

Association of Nonfinancial Performance Measures with the Financial Performance of a Lodging Chain

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A test of nonfinancial measures used as part of a management-incentive program by a U.S.-based, full-service hotel chain found that improvements in the nonfinancial measures were followed shortly by increases in revenue and profit. The two nonfinancial measures are customer satisfaction as measured by guests' comment card indications of likelihood to return and level of complaints. The lag between the nonfinancial measures and changes in revenue and operating profit was six months in this case. While the

test applies directly to that one chain, the lesson is important to the rest of the hotel industry.

Keywords: nonfinancial performance measures; performance evaluation; incentive plans; customer satisfaction; executive compensation; hospitality industry; balanced score card.

Many firms now use nonfinancial measures, such as product quality, customer satisfaction, and market share, to evaluate and reward managerial performance.¹ The primary reasons suggested for this approach are that these measures are better indicators of future financial performance than are accounting measures, and they are valuable in evaluating and motivating managerial performance.² To date, however, there have been few independent studies of the relationship between nonfinancial measures and financial performance. At that, the results of existing studies have been mixed.³ In addition, although there have been calls for greater emphasis on nonfinancial measures in internal performance-measurement systems,⁴ and although firms have implemented such systems, little evidence exists regarding whether including nonfinancial measures in performance evaluation and incentive compensation actually drives corporate success.⁵ We studied time-series data from a number of lodging properties managed by a large hospitality firm that implemented an incentive system based on nonfinancial and financial performance measures to address the following two research questions: (1) Are the nonfinancial performance measures leading indicators of financial performance?⁶ and (2) Does the adoption of an incentive compensation plan that increases the emphasis on nonfinancial performance measures for key managers lead to improvements in both financial and nonfinancial performance?⁷

Hospitality organizations were quick to adopt the idea of monitoring and reporting nonfinancial performance measures. For instance, Huckestein and Duboff described the implementation of a “balanced scorecard” at Hilton Hotels.⁸ Several reasons have been suggested to explain why nonfinancial measures are used by hospitality

firms to augment financial measures in management control. For one thing, nonfinancial measures are believed to complement short-run financial figures as indicators of progress toward a firm’s long-term goals and reflect overall corporate strategy.⁹ Current profit and other financial measures only partially reflect the effects of past and current activities, whereas nonfinancial measures of customer satisfaction, internal process improvements, and an organization’s innovation and improvement activities reflect the effect of current managerial actions that will not show up in financial performance for some time.¹⁰ The use of nonfinancial measures for performance evaluation is also consistent with theoretical work on compensation in agency settings. Because financial measures of performance may be imperfect and noisy signals of a manager’s effort, nonfinancial measures can add value by inducing long-run, focused effort.¹¹

The prevalence of compiling and reporting nonfinancial metrics in the lodging industry suggests that hotel operating companies may realize additional benefits from tracking these measures. For instance, hotel management companies with large franchise operations are concerned with the quality of their franchisees’ properties. Nonfinancial measures of customer experiences at a franchised property may provide information on how certain properties improve or diminish the franchisor’s overall reputation. Thus, monitoring or contracting on the nonfinancial measures of franchisees may help resolve the free-rider problem. In addition, if nonfinancial measures reflect future financial performance, they may be useful for capital budgeting as they may provide a clearer link between current new investment and future cash flows.

Because several parties typically share in a property’s cash flow, the relationships

between nonfinancial measures, incentive plans, and future financial performance take on added significance. For instance, if franchisors impose nonfinancial standards on their franchisees, owners need to know that compliance with these measures is not going to result in a drop in operating profits as they attempt to maximize nonfinancial measures. Moreover, as management companies implement incentive plans based in part on nonfinancial measures, owners need to ascertain whether these new plans, which they fund, contribute to the owner's long-term goal of value creation. Otherwise, these types of plans may simply result in wealth transfers among the interested parties.

Using an event study design, we analyzed longitudinal archival data both before and after a change in an incentive plan to provide empirical evidence on the financial effects of incorporating nonfinancial measures in incentive contracts. As we explain below, the analysis reveals that nonfinancial measures of customer perceptions are related to future financial performance and that both financial and nonfinancial performance improve following the implementation of an incentive plan that includes nonfinancial measures of performance.

Research Site, Incentive Plan, and Data Collection

The research site for this study is a hotel chain (which we call Hotelcorp) operated by the hospitality division of a multi-billion-dollar corporation. During the period of this study, the chain franchised more than two hundred hotels and directly managed more than twenty hotels. The hotels are located around the world, but the focus of this study is the hotels that Hotelcorp manages in the United States. We studied the U.S. hotels so that we could have access to senior managers and,

more important, for availability of comparative data for a control group of franchised hotels and competitors that enables us to estimate the relationship between financial and nonfinancial performance and isolate the performance impact of the incentive plan.

The managed hotels vary from 150 to 450 rooms. Many of the hotels are rated as four star, and all managed hotels offer full service. Most of Hotelcorp's managed hotels cater largely to business travelers. Many aspects of the managed hotels' operations are homogeneous, notably their incentive system, organizational structure, clientele, and infrastructure. Needless to say, exogenous factors like geographic location and competitors are different for each property.

