FULL LENGTH ARTICLE

Building resilience to crisis through slack resources: A longitudinal analysis of US hotels

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ABSTRACT

Building on slack resources theory and industrial characteristics, this study explores how hotels develop and deploy slack resources to achieve resilience to crisis. It conceptualizes that hotels could build various slack resources based on the flexibility of functional operations, such as rooms, food and beverage, and marketing. Using longitudinal data, we analyze the effects of slacks on resilience over long periods of time involving crisis, recovery, and post-recovery. Findings reveal the diverse impacts of slacks on resilience, suggesting that hotels should strategically use and accumulate different slacks at different times to maximize their resilience. This study contributes to tourism research on resilience and slack resource theory by providing theoretical framework and empirical evidence for the long-term process of slack utilization.

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Introduction

The hotel industry has experienced a series of crises, such as the Asian economic crisis in 1997, the dot-com bubble between 2000 and 2002, the September 11 attacks in 2001, the subprime mortgage crisis between 2007 and 2009, the Fukushima nuclear disaster in 2011, and, most recently, the coronavirus disease in 2019. These wide-reaching events led to the breakdown of firms, massive job losses, and social instability, and the tourism industry was no exception. Despite the severity of the economic disruptions, firms had to find ways to overcome financial difficulties and maintain their businesses. The increased costs and reduced demands associated with these crises led many firms to adjust their workforces, operating expenses, and capital expenditures (Flammer & Ioannou, 2021). In severe cases, firms laid off crucial employees and disposed of profitable assets to secure more immediate cash flows. Although these practices helped firms mitigate the short-term negative impacts of such crises, they also threatened long-term business performance (Alonso-Almeida & Bremser, 2013; Wenzel et al., 2020). This raises an important question about how firms can develop and enhance their resilience—that is, their capacity to absorb and recover from a crisis (Conz et al., 2023; Essuman et al., 2020, 2022).

The coronavirus pandemic has prompted tourism scholars to investigate how firms have adjusted their practices and strategies during the crisis, such as marketing (Jiang & Wen, 2020), employment (Hidalgo et al., 2022), corporate social responsibility (Filimonau et al., 2020), and revenue management (Denizci Guillet & Chu, 2021). Despite this increase in research, it is difficult to

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determine whether the adjusted practices, such as improving firm performance, have helped businesses effectively recover from the shock. Because the most recent tourism literature related to crisis is based on qualitative data or reviews of the literature, existing studies have failed to explain how firms have developed and adjusted resources to enhance resilience (Li et al., 2020). More importantly, many of these studies are exploratory without strong theoretical foundations (Aliperti et al., 2019; Ritchie & Jiang, 2019).

At the same time, unexpected crises have raised questions about some major business theories that are most prevalently used in hotel studies, because they are based on firms' operations and management under normal conditions (Jiang et al., 2019; Tognazzo et al., 2016; Zhang et al., 2018). For example, the resource-based view argues that firms can use valuable, rare, and difficult-to-imitate internal resources to develop competitive advantages and improve performance. However, it is unclear how these resources can lead to competitive advantages under the unstable and uncertain circumstances generated by a crisis (Combs et al., 2011; Kortmann et al., 2014). To overcome this theoretical limitation, some scholars in business management have suggested the importance of slack resources. Slack resources are defined as "the pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output." (Nohria & Gulati, 1996, p. 1246).

According to slack resource view, slacks are limited but not rare resources, and they can increase a firm's resilience by providing a cushion for unexpected external changes (Martinez & Artz, 2006; Rafailov, 2017; Voss et al., 2008). For instance, when a firm faces a crisis, it will experience limitations in accessing external resources (Agarwal et al., 2009), so it can use excess internal resources to meet the necessary business requirements and minimize negative impacts (Agusti et al., 2022; S. Lee et al., 2013). The slack resource theory is developed based on this assumption and further explains how firms tend to build and adjust excess resources to ensure operational stability and continuity during challenging events (Brandon-Jones et al., 2015; Hughes et al., 2015; Martinez & Artz, 2006; Rafailov, 2017; Tognazzo et al., 2016; Voss et al., 2008). The findings from some business studies support that firms with slack resources tend to survive and achieve better performance during economic recessions than those without slacks (Agustí et al., 2021; Tognazzo et al., 2016).

Although there is a consensus that slack resources are essential to resilience, findings are inconsistent on the relationship between slacks and resilience (Agusti et al., 2022; Carnes et al., 2019; Essuman et al., 2022; Paeleman & Vanacker, 2015). Some studies have indicated that slack resources have positive effects on firm performance during and after crises (Babajee et al., 2022; Daniel et al., 2004; Z. Li, 2021; Tognazzo et al., 2016), but others have shown negative (Agusti-Perez et al., 2020; Vanacker et al., 2017) or insignificant effects (Duan et al., 2020; Essuman et al., 2020; Iborra et al., 2020). Scholars have tried to explain the reasons for mixed findings and argued that the proxies used in prior studies to measure slack resources reflected only part of the slacks, such as financial ratios, leading to confounding results (Dolmans et al., 2014; Z. Li, 2021; Marlin & Geiger, 2015; Shahzad et al., 2016; Vanacker et al., 2017; Zheng et al., 2022). These proxies might have overlooked the complex, multidimensional nature of firm resources, especially human resources, and failed to reflect this in the relationship between slacks and performance (Dolmans et al., 2014; Meyer, 1982; Mishina et al., 2004; Voss et al., 2008).

