resources provided by other operators, through the networking of hotel chains (Harrigan, 1984). Independent hotels also have incentives to invest in market research, but the cost would be higher than that for hotel chains (Dahlstrom, Haugland, Nygaard, and Rokkan, 2009). In addition, stronger capital support allows chain hotels to distribute more of their budgets on market research than independent hotels can afford to do. Human resources are another important factor that can influence the quality of market research. Compared to chain hotels, independent hotels are less likely to recruit professional and experienced employees based on reputation and salary factors. In general, independent hotels are weaker in capital and

intelligence in terms of competitive analysis. Therefore, independent hotels are more likely to have inappropriate competitive sets.

With higher brand recognition, hotel chains are usually treated as the industrial standard. They are more likely to be recognized as competitors for market analysis and performance evaluation. Thus, chain hotels have higher probability to appear in competitive sets of all types of properties, including independent hotels. However, independent hotels are less likely to be identified as competitors, especially by chain hotels. Hence, properties in an independent hotel's competitive set are less possible to choose it back as their competitors.

*Hypothesis 1: Independent properties will have lower competitive set match-back than chain properties.*

According to agency theory, the agent has an incentive to reduce actions desired by the principal, due to goal conflicts, causing the so-called moral hazard problem (Eisenhardt, 1985). The owner of a hotel firm usually is highly concerned with brand position against competitors and wants to maintain a competitive advantage and market share. Thus, accurate performance information is desired by the hotel firm to get knowledge of the real competitive conditions. However, due to information asymmetry, principal of the hotel company are not able to gain completely accurate performance information from its agents, giving agents opportunity to bias on the information in favor of their own interests.

On the other hand, franchised hotels pay a certain franchise rate and royalty fee to the franchisors and gain the residual revenue as their proceeds. Apparently, the franchisee's interests are aligned with those of the franchisors (Shane, 1998). Compared to the manager of company-owned properties, the manager of franchised properties is usually more concerned with returns. Therefore, franchised hotel managers are more willing to identify competitive sets that can reflect the real competitive conditions in order to improve their performance and gain greater returns. Accordingly, this study hypothesizes that the competitors identified by franchised hotels are more optimal.

Franchising is a good solution for the agency problem. In addition, it can provide the principal with important resources such as capital and knowledge. When the geographic dispersion of properties increases, the unfamiliarity of a new market will also increase. As a service industry, the hotel industry is quite sensitive and vulnerable to the factors that will impact supply and demand conditions. To keep ahead of the competition, hotels are expected to have a thorough and detailed analysis of local markets.

According to previous studies, franchisees are more knowledgeable and experienced about local markets (Hsu, Jang, and Canter, 2010). In addition, their research and analysis costs regarding the market are less than those of properties owned or managed by corporations (Minkler, 1992). Franchised hotel managers are not only familiar with supply-side information, but they also have deeper insights into the demand side. Franchised hotel managers know well



the customers' purchasing psychology and behaviors because they may be related to cultural and regional factors. This rich knowledge and experience of franchised hotel managers could be well leveraged to promote the growth of properties, especially in terms of competitive analysis.

*Hypothesis 2: Corporate properties will have lower competitive set match-back than franchised properties.*

For an organization to align its goals, performance measurement plays an important role in incentive systems (Baker, 2002). A relative performance evaluation is an effective method that is commonly used by the principal to monitor and reward its agents. In the hotel industry, relative performance is measured based on the performance of a competitive set identified. Hence, the selections of properties in a peer group can directly influence a hotel's benefits.

Agency theory states that information asymmetry exists in the relationship between the principal and the agent. The principal does not know everything about its agents, and the information it gains from the agent may be biased (Jensen and Meckling, 1976). To present a better outcome in a relative performance evaluation, agent hotels have an incentive to manipulate competitive sets in favor of their benefits. As a result, the relative performance results may be biased against real conditions. Nonetheless, franchised hotels do not get rewards from hotel chains in this way because they are incentivized by total returns.

*Hypothesis 3: Corporate properties will manipulate their competitive set to improve relative performance more than franchised properties.*

Although a hotel company is in charge of all the operation issues of a property under a management contract, decisions made by the manager are monitored by the owner. With the assistance of consulting companies and asset managers, owners now have increased bargaining power in negotiations (Singh, Kline, Ma, and Beals, 2012). Relative performance measurement, such as the RevPAR Index, is highly related to performance termination provisions in management agreements. The selection of evaluation peer groups must be conducted based on the agreement of both parties. Thus, hotel managers have less freedom to manipulate competitive sets to improve relative performance.