Incentive Plan

Nearly two-thirds of hotel operators use some form of incentive pay for their managers, and more than one-half use some kind of bonus program for their hourly employees. The maximum bonus ranges between 30 and 70 percent of the base salaries for managers.¹² Even though a large percentage of the business in the hotel industry is from repeat customers and customer service is an essential aspect, reliance on customer satisfaction and related nonfinancial measures in incentive pay is a recent phenomenon. A survey conducted by Hotelcorp indicated that in the 1990s other hotel chains had implemented incentive programs for their senior managers based on profit levels and on nonfinancial measures, such as quality of rooms and food, safety, guest satisfaction, and employee satisfaction. The incentive programs at major hotel chains differed in target setting, bonus-pool creation, maximum bonus as a percentage of salary, and weights placed on financial

and nonfinancial performance measures, but all of them emphasized nonfinancial measures. The senior managers believed that a customer-focused strategy is essential not only for the long-term profitability of an individual hotel but also for enhancing the hotel chain's brand value. Hotelcorp introduced its incentive plan for key managers with the objective of rewarding employees for meeting the key objectives of owners' satisfaction (profitability) and customer satisfaction, as outlined in its mission statement.

Prior to the new incentive plan, individual hotel managers' compensation included a base salary and a bonus based on financial measures, including operating profit, revenues, and costs. The maximum bonus was a percentage of the base salary as determined by the manager's position at the property. For example, the general manager of a hotel might earn up to 20 percent of base pay as a bonus for achieving the hotel's profit goals. In addition, a portion of the bonuses of key managers within a hotel was based on individual performance measures for their particular area of responsibility. Although customer-satisfaction measures were tracked, they were not used explicitly for incentive purposes. With the dual objectives of keeping in line with competitors and of focusing and directing the efforts of managers on key company objectives, the hotel chain's new incentive plan was based on both operating profit and nonfinancial measures.

Based on the principles of the service-profit chain,¹³ the new incentive plan was developed by a team of regional vice presidents and corporate executives representing human resources, marketing, planning, and operations. The team identified both financial and nonfinancial measures of performance based on the strategic

objective of satisfying the two stated constituencies—namely, hotel owners and guests. The new bonus plan for all hotel managers can be approximated by a linear contract based on hotel profit, proprietary factors, and the following two nonfinancial measures: likelihood of return and customer complaints. The senior manager in charge of the division indicated that the weights on the financial and nonfinancial measures were chosen based on a consensus agreement among the senior managers.

Measurement of the variables and the reasons for their inclusion in the incentive plan are described later. Without disclosing specific details, the basics of the new plan are as follows. To begin with, managers' base salaries did not change. The new incentive plan differs from the old plan in the following three ways: (1) the new plan relies on performance measures (both financial and nonfinancial) common to all managers, while the old plan relied on individual performance measures (mainly financial); (2) the new plan explicitly incorporates nonfinancial measures with specific weights on each measure; and (3) the new plan increases the maximum possible bonus for some managers by increasing the bonus rate applied to the base salary, with a large proportion of that potential bonus based on nonfinancial measures. However, the new incentive plan continues to use current gross operating profit (GOP) as the financial performance measure and provides the same (or slightly lower) level of incentives for achieving operating profit goals as the old plan.¹⁴ Managers could earn the maximum possible bonus only if both financial and nonfinancial targets are attained. In summary, the new incentive plan retained the company's existing emphasis on current financial performance but also encouraged attainment of nonfinancial objectives.

Data

Monthly data were obtained for a period of up to seventy-two months for the managed hotels. Company documents and interviews with senior managers and corporate staff provided qualitative data on their beliefs and expectations about the incentive plan. In addition, general managers of two hotels were interviewed to understand hotel operations and obtain their views about effort reallocation in response to the new incentive plan. We examined the following nonfinancial performance measures.

Likelihood of return (LRETURN). Customer satisfaction is considered a key short-term measure that is a lead indicator of long-term performance. In evaluating customer satisfaction, many hotels employ a weighted index of customer satisfaction based on a number of questions. The incentive plan at Hotelcorp uses a measure based only on the response to the comment card question that asks how likely it is that a guest will return.¹⁵ Senior managers believe that this question best captures the customers' intent to provide repeat business. LRETURN is computed as the percentage of customer-response cards with the two highest ratings (that is, 4 or 5 out of 5). Hotel managers can take a number of actions pertaining to the operations of the hotel to improve this measure, including price concessions and delivering amenities to the rooms. However, such extra steps may lead to an increase in operating costs that could penalize their financial scores.

Customer complaints (COMPLNTS). The number of customer complaints is another measure used in the plan. Billing errors, service catastrophes, and problems with service personnel are some of the

prime reasons for customers to switch hotels.¹⁶ Analogous to defect rates in a manufacturing setting, customer complaints provide direct feedback on the hotel's operating processes and are useful for developing corrective actions. Thus, customer complaints can also be viewed as an internal business-process measure that reflects the effectiveness of the operations at a hotel.¹⁷ Focusing on potential problem areas, responding quickly to complaints, and resolving customer concerns are examples of managerial actions that can reduce the number of complaints and impact customer loyalty.¹⁸ COMPLNTS is measured as the number of customer complaints per thousand room-nights. Hotelcorp included this measure also because it provides an independent measure of customer satisfaction. Customers register their complaints either by calling the customer service center directly or by writing. Thus, this measure cannot be manipulated easily. The cross-sectional correlation between LRETURN and COMPLNTS ranged between $-.27$ and $-.39$ over the seventy-two-month sample period.