Other researchers have contended that the capability to deploy slacks is more important than the possession of slack resources and pointed out that considering resilience as a short-term procedure can cause mixed findings (Agusti-Perez et al., 2020; Dolmans et al., 2014; Iborra et al., 2020; Lorentz et al., 2021; Vogus & Sutcliffe, 2007; Zheng et al., 2022). They have focused on the response mechanisms of how firms absorb, reduce, and accumulate slacks to counteract threats from crises (Duan et al., 2020; Titus et al., 2022; Tognazzo et al., 2016). This mechanism is dynamic and heterogeneous because of varied firm-specific slack resources, requiring studies to evaluate specific and varying conditions to clarify the slack and resilience relationship (Dolmans et al., 2014; Essuman et al., 2022; Jiang et al., 2019; Nohria & Gulati, 1996). This factor calls for longitudinal data analysis, which examines changes in relationships over time (Agusti et al., 2022; Brune et al., 2023; Marlin & Geiger, 2015; Mousa & Reed, 2013) and allows causal inferences (Manhart et al., 2020).

To clarify the conflicting results from previous studies and contribute to the literature on crisis management and slack resources, we seek to explore the following research questions: 1) What kinds of slack resources have hotels developed? 2) Did slack resources contribute to hotels' resilience during and after the crisis? and 3) How do hotels use their slack resources effectively to enhance resilience in the long run? This study addresses the first question by applying the slack resources view to conceptualize slack resources in hotels. By focusing on the hotel industry, we can account for industry-specific conditions that cause variability in the relationship between slacks and resilience. This approach helps us to fill the first research gaps, since it reflects the industry's labor-intensive nature in the conceptualization of slacks within hotels and considers how hotels have built valuable firm-specific slack resources, especially in the form of human resources.

Based on the theoretical development of hotels' slack resources, we further test whether slack resources affect hotel resilience during and after crises and examines how heterogeneous slack resources influence resilience differently. Using longitudinal data from 2007 to 2019, we try to fill the second research gap and clarify how slack resources affect resilience during crisis, recovery, and post-recovery. This work helps to reveal the mechanisms of slack deployments and shows the importance of when hotels should redeploy slack resources to improve resilience. In summary, this study clarifies previously conflicting results on slack resource theory by theoretically specifying hotels' slack resources and the mechanisms of their slack deployments. It also contributes to the crisis management literature by empirically demonstrating the diverse effects of slacks on operational resilience in different crisis periods.

Theoretical framework

Slack resources related to hotels

Slack resources are typically classified as unabsorbed or absorbed (Argilés-Bosch et al., 2018; Singh, 1986; Xu et al., 2015). The former refers to resources with flexible uses for a variety of purposes, such as excess cash, that can be redeployed easily within

organizations. These are usually measured by cash, such as cash divided by total assets (Zheng et al., 2022) and cash reserves divided by total expenses (Voss et al., 2008). The latter includes resources with limited discretionary uses that are less likely to be redeployed because they are tied to specific operations and are difficult to replace, such as an excess number of employees (Mishina et al., 2004; Paeleman & Vanacker, 2015). The measures of absorbed slacks are mostly related to human resources such as the number of full-time staff divided by the total number of staff (Voss et al., 2008). Research has shown that in threatening circumstances, firms are more involved with absorbed slacks than unabsorbed slacks, such as conserving their existing resources, focusing on essential operations, and avoiding risk-taking activities (Lee et al., 2021; Li, 2021; M. Meyer & Leitner, 2018; Sarkar & Osiyevskyy, 2018).

This study focuses on absorbed slacks because they better reflect the characteristics of the hotel industry, such as high labor intensity (Boto-García & Mayor, 2022; Jiang et al., 2019; Mun et al., 2019; Zheng et al., 2022). Given that the service-oriented nature of the sector forces hotels to focus on human resources, they should carefully deploy these absorbed slacks to enhance survival and operations in times of crisis and recovery (Marlin & Geiger, 2015; Vanacker et al., 2017; Wang et al., 2016; Zheng et al., 2022).

Hotels' slack resources

Based on previous studies on slack resources, hotels' absorbed slacks can be categorized by the flexibility of slack resources (Agusti et al., 2022; Tan & Peng, 2003; Vanacker et al., 2017; Zheng et al., 2022). High-flexible slacks encompass resources that can be quickly redeployed for other purposes with minimal effort. Low-flexible slacks include resources that are difficult to adjust or replace for any discretionary purpose, even in risky situations. We posit that hotels possess slack bundles in three resources: rooms, food and beverage, and marketing. These resources represent hotels' different strategic functions and are selected based on the main departments required for hotels to operate (Downie, 1997).

To classify the flexibility of slack resources, we used two standards in this study: the type of customers a certain department is targeting and the possibility of transferring its resources to other departments. As a service industry, hotels' strategies are driven by customers, so the complexity of operations is closely related to the types of guests (e.g., in-house guests only, both in-house and local guests) (Li et al., 2020; Mun et al., 2022). In addition, depending on the complexity of operations, hotels assign different levels of skilled employees. Some departments have more competitive and better-skilled employees who can work for other departments during their shifts (e.g., sales and marketing employees working evening shifts for hotel restaurants) (Mun & Woo, 2021; Wang et al., 2016; Yang et al., 2012).

Room slacks (low flexibility)

Room slacks derive from the rooms available to sell to customers and refer to the excess human resources needed to operate and manage the available rooms (e.g., front desk, housekeeping, reservations, laundry) (Kim et al., 2011). Rooms are the key operating center, so regardless of crisis, hotels tend to retain the level of room resources necessary for maintaining quality services (Anderson & Xie, 2010; Markham Bagnera & Stewart, 2020; Ramdeen et al., 2019). For example, hotels typically employ enough housekeeping staff to provide clean rooms on a daily basis (Lai & Baum, 2005). Moreover, due to the high dependence on low-skilled employees in room departments (Cheung & Woo, 2021; Yang et al., 2012), hotels often find it difficult to adjust room slack resources to other departments (Berezina et al., 2016; Croes & Semrad, 2012; Zhao & Hou, 2022). Considering these characteristics, room slacks are highly absorbed, inflexible, and difficult to adjust for other purposes.