*Hypothesis 4: Corporate owned properties will manipulate their competitive set to improve relative performance more than corporate properties with management contracts.*

## **4. Research Design**

### **4.1 Data Sample**

Data used in this research are from STR (Smith Travel Research), which provided information about 1335 hotels from fourteen large cities in the U.S., including Austin, Boston, Charlotte, Denver, Dallas, Los Angeles, Miami, New Orleans, New York, Phoenix, Portland, San Diego, San Francisco and Seattle. According to the needs of this research, useful data were extracted from the whole data pool provided by STR.

In general, five categories of data for each of the 1335 properties were collected for the research: ownership, location, scale, competitive set, and operational performance. Each of the five categories is explained in detail as follows:

Under the category of ownership, all properties were divided into three groups: corporate hotels, franchised hotels, and independently operated hotels. For corporate hotels, the properties are either owned by the firm or are under management contracts. For franchised hotels, the ownership belongs to the franchisee, and the property is managed by the owner or a third party. The third group of hotels is owned by independent companies rather than by hotel chains, and they are managed by the companies themselves or by third-party companies. Among all the properties in the data pool, 288 hotels are operated by chain companies, 737 belong to franchised hotels, and 310 hotels are owned by independent companies.

STR assigned four location types to all properties: urban, suburban, airport, and resort. Of all 1335 hotels, 798 properties are from urban areas, 289 are from suburban areas, 81 are resorts, and the remaining 167 properties are located in airport areas.

In terms of scale, the properties were divided into five groups. These scales are, from high to low, luxury, upper upscale, upscale, upper midscale, and midscale. Among the whole sample, 184 hotels are luxury, 333 are upper upscale, 365 are upscale, 311 are upper midscale, and the remaining 142 are midscale.

Because the focus of this research is the impact of different ownership structures on competitive set identification, it is necessary to identify the quantity distribution under each ownership category in terms of location and scale. Table 1 and 2 show the property distribution proportion of each category. According to the two tables, among all ownership categories, franchised hotels account for the largest proportion, which is about 55.51%. Almost 60% of properties in the dataset are located in urban area. In terms of scale, distribution is relatively homogeneous, with slightly lower percentages of luxury and midscale properties.

Table 1 Property Distribution by Location

	Urban	Suburban	Airport	Resort	Total
Corporate Managed	13.18%	3.60%	1.57%	0.67%	19.03%
Corporate Owned	2.17%	0.22%	0.07%	0.07%	2.55%
Franchised	27.04%	16.48%	10.34%	1.35%	55.51%
Independent	17.38%	1.35%	0.52%	3.97%	22.92%
<b>Total</b>	<b>59.78%</b>	<b>21.65%</b>	<b>12.51%</b>	<b>6.07%</b>	<b>100.00%</b>

Table 2 Property Distribution by Scale

	Luxury	Upper Upscale	Upscale	Upper Midscale	Midscale	Total
Corporate Managed	4.94%	8.09%	4.27%	0.82%	0.90%	19.03%
Corporate Owned	0.97%	0.97%	0.45%	0.15%	0.00%	2.55%
Franchised	0.82%	7.27%	17.30%	20.82%	9.29%	55.51%
Independent	7.04%	8.61%	5.32%	1.50%	0.45%	22.92%
<b>Total</b>	<b>13.78%</b>	<b>24.94%</b>	<b>27.34%</b>	<b>23.30%</b>	<b>10.64%</b>	<b>100.00%</b>

Table 3 and 4 show the breakdown proportions of location and scale within each ownership category. The two tables indicate that franchised hotels are more likely to be located at suburban and airport area and have larger proportions of lower scale properties compared to corporate and independent hotels.