Financial Performance Measures

As we said above, GOP is the financial-performance measure employed in Hotelcorp's incentive plan. For our purposes, gross operating profit per available room (GOPPAR) is computed as total revenue per available room (TREVPAR) from rooms, food, beverage, and other activities like telephone and movies, less departmental and undistributed operating expenses per available room (COSTPAR). The use of this measure of GOP reflects Hotelcorp's philosophy that "measurements must reflect the manager's effectiveness." Financial data follow the uniform system of accounts for the hotel

Exhibit 1: Description of Variables

TREVPAR	Total revenue per available room
COSTPAR	Operating cost per available room
AVGRATE	Average rate for a hotel measured as total revenues divided by number of occupied rooms
OCCRATE	Occupancy rate for a hotel measured as number of occupied rooms divided by number of available rooms
LRETURN	Likelihood of return measure
COMPLNTS	Number of complaints per thousand rooms

Exhibit 2: Descriptive Statistics

Variable	Mean	Standard Deviation	First Quartile	Median	Third Quartile
TREVPAR	86.96	25.56	68.41	86.26	103.89
COSTPAR	66.50	16.55	56.24	65.88	76.03
AVGRATE	126.20	27.01	111.19	126.71	143.30
OCCRATE	0.69	0.15	0.60	0.71	0.80
LRETURN	0.91	0.08	0.88	0.93	0.96
COMPLNTS	0.92	0.65	0.45	0.80	1.22

Note: All numbers are disguised by multiplying by a scalar. See Exhibit 1 for definitions of variables.

industry.¹⁹ We partitioned TREVPAR into its price and occupancy components, average daily rate, and occupancy. Average rate (AVGRATE) was measured as total (not room) revenues divided by the number of occupied rooms, and occupancy rate (OCCRATE) was measured as the number of occupied rooms divided by the number of available rooms.

Results

Descriptive Information

Exhibit 1 summarizes the definitions of the variables, while Exhibit 2 presents disguised information on the study's key variables. Average daily TREVPAR is \$86.96, and the corresponding cost is \$66.50. Revenue can be partitioned into

the average amount per room occupied, \$126.20, with an occupancy rate of 69 percent. Over the study period, 91 percent of respondents said they were likely to return to the hotel if they again visited the area (LRETURN). Customer complaints (COMPLNTS) averaged 0.92 per thousand rooms occupied.

Estimation Models

Nonfinancial Measures as Lead Indicators of Financial Performance

We use pooled time-series data of up to sixty months for eighteen properties to examine the relationship between current nonfinancial performance measures and future financial measures. Our estimation models specify financial performance per

available room and its components as functions of exogenous parameters, past financial performance, and lagged values of nonfinancial measures.²⁰ The exogenous variables that affect financial performance in the hotel industry include hotel-specific factors; seasonality; and local, regional, and other economy-wide factors like inflation. To control for exogenous factors that affect revenues, we include an index (labeled COMPREV) that measures competitors' average revenue per available room (RevPAR). This measure (COMPREV) is the most widely used benchmark in the hotel industry and best captures the external variables that affect the local hotel industry. COMPREV is computed by an independent agency that collects the relevant confidential information from participating hotels.

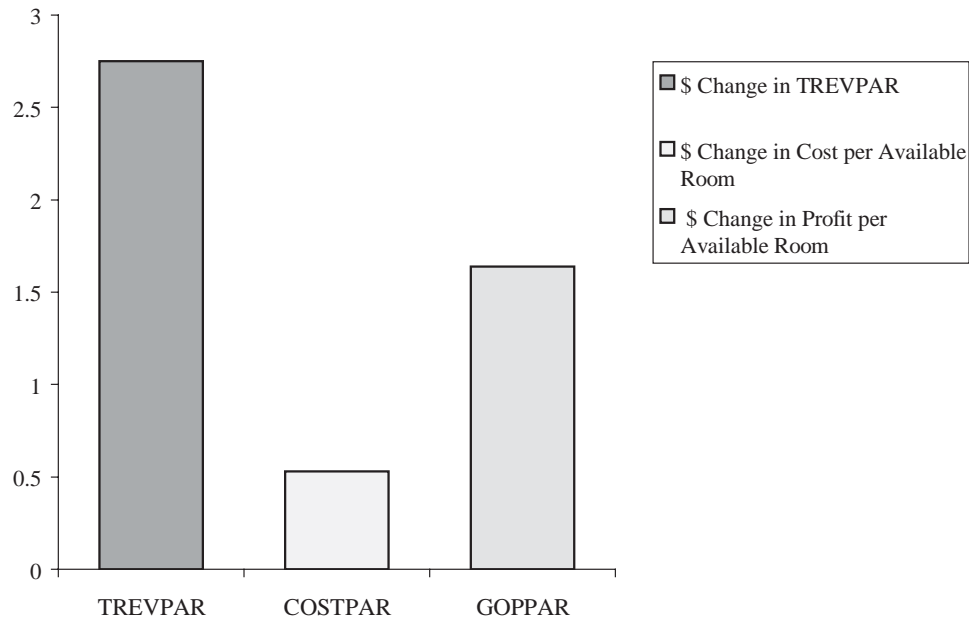
Unlike the revenue model, competitors' cost data, which may help the model to control for seasonality and other factors, are not available. Since hotels' seasonal and trend variations in operating costs are primarily driven by volume, we include occupancy rate (OCCRATE) to control for variations in operating costs. To control for changes in operating costs due to inflation, we include the Employment Cost Index (ECI), which measures the average total wages and benefits paid to employees, since payroll costs can constitute more than half of operating costs. Because of the lack of competitor data, for the GOPPAR model we control for seasonal and other variations by including COMPREV as a control variable. We also include the previous period's financial performance to control for hotel-specific time trends and to examine whether nonfinancial measures provide additional information on future financial performance that is not reflected in current financial measures.²¹