Food and beverage slacks (moderate flexibility)

Hotels provide various food and beverage services in the form of room services, bars, and restaurants. Food and beverage slack refers to additional human resources (e.g., chefs, bartenders, sommeliers, service staff) that support specialized and localized food and beverage services. The original role of food and beverage departments was mainly to support the rooms department by providing services to in-house guests (Hemmington & King, 2000; Mun et al., 2019; Promsivapallop et al., 2015). However, as the competition between hotels has increased, food and beverage has become a major strategic revenue resource for hotels (Chen & Chang, 2012; Lin et al., 2020; Mun et al., 2019; Yeh et al., 2012).

The strategic focus of food and beverage has changed, differentiating it from room slack resources. Unlike rooms, which are strictly regulated by standard operating procedures, hotels allow food and beverage to have strategic flexibility by, for example, providing diverse restaurants that attract local and in-house guests (Accor, 2020; Hess, 2020; Mun et al., 2022; Ting, 2019). Room customers are limited to travelers and nonlocal, one-time customers. In contrast, food and beverage customers include both travelers and locals, especially locals who are repeat customers. To satisfy both groups, hotels tend to allocate high-quality, multiskilled employees to food and beverage (Lai & Hitchcock, 2017; Mun et al., 2022), and these employees can be reallocated and work for other departments (Brown & Crossman, 2000; Conz et al., 2023). From this perspective, food and beverage slacks have more flexibility than room slacks.

Marketing slacks (high flexibility)

Marketing slacks consist of extra human resources in charge of advertising and promotions, which increase the number of new guests and manage repeated guests (Beatson et al., 2006; Chen, 2015). This resource is based on customer relationships and is "attributable to relational or committed customers, who are valued resources providing tangible benefits to an organization" (Voss et al., 2008, p. 150).

Since the role of marketing is to generate revenue by selling rooms and food and beverage (Kim et al., 2011) and strengthening reputation (Conz et al., 2023), marketing resources should be associated with room and food and beverage resources and support

the operations of other departments (Denizci Guillet & Chu, 2021; Downie, 1997). For example, employees in marketing have to communicate well with the front desk and restaurants because they need to sell rooms, banquets, and conventions. Accordingly, to achieve or exceed their sales goals, marketing departments need to maintain competencies or qualifications, such as customizing and interpersonal skills, at a higher level than other departments (Conz et al., 2023; Kim et al., 2011; Simons & Enz, 1995). Because of this resource characteristic, marketing slacks are a more flexible than room and food and beverage slacks.

Hotels' slack-resilience relationship

Firms need resources to maintain resilience and stability during crises and recover better than their peers (Ortiz-de-Mandojana & Bansal, 2016). Researchers have focused on saved and underutilized resources, or slack resources, as drivers of operational resilience (Conz et al., 2023; Essuman et al., 2020). However, as discussed above, the empirical findings regarding the slack-resilience relationship are equivocal. To explain the confounding findings, some argue that resilience should be regarded as a dynamic, long-term process (DesJardine et al., 2019; Gunderson & Pritchard, 2002). This view requires research to reflect the heterogeneity of the capability to leverage slack resources, and it recognizes that the effects of slacks on resilience can be diverse over time. In this study, we associate the flexibility of slacks with hotels' capability to deploy slack resources, ultimately resulting in different effects on resilience (Marlin & Geiger, 2015; Paeleman & Vanacker, 2015; Zheng et al., 2022).

When facing a crisis, hotels typically reduce all types of slacks first, such as laying off extra employees, initiating no-pay leave, cutting wages (Denizci Guillet & Chu, 2021; Hidalgo et al., 2022; Lai & Wong, 2020; Le & Phi, 2021; Lo et al., 2006). At this stage, slacks with low flexibility (e.g., room slacks) often lead to inefficient resource allocation, so they may have a limited influence on resilience. Therefore, hotels should be highly motivated to use more flexible slacks in the crisis, especially food and beverage slacks; this flexibility would lead to operational efficiency (operating with minimal resources), positively influencing resilience during the crisis (in the short term).

During recovery periods, hotels become more willing to increase slacks (e.g., hiring employees, increasing payrolls) to meet the soaring demand (Bhattarai & Penman, 2023; Hidalgo et al., 2022; Leung & Lam, 2004). Unlike consuming slacks to survive during the crisis, hotels tend to accumulate more slacks than before to increase their competitive advantage. Although all slacks during this time can contribute to resilience, regardless of their flexibility, the magnitudes of the effects might be different. In this period in particular, hotels with high-flexible slacks may be more competitive and able to recover their performance. For example, hotels with high levels of marketing slacks can aggressively promote their products and services to keep their existing customers and attract new customers who have been guests of other hotels (Conz et al., 2023; Denizci Guillet & Chu, 2021; Garrido-Moreno et al., 2021; Lai & Wong, 2020; Zheng et al., 2022). Given the long-term benefits of customer relationships, aggressive marketing during this recovery period could help hotels hold a dominant position in the market and increase resilience in the long term (Voss et al., 2008; Zheng et al., 2022).

After the recovery years (post-recovery period), hotels may keep increasing their slacks to capture newly created opportunities rather than focusing on survival (Conz et al., 2023; Jiang et al., 2019; Wan & Yiu, 2009). For example, they might develop new training sessions for employees to adapt to new technology and revamp practices (Garrido-Moreno et al., 2021; Markham Bagnera & Stewart, 2020; Teirlinck, 2020) or increase employee engagement in sustainability activities (Qiu et al., 2021). The effectiveness of slacks on resilience during the post-recovery period is expected to be similar to that of the recovery period, and more high-flexible slacks should contribute to long-term competitive advantages (Le & Phi, 2021; Zheng et al., 2022).