Table 3 Property Distribution by Location within Categories

	Urban	Suburban	Airport	Resort
Corporate Managed	69.29%	18.90%	8.27%	3.54%
Corporate Owned	85.29%	8.82%	2.94%	2.94%
Franchised	48.71%	29.69%	18.62%	2.43%
Independent	75.82%	5.88%	2.29%	17.32%

Table 4 Property Distribution by Scale within Categories

	Luxury	Upper Upscale	Upscale	Upper Midscale	Midscale
Corporate Managed	25.98%	42.52%	22.44%	4.33%	4.72%
Corporate Owned	38.24%	38.24%	17.65%	5.88%	0.00%
Franchised	1.48%	13.09%	31.17%	37.52%	16.73%
Independent	30.72%	37.58%	23.20%	6.54%	1.96%

STR assigned each property a unique number for identification. For each hotel, all the ID numbers of its competitors in the competitive set are provided in the spreadsheet. The competitor data are crucial for the study of properties' competitive set identification and performance analysis. The calculation results show that there is no large difference in the quantity of identified competitors among the three operation structures. On average, corporate hotels have 5.77 competitors in their competitive sets. The number for franchised hotels and independent hotels are 5.64 and 6.26, respectively. Therefore, all three types of properties identified approximately six competitors.

STR tracks the performance data of each property on record for every month. This research mainly used the occupancy percentage, the ADR, and the RevPAR as the indicators of property performance. Combined with the competitive set data, these three indicators are used to calculate three performance indexes: the Occupancy Index, the ADR Index, and the RevPAR Index. These indexes are the most direct and effective way to reflect the competitive condition of a property. Because the RevPAR Index combines the features of both the Occupancy Index and the ADR Index, this study uses only the RevPAR Index as the analysis object. Monthly data for each property are provided from the beginning of 2010 to August 2012. Thus, there are a total of 32 records for each property.

## 4.2 Primary Variables

The purpose of this research is to test the variance of competitive sets across different hotel ownerships. Therefore, the four ownership structures: corporately owned, corporately managed, franchised, and independent ownership are treated as the main independent variables in models. As the hypotheses stated, variables that can measure the competitive set match-back and the bias degree of the competitive sets are expected to be the dependent variables.

In the model designed, the “match-up rate” performs as the measurement of competitive set match-back. It measures the degree to which the identified competitive set is recognized by competitors in this set. For example, among all five competitors selected by property 1001, if only one of them also put property 1001 in the competitive set, then the match-up rate of property 1001 would be 25%. One noticeable fact is that in the STR data pool, some properties chose to put themselves in the competitive sets, while others chose not to. The inclusion of the object property will undoubtedly increase the match-up rate, especially for properties that have fewer competitors. To maintain data consistency, object properties were eliminated from their competitive sets. Table 5 shows the average and standard deviation of the match-up rates across different property types.

Table 5 Match-up Rate by Property Type

Ownership	Match-up Rate	
Corporate	Average	0.386
	Std.Deviation	0.248
Franchised	Average	0.400
	Std.Deviation	0.256
Independent	Average	0.258
	Std.Deviation	0.239
<b>Grand Total</b>		<b>0.348</b>

Among the three property types, franchised hotels have the highest average match-up rate, which is about 1.4% higher than that of corporate hotels. Independent hotels have the lowest rate, which is nearly 10% below the average level.

To examine whether bias exists in the competitive set selection, the RevPAR Indexes are recalculated based on the “new competitive set.” In the new competitive set, only hotels that chose the object property as their competitors are left. New RevPAR Indexes were calculated by comparing the RevPAR of the object property to the value of properties in the new competitive set. Compared to the original RevPAR Indexes, the new indexes are expected to be more objective because the new competitive sets were recognized by both the property and its competitors. Another primary variable, “Change of Index,” was generated by taking the differences between the new RevPAR Indexes and the original RevPAR Indexes. When the value is negative, it means that the “real” RevPAR Index should be lower than the original one, and there might be bias in the competitive set identification, to show a better performance. The



larger the absolute value of the negative result, the more serious the bias is. Table 6 summarizes the average and standard deviations of the index-change values across four property types.

Table 6 Index Change by Property Type

Ownership	Index Change	
Corporate Managed	Average	-0.012
	Std.Deviation	0.198
Corporate Owned	Average	-0.089
	Std.Deviation	0.133
Franchised	Average	0.011
	Std.Deviation	0.191
<b>Grand Total</b>		<b>-0.030</b>

Both corporately managed and corporately owned hotels have negative index changes, but the absolute value of the former is much smaller than that of the latter. This result means that competitive sets identified by corporately managed hotels tend to be less biased than those of corporately owned hotels. The average index change for franchised hotels is positive, indicating higher recalculated RevPAR Indexes.