While earlier studies recognize that nonfinancial measures may have long-term effects, no formal theory identifies the specific number of lags for nonfinancial measures. Anderson, Fornell, and Lehmann use a half-year-lag model, for example, but they do not present a theoretical justification for using that length of time.²² Therefore, it is necessary to undertake a specification search to determine the appropriate lag length. The results of that search are AVGLRETURN and AVGCOMPLNTS. These two variables, which are the moving average of the past six months of the nonfinancial measures, are included as independent variables rather than multiple lags.²³ Consequently, for this firm changes in nonfinancial measures affect the next six months of financial performance.

Exhibits 3 through 6 present estimates of the relationships between nonfinancial measures and future financial performance as measured by the levels of revenues, operating cost, and profit per available room. The overall regressions are significant ($p = .01$) with adjusted R^2 ranging from .80 to .90. The two nonfinancial measures in these regressions have incremental R^2 ranging from .005 to .025 and account for 5 to 25 percent of the unexplained variance in financial performance. Exhibit 3 reveals that the prior-six-month average of LRETURN is positively associated with TREVPAR and GOPPAR. (It is also significant, $p < .01$.) The exhibit reports that a 0.10 increase in LRETURN would result in about a \$2.75 increase in TREVPAR per day and about a \$1.64 increase in GOPPAR per day. While costs also increase, \$0.53, the amount is not significantly different than zero. Exhibit 4 reveals that most of the gain in revenue is explained by increases in occupancy, rather than from ADR rises. Indeed, a 0.10

Exhibit 3:

Association of a 0.1 Increase in Likelihood of Return with Financial Performance (per Available Room) (Holding All Other Variables Constant)



Note: See Exhibit 1 for definitions of variables.

increase in LRETURN is estimated to result in an increase in occupancy of 3.7 percent.

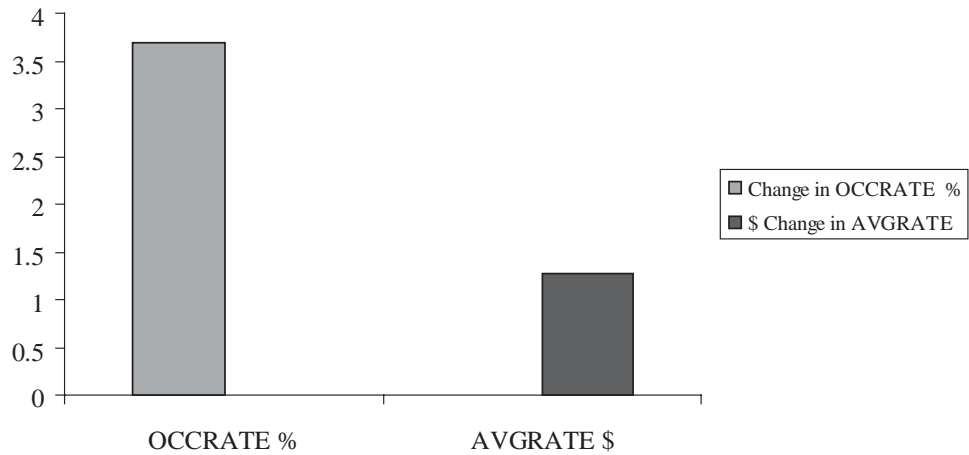
Exhibit 5 reveals that COMPLNTS is negatively associated with revenues and profit per available room (but it is not significantly so at $p < .01$). The exhibit reports that a 1.0 decrease in COMPLNTS would result in about a \$1.00 increase in TREVPAR per day and about a \$0.40 increase in operating profit per room per day. While costs also increase, about \$0.70, the amount is not different from zero. In this case, most of the gain is explained by increases in average revenue per room sold (as shown in Exhibit 6). In fact, a 1.0 decrease in COMPLNTS is estimated to result in significant increase in

daily revenue per room sold of more than \$3.00.