Methodology

Sample data

The sample includes 281 hotels (3653 observations) that operate in five major tourist destinations in the United States: New York, California, Illinois, Florida, and Texas. We obtained data from STR (formerly Smith Travel Research) from 2007 to 2019, including the subprime mortgage financial crisis and the years after the crisis. To test the differential impacts of slacks across time, we analyzed the data in three periods: crisis (2009), recovery (from 2010 to 2013), and post-recovery (from 2014 to 2019). This approach follows the conventional event study method for comparing variations of slacks before and after a crisis (Dick-Nielsen et al., 2012; Friewald et al., 2012).

Variables

Dependent variable

To measure resilience, we conducted several steps. We first calculated the operating performance: earnings before interest, tax, depreciation, and amortization expenses (EBITDA) over total revenue. Consistent with prior studies, we subtracted the industry average in 2007 from each hotel's operating performance to adjust the industry norms in typical situations (Conz et al., 2023; Mellahi & Wilkinson, 2010; Mishina et al., 2004; Shahzad et al., 2016). We selected 2007 as the baseline year because the negative impacts on performance began in 2008 and increased the most in 2009 (Demyanyk & Van Hemert, 2011; DesJardine et al., 2019; Reinhart & Rogoff, 2008).

We then used the changes in operating performance $((\text{EBITDA}_t - \text{EBITDA}_{2007})/\text{Total Revenue}_{2007})$ from 2009 to 2014 to create a dummy variable that captures the resilience over time. We selected 2014 because the performance that year was restored to normal

levels (Essuman et al., 2020). The total revenue per available rooms of all hotels in 2007 ($213.12) was fully recovered in 2014 ($228.49), and the earnings before interest, tax, depreciation, and amortization expenses (EBITDA) per available room of all hotels in 2007 ($44.60) was fully recovered in 2013 ($50.56).

If a hotel consistently underperformed during the crisis and recovery period (2009–2014) compared with the precrisis industry average (2007), we coded it as 0: poor performer. If the hotel consistently overperformed during and after the crisis compared with the precrisis industry average, then we coded it as 1: good performer. Thus, the poor performers were hotels with less resilience that showed continual low operating profit improvement over 6 years compared to their competitors in 2007, the precrisis year. The good performers were hotels with high resilience that outperformed (higher operating profit improvement) over 6 years compared to their competitors in 2007. With this approach, we attempted to explain long-term operational resilience focused on hotels' ability to consistently improve operating profits over their competitors under normal situations.

Independent variables

Following the measurements of human resource slacks from prior studies (Bradley et al., 2011; Marlin & Geiger, 2015; Paeleman & Vanacker, 2015; Wefald et al., 2010), we used the salary to total revenue ratio as the basis for our calculation of hotel slacks. We then subtracted the 2007 salaries of each hotel from the salary ratios from 2009 to 2019 to capture the changes in slacks. The 2007 salary was selected as a baseline to represent the amount of resources needed to operate a hotel during normal conditions (precrisis). A positive value for the hotel slack proxy indicated that the hotel accumulated more slack resources during and after the crisis than in normal situations. A negative value indicated that the hotel consumed more slacks during and after the crisis than in 2007. We measured the slack resources of the three major functional departments: rooms ((room salary$_t$−room salary$_{2007}$)/total revenue$_{2007}$), food and beverage ((food and beverage salary$_t$−food and beverage salary$_{2007}$)/total revenue$_{2007}$), and marketing ((marketing salary$_t$−marketing salary$_{2007}$)/total revenue$_{2007}$).

Control variables

The slack resources from other departments, such as administrative and general and property operations and maintenance, were included as control variables as undistributed operating expenses according to the Uniform System of Accounts for the Lodging Industry: administrative and general salary/total revenue, property operations and maintenance salary/total revenue, (administrative and general salary$_t$− administrative and general salary$_{2007}$)/total revenue$_{2007}$, and (property operations and maintenance salary$_t$− property operations and maintenance salary$_{2007}$)/total revenue$_{2007}$.

We also controlled for various factors, such as hotel class (1 for luxury, 2 for upper upscale, 3 for upscale, 4 for upper midscale, 5 for midscale, and 6 for economy); operation type (1 for chain-owned and/or chain-managed, 2 for franchised, and 3 for independent); level of service (1 for full service and 0 for limited service); hotel size (1 for <75 rooms, 2 for 75–149 rooms, 3 for 150–299 rooms, 4 for 300–500 rooms, and 5 for >500 rooms); hotel age (number of years after opening); hotel location (1 for urban, 2 for suburban, 3 for airport, 4 for interstate or motorway, 5 for resort, and 6 for small metro area or town); and state (1 for New York, 2 for California, 3 for Florida, 4 for Illinois, and 5 for Texas). A year dummy was included to control for any confounding effects over time.

Statistical models

To estimate the effects of rooms, food and beverage, and marketing slacks on operational resilience, we used generalized linear models with a logit link.

$$
\begin{aligned}
\text{Resilience}_i = \beta_0 &+ \beta_1{}^* \left((\text{Room Salary}_t - \text{Room Salary}_{2007})/\text{Total Revenue}_{2007}\right)_i \\
&+ \beta_2{}^* \left((\text{Food\&Beverage Salary}_t - \text{Food\&Beverage Salary}_{2007})/\text{Total Revenue}_{2007}\right)_i \\
&+ \beta_3\left((\text{Marketing Salary}_t - \text{Marketing Salary}_{2007})/\text{Total Revenue}_{2007}\right)_i \\
&+ \beta_4{}^*\left((\text{Administrative\&General Salary}_t - \text{Administrative\&General Salary}_{2007})/\text{Total Revenue}_{2007}\right)_i \\
&+ \beta_5{}^*\left((\text{Property Operations\&Maintenance Salary}_t - \text{Property Operations\&Maintenance Salary}_{2007})_i + \beta_6{}^*\text{Class}_i \right. \\
&+ \beta_7{}^*\text{Operation}_i + \beta_8{}^*\text{Full}_i + \beta_9{}^*\text{Size}_i + \beta_{10}{}^*\text{Age}_i + \beta_{11}{}^*\text{Location}_i + \beta_{12}{}^*\text{State}_i + \beta_{13}{}^*\text{Year}_i + u_i
\end{aligned}
$$