### 4.3 Control Variables

As mentioned in the literature review, the identification of competitive sets depends mainly on three aspects: subjective factors, objective factors, and incentive factors. As the primary

independent variable, property ownership structure is highly related to subjective factors and incentive factors. Nonetheless, many other factors can also affect the process of competitive set identification. In this research, location and hotel scale are selected as two control variables.

Location is one of the most important objective factors that impact hotels' competitor selection. It can influence the size of a hotel's competitor consideration set, based on two aspects: density and homogeneity. If a property is located in an area with lower hotel density, the consideration set of competitors will be lower. Thus, two similar hotels are more likely to choose each other as their competitors. On the other hand, with higher hotel density, a property's candidate competitors will increase. The process of competitor selection may also be more complex. In this case, it is not uncommon that similar properties have totally different competitive sets. In another aspect, homogeneity could simplify the process of competitor identification. When hotels within an area are homogeneous, it will be easier for managers to decide on competitors because there are fewer factors to consider.

In addition to location, scale is another important factor that should be controlled for in competitive set analysis. Competitor selection is highly dependent on a manager's knowledge and experience in local markets and on resources invested in market analysis. In general, higher-class hotels are more likely to recruit employees with more professional knowledge and richer industrial experience. Additionally, these properties tend to invest more in competitive analysis, compared to lower-class properties, given budget constraints.

#### 4.4 Analysis Models and Results

Four regression models are designed to test the four hypotheses, respectively. The first two models employ the match-up rate as the dependent variable to test the variance of competitive sets across different hotel ownership structures. In the dataset, each property only have one competitive set, so only one match-up rate observation is attached to each unit. Therefore, the first two models use the classic regression analysis method instead of panel data regression analysis which is applied to multiple observations for one unit overtime.

##### Model 1

In the first model, corporate and franchised are the two dummy primary variables, with independent as the reference. The regression results are shown in Table 7.

Table 7 Regression Model 1 Results

Variable	Parameter Estimate	Standard Error	t Value	Pr >  t
Intercept	0.10227	0.02895	3.53	0.0004
Chain	0.18358	0.01813	10.12	<.0001
Airport	0.05084	0.02045	2.49	0.013
Suburban	0.04585	0.01729	2.65	0.0081
Resort	-0.1416	0.04739	-2.99	0.0029
Luxury	0.11111	0.03479	3.19	0.0014
Upper Upscale	0.1832	0.0248	7.39	<.0001
Upscale	0.10311	0.02262	4.56	<.0001
Upper Midscale	0.08384	0.0229	3.66	0.0003

The regression results provide support for the first hypothesis. The positive coefficient of chain hotels ( $p < 0.001$ ) indicates that the match-up rates for chain hotels are estimated to be about 0.183 higher than that of independently owned hotels.

## Model 2

The second regression model is designed to test the difference in terms of the match-up rate between corporate hotels and franchised hotels. Thus, corporate is the only primary variable in this model, with franchised hotels as the reference. The regression results are shown in Table 8.

Table 8 Regression Model 2 Results

Variable	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	0.29089	0.02362	12.32	<.0001
<b>Corporate</b>	-0.04574	0.02128	-2.15	0.0318
<b>Suburban</b>	0.0358	0.01901	1.88	0.06
<b>Resort</b>	-0.14291	0.0481	-2.97	0.003
<b>Airport</b>	0.06878	0.02285	3.01	0.0027
<b>Luxury</b>	0.13054	0.03845	3.39	0.0007
<b>Upper Upscale</b>	0.18587	0.02936	6.33	<.0001
<b>Upscale</b>	0.09813	0.02585	3.8	0.0002
<b>Upper Midscale</b>	0.08971	0.02581	3.48	0.0005

The estimated parameter for corporate hotels is -0.046 (P=0.0318). This result means that if the property is operated by a hotel company rather than by a franchisee, the match-up rate is estimated to reduce by approximately 0.046, allowing for location and scale.

### **ANCOVA Model**

To verify the differences of the match-up rates existing among corporate, franchised, and independent hotels, the research also employs ANCOVA (Analysis of Covariance). ANCOVA is a general linear model that is a combination of ANOVA and regression. It measures whether population means of a dependent variable are the same across levels of a primary categorical independent variable, controlling for the effects of other variables.