In summary, the results suggest that the nonfinancial measures used by Hotelcorp are lead indicators of future financial performance. The analyses of the lead-lag relationship between Hotelcorp's nonfinancial performance measures and its financial performance suggest that nonfinancial measures of customer satisfaction help predict future financial performance for the next six months. Our results also suggest that the association between financial and nonfinancial performance may be a result of repeat purchases rather than increased price premiums. This finding is similar to that of Ittner and Larcker, who reported that customer-satisfaction

Exhibit 4:

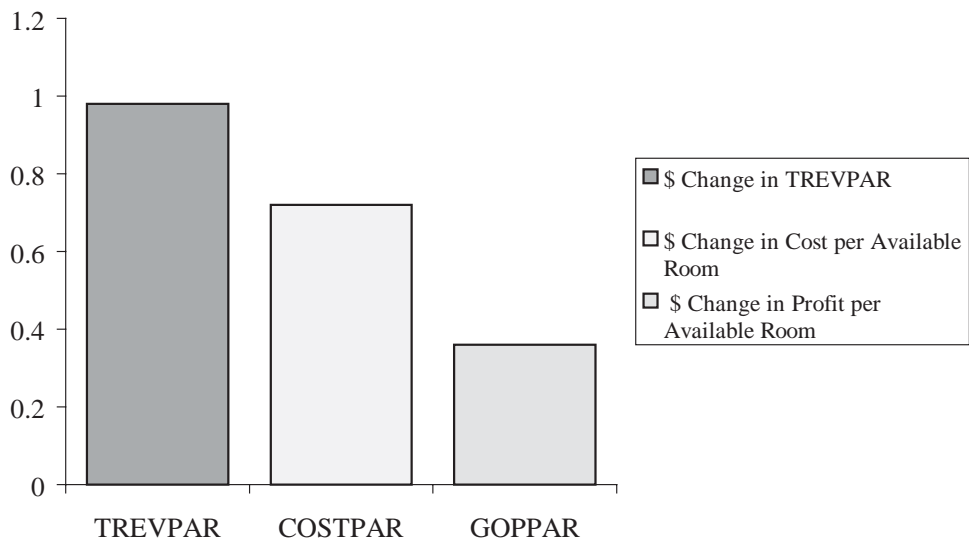
Association of a 0.1 Increase in Likelihood of Return with Rate and Occupancy (Holding All Other Variables Constant)



Note: See Exhibit 1 for definitions of variables.

Exhibit 5:

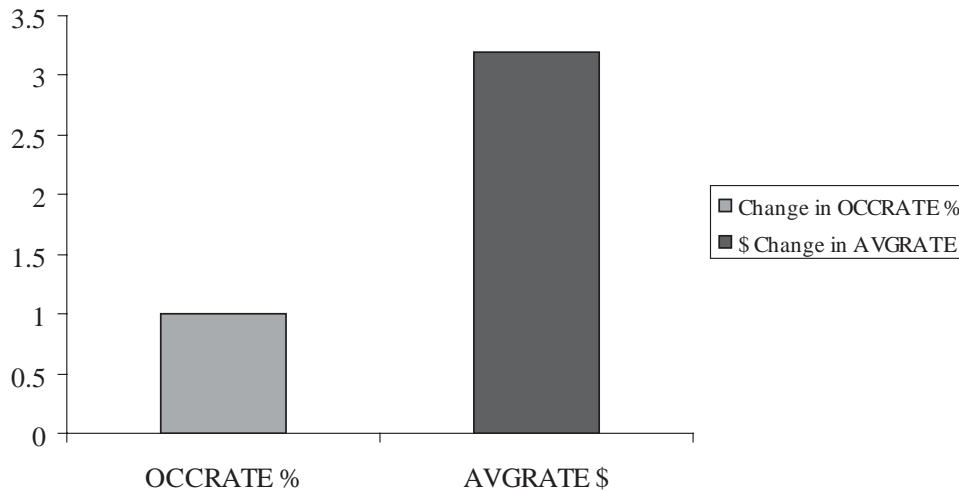
Association of a 1.0 Decrease in Customer Complaints with Financial Performance (Holding All Other Variables Constant)



Note: See Exhibit 1 for definitions of variables.

Exhibit 6:

Association of a 1.0 Decrease in Customer Complaints with Rate and Occupancy
(Holding All Other Variables Constant)



Note: See Exhibit 1 for definitions of variables.

measures are associated with growth in new customers but not with increased profit from existing customers.²⁴ Moreover, we find little evidence that increased customer satisfaction is associated with increased operating costs other than through the impact on occupancy-related variable costs.