Results

Descriptive statistics

Table 1 presents a summary of the data. Overall, the good performers had better performance, such as higher total revenue per available room, room prices, and occupancy rates, than the poor performers. The changes in the operating profitability ratio relative to the industry average in 2007 ((EBITDA$_t$ − EBITDA$_{2007}$)/Total revenue$_{2007}$) were much lower for the poor-performing hotels than for the good performers. Interestingly, for the poor-performing hotels, the slack resources for rooms, food and beverage, and marketing were substantially lower than those for the good-performing hotels. Specifically, the poor performers tended to use slack resources more than the good performers during the crisis and increase them less during the recovery and post-recovery years.

Fig. 1 compares the good and bad performers based on the adjusted changes in operating profitability ratios: (EBITDA$_t$ − EBITDA$_{2007}$)/Total revenue$_{2007}$. Surprisingly, the poor-performing hotels' operating profitability significantly deteriorated during and after the crisis and never recovered entirely after 2007. In contrast, the operating profitability of the good-performing hotels was always higher than the operating profitability in 2007, even in the crisis year (2009), and fully recovered after the crisis.

Table 1
Descriptive statistics.

	All			Crisis Year (2009)			Recovery Years (2010–2013)			Post-Recovery Years (2014–2019)		
	All	Poor Performer	Good Performer	All	Poor Performer	Good Performer	All	Poor Performer	Good Performer	All	Poor Performer	Good Performer
Total revenue per available room	209.10	173.89	255.37	167.04	143.86	196.09	192.87	160.30	233.87	242.45	195.42	304.62
Average daily rate	190.72	172.36	222.09	161.31	153.58	180.23	171.39	157.75	195.33	208.66	183.44	248.56
Occupancy%	70.7425	69.2436	71.9985	64.9480	62.3346	66.4097	71.8822	68.9686	74.1733	76.5218	75.4833	78.0410
EBITDA/Total revenue	0.2026	0.1925	0.1772	0.1747	0.1959	0.1283	0.2161	0.2074	0.1910	0.2612	0.2389	0.2539
$(EBITDA_t - EBITDA_{2007})$ /Total revenue$_{2007}$	0.0251	−0.1255	0.2486	−0.0755	−0.1896	0.1080	−0.0086	−0.1613	0.2166	0.1116	−0.0777	0.3921
Room Slack	0.0174	0.0123	0.0328	−0.0030	−0.0077	0.0072	0.0099	0.0045	0.0239	0.0376	0.0309	0.0592
Food & Beverage Slack	0.0162	0.0063	0.0350	−0.0063	−0.0113	0.0041	0.0105	0.0027	0.0268	0.0376	0.0207	0.0657
Marketing Slack	0.0019	−0.0029	0.0069	−0.0008	−0.0032	0.0006	−0.0001	−0.0046	0.0040	0.0055	−0.0017	0.0136
Administrative & General Slack	0.0052	0.0062	0.0048	−0.0020	−0.0036	−0.0027	0.0029	0.0026	0.0027	0.0107	0.0130	0.0100
Property Operations & Maintenance Slack	0.0028	0.0021	0.0048	−0.0001	−0.0007	0.0008	0.0015	0.0009	0.0032	0.0055	0.0046	0.0085
Full	0.9837	0.9853	0.9752	0.9715	0.9615	0.9722	0.9831	0.9936	0.9757	0.9970	1.000	0.9884
Operation	1.1515	1.0513	1.1538	1.1388	1.0513	1.1389	1.1388	1.0513	1.1389	1.1566	1.0513	1.1597
Size	3.6797	3.2692	3.9167	3.6797	3.2692	3.9167	3.6797	3.2692	3.9167	3.6797	3.2692	3.9167
Class	2.1507	2.4313	1.8780	2.1459	2.4487	1.8750	2.1566	2.4327	1.8819	2.1441	2.4231	1.8681
Age	29.28	29.18	30.068	24.61	24.68	24.89	27.11	27.18	27.39	32.359	32.18	33.33
Location	2.5031	2.3553	2.8194	2.5017	2.3462	2.8194	2.5018	2.3462	2.8194	2.5036	2.3590	2.8194
Observation	3934	1092	1008	281	78	72	1124	312	288	1686	468	432