In the ANCOVA model designed for this research, ownership structure is the primary independent variable to be tested. There are three levels: corporate, franchised, and independent. The location and scale factors are treated as control variables. The analysis results are provided in Table 9.

Table 9 ANCOVA Results

Dependent Variable: Match-up

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	9.163 <sup>a</sup>	9	1.018	17.000	.000	.103
Intercept	5.125	1	5.125	85.582	.000	.060
Suburban	.421	1	.421	7.030	.008	.005
Resort	.535	1	.535	8.927	.003	.007
Airport	.370	1	.370	6.182	.013	.005
Luxury	.611	1	.611	10.203	.001	.008
UpperUpscale	3.269	1	3.269	54.590	.000	.039
Upscale	1.244	1	1.244	20.774	.000	.015
UpperMidscale	.803	1	.803	13.405	.000	.010
Ownership	6.415	2	3.207	53.555	.000	.074
Error	79.771	1332	.060			
Total	267.943	1342				
Corrected Total	88.933	1341				

a. R Squared = .103 (Adjusted R Squared = .097)

As shown in the table, the significance value of ownership is less than 0.0001. Thus, it can be concluded that the means of the match-up rates across the three ownership structures are not equal. Furthermore, a pairwise comparison analysis is made to show the differences of the match-up rate means between each of the two groups. Table 10 provides detailed results of the analysis.

Table 10 Pairwise Comparison Results

Dependent Variable: Match-up

(I) Ownership	(J) Ownership	Mean Difference (I- J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
Corporate	Franchised	-.042 <sup>*</sup>	.020	.036	-.082	-.003
	Independent	.152 <sup>*</sup>	.023	.000	.107	.198
Franchised	Corporate	.042 <sup>*</sup>	.020	.036	.003	.082
	Independent	.195 <sup>*</sup>	.019	.000	.158	.232
Independent	Corporate	-.152 <sup>*</sup>	.023	.000	-.198	-.107
	Franchised	-.195 <sup>*</sup>	.019	.000	-.232	-.158

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

The results indicate that the significance values for each of the two groups are less than 0.05.

This result reveals that each ownership structure has a different match-up mean from that of the other groups. Specifically, the sequence is franchised, corporate, and independent, from high to low. The ANCOVA results provide additional evidence that supports the first two hypotheses.

The third and fourth models employ Index Change as the dependent variable to examine the degree of bias in competitive set identification. Because there are 32 observations collected each month from January 2010 to August 2012 for each sample, the high correlation between observations of the same unit can overestimate the degree of confidence when a classical linear

regression model is used. To reflect more accurately the effects of the independent variables, a panel data analysis model is used for this case.

In panel data analysis, there are two approaches: Fixed Effects (FE) and Random Effects (RE). FE explores the relationship between independent and dependent variables within an entity, in this case a property. The rationale behind the assumption of FE is that the individual characteristics within each entity may impact or bias the independent or outcome variables. FE removes these effects from the variables so that the net effect of the independent variables can be assessed.

Unlike FE, RE assumes that the variation across entities is random and uncorrelated with the independent variables in the model. When differences across entities may have an influence on the dependent variable, the RE model is preferred. The RE model not only analyzes the effect of time variance, but it also explores other effects caused by time-invariant variables. In this study, variant individual characteristics of each hotel may impact a competitive set decision. It can depend on certain complex factors, such as market strategy, which is hard to observe. Therefore, a random effects model is more suitable for the pooled data.

The equation of the random effects model can be expressed as

$$Y_{it} = \beta X_{it} + \alpha + u_{it} + \varepsilon_{it}$$

Where



- $\alpha$  is the intercept
- $Y_{it}$  is the dependent variable (DV) where  $i$  = entity and  $t$  = time.
- $X_{it}$  represents one independent variable (IV),
- $\beta$  is the coefficient for that IV,
- $u_{it}$  is the error between entity,
- $\varepsilon_{it}$  is the error within entity

### Model 3

To test the third hypothesis, the third model aims to compare the differences of Index Change between corporate hotels and franchised hotels. In this model, corporate hotel is employed as the primary variable, with franchised hotel as the reference. The results of the panel data regression analysis are shown in Table 11.