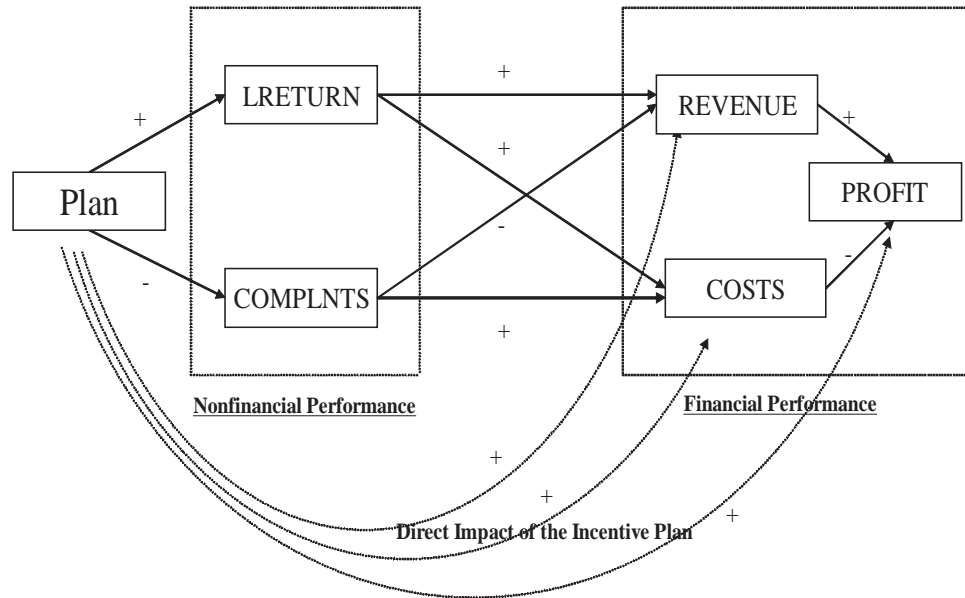
Impact of Incentive Plan on Nonfinancial Performance

Our second research question focuses on the performance effects of including nonfinancial measures in incentive plans. Intuitively, one would expect a performance measure to improve when it is positively linked to monetary incentives. Agency theoretic research supports the view that including a performance measure in an incentive plan results in a reallocation of effort by managers that leads to an improvement along the measured

dimension.²⁵ As discussed earlier, nonfinancial measures were reported at Hotelcorp but not used for incentive purposes prior to the implementation of the new plan.

As shown in Exhibit 7, the implementation of the incentive plan can affect financial performance either indirectly by improving nonfinancial performance measures, which then affect financial performance, or directly through enhanced cost efficiency or value-added activities. Implementation of an incentive plan based on customer-satisfaction-oriented nonfinancial measures increases customer-service activities and, consequently, installing such a plan is likely to increase customer satisfaction. An increase in operating costs may also result from an increased customer-satisfaction effort. For example, managers may have to train their employees in customer service. While it is possible that costs may increase, we expect that

Exhibit 7:
Relation between Incentive Plan, Nonfinancial Measures, and Financial Performance



Note: See Exhibit 1 for definitions of variables.

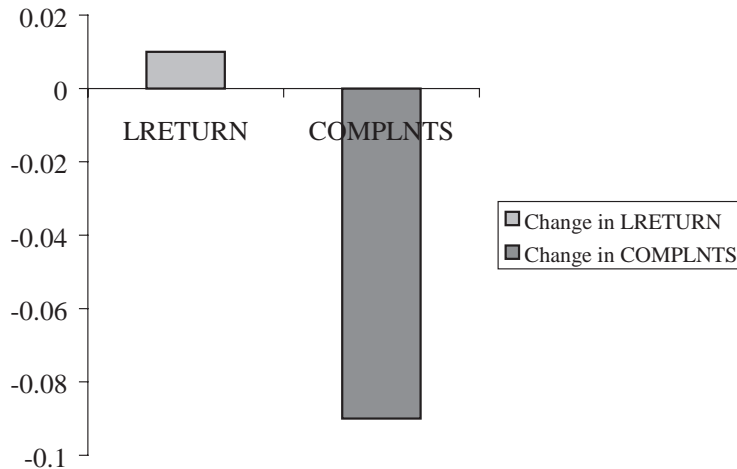
any cost increase would be lower than the corresponding revenue increase, meaning that profits are expected to increase as a consequence of an increased emphasis on customer satisfaction. Finally, the new incentive plan provides higher bonus potential for some managers, and bonus costs are likely to increase following the implementation of the plan. Therefore, operating costs (both inclusive and exclusive of bonus costs) are likely to increase following the implementation of the new incentive plan.

Estimates of the effects of the change in the incentive plan on nonfinancial measures are presented in Exhibit 8.²⁶ The exhibit reveals that nonfinancial performance improved following the plan’s implementation. The exhibit reports that LRETURN increased a small but statisti-

cally significant 0.01 due to the plan. This suggests that the incentive plan resulted in an increase in customer satisfaction as measured by the likelihood-of-return measure. The exhibit also reveals that COMPLNTS dropped a significant 0.09, also presumably as a result of the incentive plan. Overall, these results support the assertion that “what you measure is what you get.”²⁷

Impact of Incentive Plan on Financial Performance

Exhibit 9 presents the incentive plan’s estimated effect on the three measures of financial performance (all statistically significant).²⁸ Estimates from the revenue model suggest that the plan resulted in a TREVPAR increase of about \$1.56. This

Exhibit 8:**Association of Incentive Plan with Nonfinancial Performance Measures**

Note: See Exhibit 1 for definitions of variables.