6

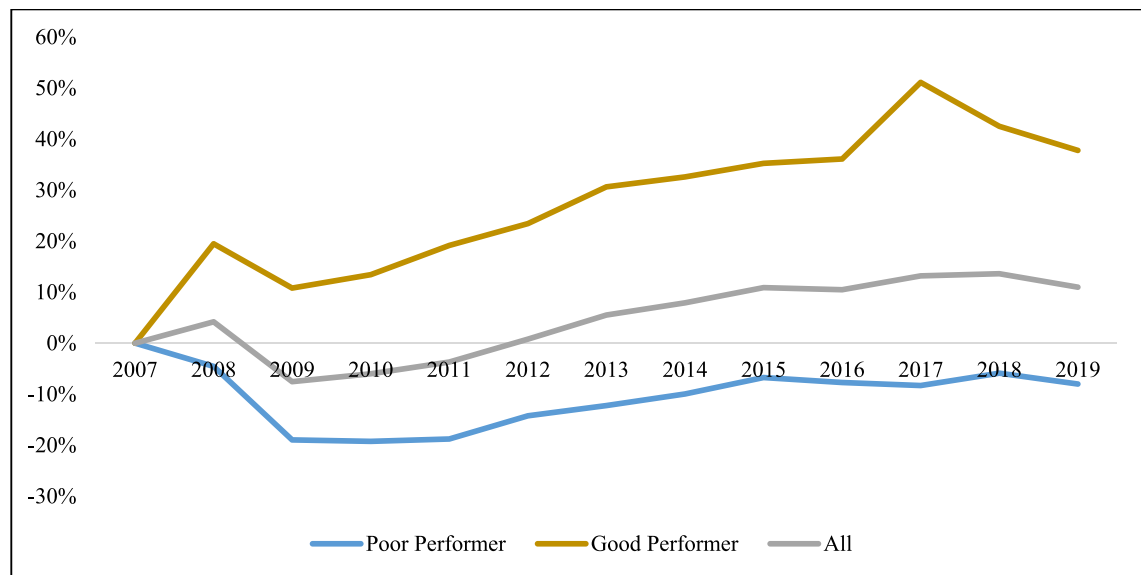**Fig. 1.** (EBITDA$_t$−EBITDA$_{2007}$)/Total revenue$_{2007}$: Poor performers vs. Good performers.

Figs. 2 (slack resources in the rooms department), 3 (slack resources in the food and beverage department), and 4 (slack resources in the marketing department) present the disparity in slack resources between the poor- and good-performing hotels, reflecting their slack resource deployment in each department. Compared to the poor performers, the good performers tended to accumulate more slack resources in all three departments in 2008. That is, although both poor and good performers had more slack resources compared to those they had in 2007 (a positive figure), the slack resources of good performers were larger than those of poor performers in the rooms (Fig. 2), food and beverage (Fig. 3), and marketing (Fig. 4) departments.

In contrast, in 2009 and 2010, the poor-performing hotels tended to consume slacks, and their slacks were lower than in 2007 (negative figures) in all three departments. Noticeably, in Fig. 4, the poor performers consistently spent more marketing slacks than they did in 2007 (negative figures until 2019). Even though the good performers also tended to reduce their slacks in all departments in 2009 and 2010, their slacks were still slightly higher (not lower) than the amounts expended in 2007 (positive figures). Furthermore, the gaps in slacks for the food and beverage (Fig. 3) and marketing (Fig. 4) departments became wider over the years, with the good performers increasing their slacks more aggressively than the poor performers.

Statistical analysis

Table 2 presents the findings of the logistic regression estimations that examined the effects of slack resources on resilience. These effects varied between the poor- and good-performing hotels in different economic environments: crisis, recovery, and post-recovery years. First, food and beverage slacks consistently increased the probability of belonging to a good-performing group in all years. During the crisis year (2009), food and beverage slacks (23.7278, $p < 0.05$) were the only significant positive factor that helped hotels
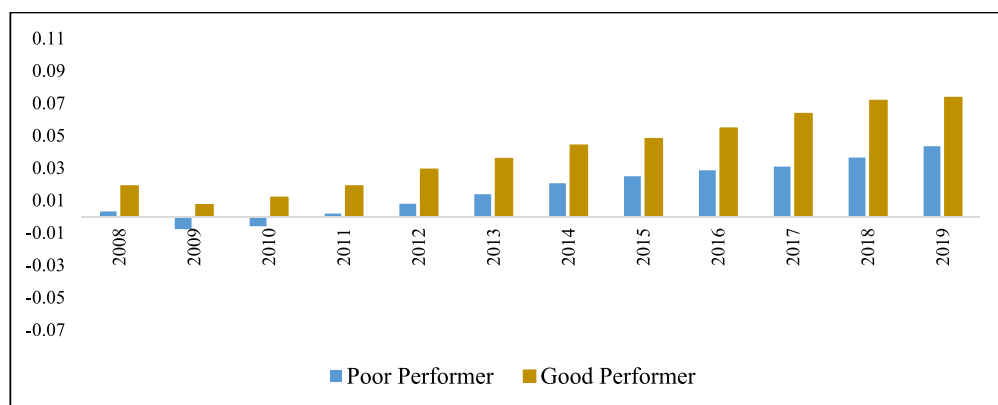

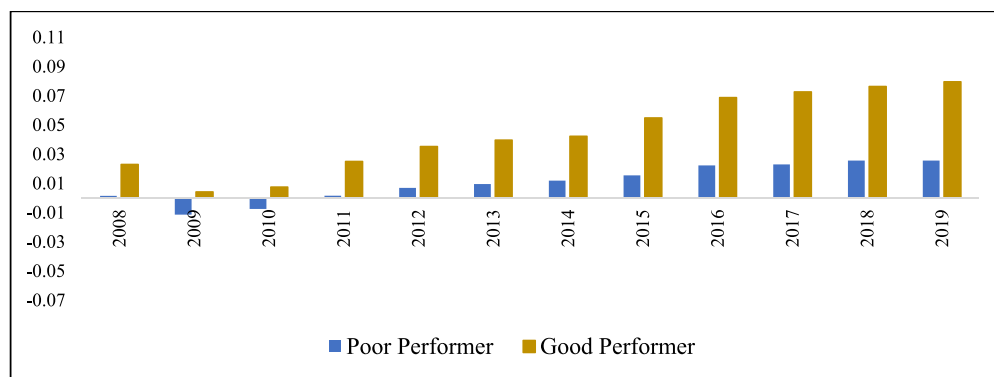**Fig. 2.** Room slacks between poor performers and good performers.

Fig. 3. Food and beverage slacks between poor performers and good performers.

enhance and maintain their performance—that is, hotels that increased food and beverage slacks during the crisis increased their operational resilience.