Table 11 Regression Model 3 Results

Variable	Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	0.097903	0.0268	3.65	0.0003
<b>Corporate</b>	-0.04637	0.0195	-2.38	0.0174
<b>Airport</b>	-0.04363	0.0205	-2.13	0.0336
<b>Suburban</b>	-0.03255	0.0175	-1.86	0.0629
<b>Resort</b>	0.040908	0.0367	1.11	0.2649
<b>Luxury</b>	-0.03977	0.0361	-1.1	0.2704
<b>Upper Upscale</b>	0.004376	0.0299	0.15	0.8836
<b>Upscale</b>	-0.03447	0.0272	-1.27	0.2051
<b>Upper Midscale</b>	-0.04059	0.0276	-1.47	0.1411

The results show that the coefficient of corporate hotels is approximately -0.046, with a significant p value (0.00174). Accordingly, the index change for corporate hotels is estimated to be approximately 4.6% lower compared to that of franchised hotels. In other words, corporate hotels tend to have larger negative change in terms of the RevPAR Index compared to franchised hotels.

#### Model 4

The last model tests whether differences of Index Change exist between corporately managed hotels and corporately owned hotels. Thus, corporately owned is designated as the primary variable of this model, with corporately managed as the reference. Table 12 provides the regression results.

Table 12 Regression Model 4 Results

<b>Variable</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
<b>Intercept</b>	-0.04521	0.0949	-0.48	0.6339
<b>Corporately Owned</b>	-0.0965	0.0435	-2.22	0.0266
<b>Airport</b>	-0.01213	0.0487	-0.25	0.8031
<b>Suburban</b>	-0.00105	0.0445	-0.02	0.9812
<b>Resort</b>	0.240885	0.0862	2.8	0.0052
<b>Luxury</b>	0.061408	0.0963	0.64	0.5237
<b>Upper Upscale</b>	0.092535	0.0949	0.97	0.3298
<b>Upscale</b>	0.029317	0.0941	0.31	0.7553
<b>Upper Midscale</b>	0.13672	0.1193	1.15	0.252

With a p value of 0.0266, the coefficient of corporately owned is -0.0965. The negative value indicates that corporately owned hotels are expected to be 0.0965 lower on Index Change, allowing for location and scale. Thus, compared to corporately managed hotels, corporately owned hotels tend to have larger negative Index Change.

## 5. Discussion

According to the analysis results of the four regression models, hypotheses 1 through 4 are all strongly supported.

The first model provides evidence that independent hotels tend to have lower match-up rates than those of chain hotels. As mentioned, competitive analysis requires appropriate recognition of both the property itself and competitors. Most independent hotels do not reflect as much experience and knowledge as corporate hotels do. In addition, independent hotels have no advantages of scale and capital, which are helpful for the market research process. The scarcity of knowledge and information results in less optimal competitive sets for independent hotels. In addition, independent hotels are less frequently to be recognized as competitors compared to chain hotels. The regression results show that the coefficients of both corporate hotels and franchised hotels are positive, with significant p values. This result indicates that the match-up rates of independent hotels are expected to be lower than those of chain hotels. The competitive sets identified by independent hotels do not gain much recognition from peers.

As shown in Tables 1 and 2, independent hotels have higher distribution in urban areas and higher scales. Nonetheless, the model controls for location and scale factors and removes the effects of non-homogeneous data distribution. Therefore, the first regression model results are quite supportive of Hypothesis 1.

Similar to the first model, with the same dependent variable and control variables, the second regression model proves the differences of match-up rates between corporate hotels and franchised hotels. According to the results, corporate hotels are expected to have lower match-up rates, allowing for the effect of location and scale. The reasons for this result are twofold. First, compared to franchised hotels, corporate hotels have less incentive to identify optimal competitors, because they have conflict interests with the principal. Franchised hotels, in contrast, tend to focus more on returns and are more knowledgeable about local markets. Therefore, competitors selected by franchised hotels are more likely to be matched. Second, a competitive set can determine a hotel's performance index, which is an important indicator of performance evaluation. To present a better performance outcome for evaluation, corporate hotels have an incentive to bias their competitive set identifications. When hotels include properties that mismatch their performance level in the competitive sets in order to boost the indexes, the match-up rates will certainly be pulled down. Although corporate hotels and franchised hotels have quite different distributions on location and scale, the two factors have been controlled in the model, resulting in strong support for hypothesis 2.