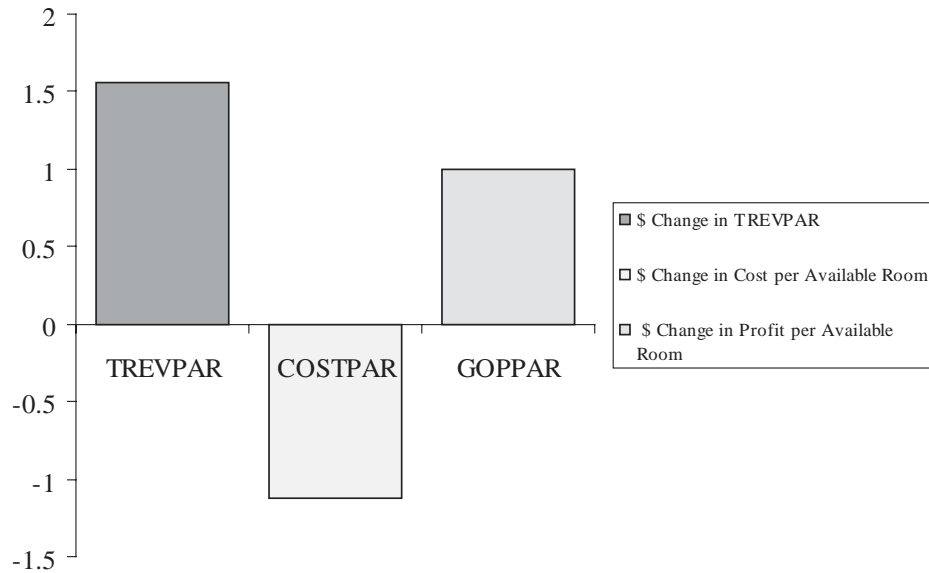
result is consistent with the earlier results that the nonfinancial measures are positively associated with revenues and that these measures improved following the change in the incentive plan. Overall, the results indicate that the incentive plan change has a positive and significant effect on revenues, controlling for inflation and competitors' performance. Exhibit 10 reveals that revenue gains came through both rate and occupancy increases. At the same time, the plan also resulted in a decrease in operating costs of about \$1.12 per room per night, after controlling for changes in costs due to changes in occupancy. Contrary to our expectations, this result indicates that hotel managers did not stifle cost-reduction efforts or increase spending to improve customer satisfaction. The impact of incentive plan change on GOPPAR is estimated at about \$1.00 per available room. Following the incentive plan change, revenues increased and costs decreased significantly, resulting in a net profit increase.

Overall, these results suggest that both nonfinancial and financial performance improved following the implementation of the incentive plan that included nonfinancial performance measures. While it is tempting to attribute this improvement solely to the fact that nonfinancial measures were added to the incentive compensation plan, caution needs to be exercised in drawing that inference because of the nature of the incentive-plan implementation. Therefore, the improvement in financial performance cannot be entirely ascribed to the inclusion of nonfinancial measures.

Impact of Incentive Plan on the Hotel Chain's Performance

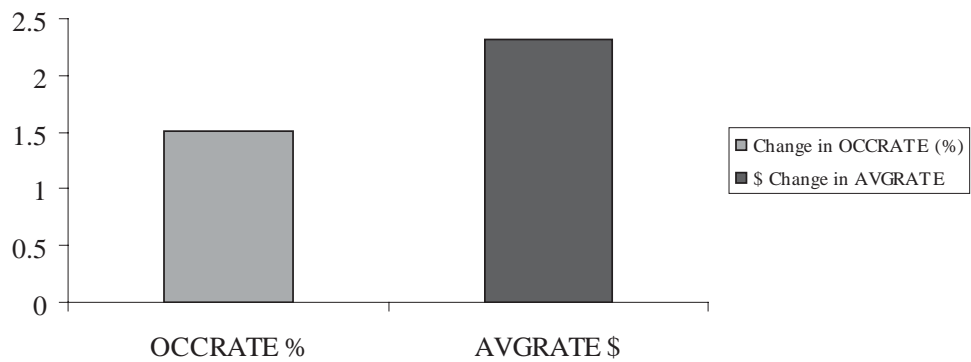
Marketing literature suggests that there may be positive externalities for improvements in customer satisfaction. Typical of most hotel chains, much of Hotelcorp's revenues come from franchise and management fees. As hotel manager, Hotelcorp

Exhibit 9:
Association of Incentive Plan with Financial Performance Measures



Note: See Exhibit 1 for definitions of variables.

Exhibit 10:
Association of Incentive plan with Rate and Occupancy

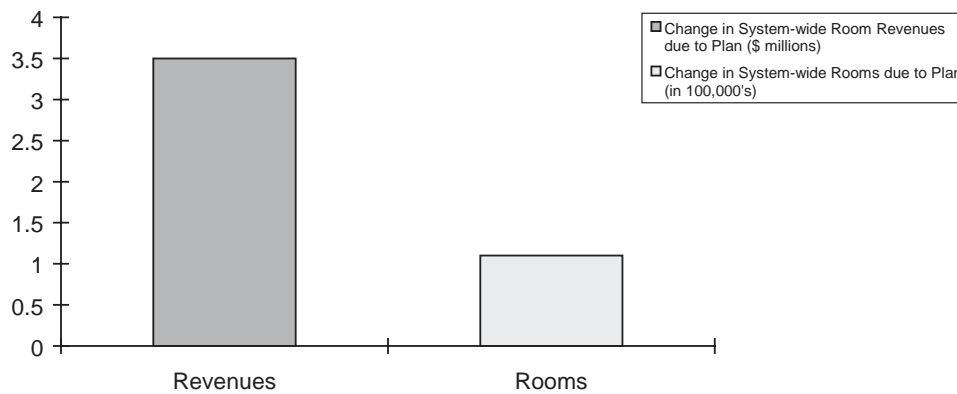


Note: See Exhibit 1 for definitions of variables.