During the recovery years (2010−2013), the slack resources of the marketing, food and beverage, and room departments significantly increased the probability of improving hotel performance ($26.2047, p < 0.1; 17.1637, p < 0.01; 13.4550, p < 0.05$, respectively). In addition, increasing food and beverage slacks more than room slacks had stronger contributions to resilience ($17.1637, p < 0.01$ vs. $13.4550, p < 0.01$). That is, more food and beverage slacks would increase the probability of better hotel performance than room slacks.

The effects of slacks continued to be significant and positive during the post-recovery years (2014–2019). In particular, marketing slacks were most influential in increasing hotel performance during the recovery and post-recovery periods ($41.9174, p < 0.01$), indicating that the hotels with greater levels of marketing slacks were more likely to be better performers. In other words, when hotels accumulate marketing slacks more than rooms or food and beverage slacks, they can increase resilience more effectively, especially during post-recovery years. Between rooms and food and beverage slacks, room slacks had more positive influence than food and beverage slacks ($23.2490, p < 0.01; 15.7263, p < 0.01$, respectively) on the probability of hotels becoming good performers. Overall, to maximize resilience, hotels should deploy their slack resources differently at different stages of a crisis.

To test the robustness of the results, we replicated the analysis using the year 2020 data (coronavirus disease of 2019 crisis), and it provided consistent results with the main findings of the 2009 crisis.

Conclusions

Considering the findings from previous studies on slacks and crisis management, we argue that hotels have developed various slack resources in the form of human resources, and these slacks have different flexibilities and can be categorized by department: rooms, food and beverage, and marketing. To identify whether differences existed in their slack resource deployment during and after a crisis, we grouped poor- and good-performing hotels by operational resilience. The slack resource management of poor- and good-performing hotels showed considerable contrast over time. The poor-performing hotels decreased room, food and beverage, and marketing slacks more during the crisis year than during the precrisis year, whereas the good-performing hotels maintained room, food and beverage, and marketing slacks slightly more in the crisis year than in the precrisis year. Furthermore, while the good-performing hotels increased room and food and beverage slacks immediately after the crisis year and over the recovery years, the
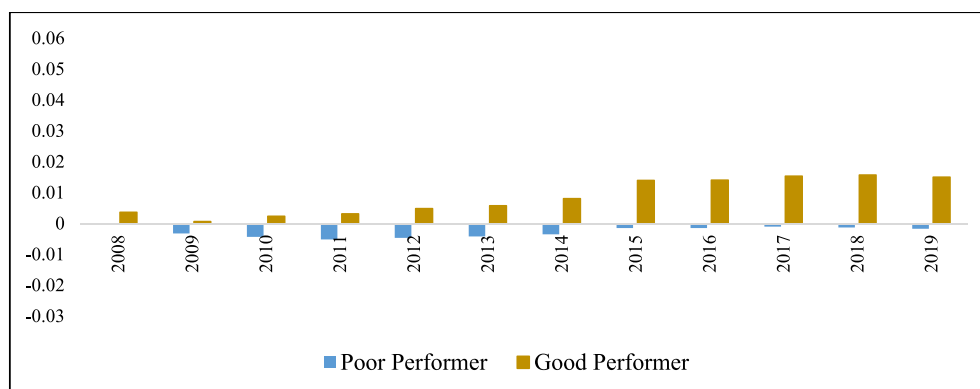

Fig. 4. Marketing slacks between poor performers and good performers.

Table 2
Impact of slack resources on hotel resilience.

	Dependent Variable: Poor performer (0) & Good performer (1)		
	Crisis	Recovery	Post-Recovery
	2009	2010– 2013	2014– 2019
Room Slack	19.4410	**13.4550**[**]	**23.2490**[***]
	(19.0492)	**(6.8581)**	**(3.9346)**
Food & Beverage Slack	**23.7248**[**]	**17.1637**[***]	**15.7263**[***]
	(10.0667)	**(4.0308)**	**(2.5984)**
Marketing Slack	5.1323	**26.2047**[*]	**41.9174**[***]
	(33.6668)	**(13.8611)**	**(7.5718)**
Administrative & General Slack	−51.3328[*]	−44.5700[***]	−22.8725[***]
	(29.0255)	(11.0343)	(7.0055)
Property Operations & Maintenance Slack	−94.6954	−10.1186	−26.1013
	(58.8115)	(26.7696)	(18.5188)
Class	1.2754[**]	1.0748[***]	1.2555[***]
	(0.5504)	(0.2153)	(0.1663)
Operation	1.5668	1.3879[**]	2.1065[***]
	(1.0732)	(0.5443)	(0.3957)
Full	Included	Included	Included
Size	Included	Included	Included
Age	Included	Included	Included
Location	Included	Included	Included
State	Included	Included	Included
Year	–	Included	Included
_Cons	−1.1472	0.2098	−2.3552
	(2.3331)	(1.2612)	(0.7240)
Observation	150	600	895

Note: Poor (Good) performers represent the hotels that have consistently lower (higher) operating performance (EBITDA over total revenue) than the industry average from 2009 to 2014 (for 6 years) in each state.

   * Significant at 10 %.
  ** Significant at 5 %.
*** Significant at 1 %.

poor-performing hotels could not raise them even another year after the crisis. Surprisingly, until 2019, the poor-performing hotels never had more marketing slacks than in the precrisis year.

To clarify the impacts of slacks on resilience, we used unique property-level data and analyzed the effects of rooms, food and beverage, and marketing slacks on resilience across three periods: crisis, recovery, and post-recovery. Overall, the regression results reveal that a hotel's absorbed slacks can contribute to resilience after crises. In addition to serving as buffers that mitigate the negative impacts of crises, slack resources can be a booster for helping hotels recover their performance and perform consistently better than competitors during recovery and post-recovery.