According to the results of the third regression model, corporate hotels are expected to have a larger negative index change compared to that of franchised hotels. The result reveals that for corporate hotels, the RevPAR Indexes calculated based on the "match-back only competitive set" tend to be lower than the original indexes. In other words, the "real" relative performance for

corporate properties is expected to be poorer than the current one. The results provide evidence to the hypothesis that corporate properties will manipulate their competitive set to improve relative performance more than franchised properties. Explanation for the result is that corporate properties are incentive to design competitive sets that can bring them larger benefits instead of competitive sets that can reflect the real condition. Furthermore, the information asymmetry problem provides properties more opportunities to manipulate the competitive sets in favor of their interests.

Hypothesis 4 gains support from the fourth regression model, which tested the differences of index change between corporately managed hotels and corporately owned hotels. The negative coefficient reveals that corporately owned hotels are estimated to have larger negative Index Change compared to those hotels under management contracts. The results indicate that the negative difference between the recalculated RevPAR Index and the original RevPAR Index of corporate managed hotels is not as larger as that of corporately owned hotels. As discussed, for properties under management contracts, managers alone cannot choose competitive sets. Competitive sets must be chosen based on the agreement of both the owner and the manager because the determination is highly related to performance termination clauses in contracts. Therefore, corporately managed properties' freedom regarding competitor selection is restrained, and there is lower probability for these properties to purposely bias competitive sets.

With the combination of results generated by all analysis models, it can be summarized that properties with different ownerships have different match-back degrees for their competitive sets, resulting from various reasons. Independent hotels have the lowest match-back among all ownership groups because of the scarcity of knowledge and brand recognition. It is their ability that restrains independent hotels from identifying more optimal competitors rather their incentive. Corporate hotels have higher competitive set match-back than independent hotels because of advantages in knowledge and experience. However, corporate hotels do not have as much incentive as franchised hotels to identify the most optimal competitive sets due to moral hazard problem in agency relationship. In addition to incentive factor, superior knowledge of local market is another reason for the higher match-back of franchised hotels. One noticeable fact is that, although previous studies indicate that freeriding problems of franchised properties have negative effects on service quality, such problems have no reflection on the problem of competitive set identification based on the findings of this study. The models designed also prove that relative performance outcome is the incentive for corporate properties to identify sub optimal competitive sets. Analysis results reveal that the RevPAR Index values based on the identified competitive sets are higher than the “real condition” for corporate properties. Although both corporately owned hotels and hotels under management contracts are operated by hotel companies, the bias degree of relative performance are not the same for the two types of

properties. Hotels with management contracts are proved to have smaller bias due to the restriction of competitive set decision from the owners.



## **6. Conclusion**

In this article, the relationship between competitive set identification and hotel ownership structures is explored. Incentives underlying the variance existing across different property types are discussed from the perspective of agency relationship. Four regression models are employed for the analysis, and the results provide evidence to support the four hypotheses proposed.

### **6.1 Findings**

The main findings of this research are fourfold. First, independent properties will have lower competitive match-back than chain properties because of the scarcity of knowledge and recognition. Secondly, corporate properties will have lower competitive match-back than franchised properties because corporate properties have less incentive to identify optimal competitors. Thirdly, corporate properties will manipulate their competitive set to improve relative performance more than franchised properties. Fourthly, corporate owned properties will manipulate their competitive set to improve relative performance more than corporate properties with management contracts.

## 6.2 Contributions

This research contributes to the hotel competitive set identification literature by exploring the variance of competitive sets across properties with different ownership structures. Unlike previous studies, which mainly focus on the attributes and methods used for competitive set identification in the lodging industry, this research states and discusses the variance and explains the reasons behind it. The study emphasizes the incentives of properties with different ownerships.

This research also contributes to the literature of agency theory. Agency problems arise when conflicts of interest exist between the principal and the agency. Combined with information asymmetry, moral hazard occurs in the operations of agents. Managers of corporate outlets tend to diminish actions desired in order to satisfy their self-interests. Competitive set identification is an important component of competitive analysis and requires a large amount of work and investments in market research and analysis. The results generated by the regression model indicate that corporate hotels have less incentive to identify optimal competitors, and the model examines the existence of the moral hazard problem. This result advances the understanding of agency theory.