More importantly, using long-term data, we verified that firms are heterogeneous in their abilities to deploy slacks and that the effects of slacks on resilience can be changed over time. During the crisis year, only the hotels that increased food and beverage slacks were more efficient in improving resilience than the hotels that increased other slacks. However, the hotels that increased marketing or food and beverage slacks more than room slacks experienced larger performance growth during recovery years. In the post-recovery years, the hotels that increased more marketing or room slacks than food and beverage slacks achieved better performance improvement. These findings indicate that the effects of slack resources on resilience are not monotonous but dynamic under different economic conditions, and our results reconcile the inconsistent findings on the relationship between slacks and resilience.

Theoretical contributions

Like other slack resource-based studies, this study attempts to extend the resource-based view by providing evidence of the needs for slack resources. Resource-based view suggests that firms should possess resources and the possession of resources always provide competitive advantages. However, resource-based theory cannot explain to what extent or level firms should have resources or the reasons for outperforming or underperforming in a crisis. The findings of this study clarify that sustainable competitive advantages can be generated not only by retaining resources (resource-based view) but also by redeploying resources in an appropriate manner and at the right time (slack resource theory). More importantly, the results show that certain types of resources might provide per-formance benefits at particular times, highlighting the capability of firms' resource management, especially regarding how firms should allocate additional resources in existing resource bundles (Aliperti et al., 2019; Jiang et al., 2019; Marlin & Geiger, 2015; Paeleman & Vanacker, 2015; Zheng et al., 2022). By demonstrating the effects of different slacks with longitudinal data, this study provides explanations for why some firms keep certain types of resources in excess for unexpected events and perform better than other competitors in the long term, even after a crisis.

This study also contributes to the literature on slack resources and operational resilience. Several attempts have been made to rec-oncile the inconsistent findings from previous studies, which have mainly explored one-dimensional slacks, particularly unabsorbed

types (such as financial slacks), but this study focused on absorbed slacks (human resources). To capture these multidimensional slacks, we explored the flexibility of slacks and conceptualized that the level of flexibility depends on hotels' functional levels. This approach allows for explaining the diverse impacts of slacks at the operational level (Essuman et al., 2022), thus resolving the mixed findings regarding slack-resilience relationships. In addition to examining slacks, this study also used measurements of operational resilience that reflect hotels' capacities to recover and enhance performance during and after a crisis. Previous studies used financial performance measures (e.g., return on assets, sales) focused on short-term survival outcomes, but we operationalized resilience as a long-term outcome reflecting sustainable and superior performance before, during, and after a crisis (Williams et al., 2017). In doing so, we compared each hotel's performance with industry performance averages in precrisis periods and then grouped hotels into good performers and bad performers based on their constant performance during and after a crisis.

Practical implications

The findings are more useful for hotels at the property level than for those at the corporate level. This is because property-level hotels generally lack slack resources and are more constrained than corporations to daily operations (Ritchie & Jiang, 2019). Many small sizes of hotels do not have unabsorbed slacks (e.g., cash flow), but they do have absorbed slacks that are essential for operations and can help them prepare for sustained recovery (Essuman et al., 2020; Jiang et al., 2019, 2021). The overall findings, the positive effects of food and beverage slacks on resilience throughout all periods, highlight their critical role in hotel operations. Food and beverage departments retain a more skilled and competitive workforce than room departments because of their operational complexity (Mun et al., 2021, 2022), so we recommend that hotels continue to increase their food and beverage slacks (e.g., by attracting better-trained employees) to reduce the adverse impact of crises, increase operational efficiency, and enhance sustainable competitive advantages.

This study also highlights that hotels should adjust their slacks at the right time to enhance operational resilience. In normal circumstances, hotels tend to retain extra employees than needed to prepare for high seasonal demand (Li et al., 2020; Marlin & Geiger, 2015). However, according to the findings of the crisis period, hotels decrease their slacks overall. Although several studies have pointed out that reducing slacks is not beneficial for long-term performance, some insignificant slack-resilience relationships indicate that this is not always the case. Temporarily reducing rooms and marketing slacks, especially in times of crisis, will not negatively affect resilience, but reducing these slacks after the crisis will significantly damage long-term performance.

In a similar vein, hotels should find the right balance of various slacks at different times to increase performance and resilience (Wan & Yiu, 2009; Wang et al., 2016). For example, we found that, especially during the crisis, food and beverage slacks were the only significantly positive factor that promoted hotel performance, so hotels should deploy more slacks in food and beverage. In addition, marketing slacks were the most significant factor during the recovery and post-recovery periods, indicating that hotels should be encouraged to invest more in marketing when the economy improves. These findings highlight the importance of strategically combining organizational resources that can help hotels suffer less from financial hardships and enhance sustainable competitive advantages.

Limitations and future research

This study has limitations that should be considered in future studies. The data are from a single country, the United States, and studies should be conducted in other countries to capture differences in economic situations and managerial decisions regarding risk management. For example, reductions or accumulations of slacks can be diverse because of different accounting standards, market sizes, and cultural values. To improve generalizability, this study focused on the effects of the global economic crisis on slack-resilience relationships. However, as tourism is highly affected by various types of short-term crises (e.g., political crises and natural disasters), future studies should examine the effects of these crises in depth. Lastly, we recommend that researchers introduce mediators and associated moderators (e.g., service quality, organizational structure, strategic orientation) to our conceptual model.

CRediT authorship contribution statement

Linda Woo: Writing – review & editing, Writing – original draft, Validation, Methodology, Conceptualization. **Sung Gyun Mun:** Writing – review & editing, Writing – original draft, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Kwanglim Seo:** Writing – review & editing, Writing – original draft, Validation, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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