On the other hand, the results support the advantages of franchised outlets. The results show that franchising contracts align the interests of the franchisees with those of the franchisors by making the franchisee a residual claimant. Therefore, franchised outlets have more incentive to

work for maximized returns. The higher match-back of competitive sets selected by franchised hotels provides evidence for this finding. Another explanation may lie in franchised properties' superior knowledge and experience of local markets.

Finally, the research provides insight in terms of hotel management contracts. Recent evidence indicates that hotel owners have greatly increased their understanding of hotel operations through their own industry experience or through the employment of asset managers. The bargaining power of owners is therefore boosted in contract negotiations. The RevPAR Index is usually an important evaluation indicator that is directly related to performance termination provisions in management contracts. The increased bargaining power of the owner can effectively avoid bias in competitive set identification. This argument is well supported by the results generated by the fourth regression model.

### **6.3 Managerial Implications**

The findings of this research have several managerial implications:

1. Corporate hotels are more likely to shrink on desired actions due to moral hazard problem in agency relationship.
2. Franchising is a good solution for the agency problem, especially when it is difficult and costly to monitor the outlet.

3. Corporately owned hotels may have a bias problem in competitive set identification, to obtain a better outcome in relative performance evaluations.

The findings suggest that hotel chain companies should pay more attention to monitor the outlets' competitive set identification. Competitive analysis is an important step for generating a hotel's market strategy. An appropriate competitive set helps a hotel to obtain accurate information about updated competitive conditions and to form its own advantages over competitors. Considering the importance of competitive analysis, hotel companies should never ignore the moral hazard problem that may arise from agency relationships.

The second implication claims an advantage for the franchising structure in certain situations. When a property is distant from a principal company, monitoring costs become higher, and a large amount of investment is required to research new markets. In this case, franchised hotels can work hard without monitoring because their goals are to maximize profits through better performance. In addition, research costs for franchising operators are relatively low because of their familiarity with local markets. Nonetheless, this is not to say that franchising is superior to other structures in every case. The selection of ownership and operation structures demands a thorough analysis and consideration of various factors.

Finally, hotel firms should reexamine the relative performance for evaluation. According to this study's findings, corporately owned properties have a tendency to manipulate competitor selection for the sake of higher RevPAR indexes. Without accurate information, the company

cannot determine its real position against competitors. Therefore, it is necessary for hotel companies to take action by examining the relative performance reported by its properties and caution against bias on the performance.

## 7. Limitations and Future Research

The limitations of this research mainly lie in three aspects. First, this study discusses the impact of ownerships on competitive set identification. Nonetheless, competitive set identification is a relatively complex problem. The methods and attributes used by different firms are various and difficult to categorize. It is possible that when a company considers more implicit factors and uses more complicated methods, the competitors identified will be less likely to select the property back as their competitors. The regression model used in this research does not test the effects of such factors.

Second, this study uses match-up rate as the measurement of competitive set variance. Nevertheless, components breakdown within competitive sets is not analyzed. It is possible that properties with different ownerships have similar component proportion due to similar agency relationships.

The third limitation is that the data set used in this research is from hotel properties in fourteen large cities in the U.S. The research results may not apply to small cities and foreign countries. In general, the smaller the city size, the more homogeneous it tends to be. Thus, attributes used for competitor identification may be less complex and more similar across different types of hotels. If we apply the research model to a data set based on small cities, the variance of competitive sets might not be as obvious as that in big cities. In addition, the conclusions may not apply beyond the U.S. With the effects of cultural and political factors,

agency relationships in different countries may vary significantly and show distinct characteristics.

Future research can explore the various attributes and methods used for competitive set identification by hotels with different ownership structures. The interests of the brand owner usually lie in the reputation of the brand and focus more on the future development of the firm. Accordingly, when selecting competitors, managers of corporate properties may consider brand strategic factors to a greater degree. For franchised hotels, the managers' interests are mainly how to obtain maximized returns. Thus, performance factors may have more weight in their competitive set decisions. Research on this topic can advance the understanding of agency relationships.

Research opportunities also exist regarding the triad relationship in corporate properties. The separation of operation and ownership adds to the sophistication of the relationship. Furthermore, when an owner chooses to hire a third-party company for consultation, more factors can influence a manager's actions. Thus, it would be meaningful to research the impact of this triad relationship on hotels' market analysis behaviors.

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