collects a flat fee, plus incentive fees based on either revenues or profits of individual hotels. The emphasis on customer satisfaction can lead to improved overall

brand-name reputation and increased profitability for the whole chain. Based on better brand-name reputation, Hotelcorp may be able to increase the number of

Exhibit 11:
Association of Incentive Plan with Systemwide Rooms and Revenues



franchised hotels, thereby increasing its profits through franchise fees. Over the seven-year period preceding our study, the number of franchised hotels nearly doubled, and total revenues (without inflation adjustment) more than tripled.

Exhibit 11 shows the incentive plan's effect on the hotel chain as a whole. For this analysis, we examined the growth in the available number of rooms under the Hotelcorp brand name after controlling for the overall industry growth as measured by the number of rooms added in a year by the upscale and midscale hotel chains in the United States. In addition, we examined the growth in annual revenues generated by all Hotelcorp hotels relative to annual revenues generated by the upscale and midscale hotel chains in the United States. As shown in Exhibit 11, both the number of franchised hotels and the total revenues increased more for Hotelcorp than for its competitors following the implementation of its new incentive plan. This finding provides one more rationale for the use of customer-satisfaction measures in hotel-performance evalu-

ation. Once again, we must warn that the results should be viewed with caution because of externalities that we did not measure. Changes in franchise-fee structures, market niche, promotional efforts, contractual obligations, and other macroeconomic factors may have influenced the chain's growth in franchised hotels and revenues.

Concluding Remarks

Despite the cautions we have urged in interpreting our findings, the fact remains that we have documented that the nonfinancial measures used in the Hotelcorp's incentive plan were significantly associated with the chain's subsequent financial performance as measured by individual business unit revenues and operating profit. Moreover, our analysis provided some qualified support for the argument that these customer-satisfaction measures are associated more with long-term profits than with immediate financial performance. In addition, these simple measures of customer satisfaction were more effective than a complex measure in predicting

financial performance. Our analysis also documented that nonfinancial performance improved following the implementation of the incentive plan that included nonfinancial measures. Financial performance, as measured by GOP, also improved.

There are several limitations to this study. To begin with, we studied just one chain. However, if Hotelcorp is representative of other hotel chains, our findings may be generalized to the hospitality industry, albeit with the cautions we have offered above. Our analysis indicates that there is an average lag of six months between the time of a customer-satisfaction measurement and the resulting financial performance. The relatively short lag between measured satisfaction and a hotel's financial results is similar to that of retail banking and seems to capture the economic consequences of customers' frequent visits.²⁹ Another limitation pertains to data availability. The absence of full data for a carefully designed control group necessitates caution in interpreting the results. The study relies on alternative control measures in the form of comparative data for competitors or franchised hotels, but such comparable measures were not available for some models. Our findings are also limited by our model specification in the absence of a theoretical functional relation between nonfinancial measures and financial performance. Finally, because the incentive plan capped the bonus payouts as a percentage of operating profit, the incentive plan was able to cover its expenses and produce a net profit, and, hence, we conclude that it had a positive impact on profitability. Nevertheless, we are unable to provide a measure of overall ROI for the incentive plan because the potential positive externalities of nonfinancial measures on systemwide performance improvements and the costs of incentive plan design and implementation

need to be quantified in a more rigorous way. We leave it for future research to address this.

We conclude with some practical implications. Before beginning, it is important to keep in mind that at no time did Hotelcorp consider its plan based on nonfinancial measures to be optimal, and the firm has likely made refinements since our study. Acknowledging this, one implication of the study is that even simple measures of nonfinancial performance, such as likelihood of return and number of complaints, are related to future financial performance and appear to induce some appropriate managerial actions. Thus, firms may not need to invest in complex survey sources and expensive information-gathering techniques to implement an effective performance measurement system. Another implication is that it is important for hotel management to document the relationships between various nonfinancial measures and financial performance. At our research site, top management had an idea about this relationship but did not have any quantifiable method to convince individual hotels. Nor did the company have clear guidelines on how improvement in these measures could be attained. Understanding the links should help operating companies obtain the necessary support of employees, owners, and franchisees. It will also help public enterprises in complying with the Securities and Exchange Commission's recent ruling that management's discussion and analysis should identify and discuss key performance metrics, including nonfinancial performance measures that are material and used to manage the business.³⁰ Such an analysis will also help determine the appropriate measures and weights to be placed on these measures. For example, quantifying the relationships between nonfinancial measures and

financial performance across a wide range of observations could help in setting targets for nonfinancial measures. More is not always better; in fact, it may hurt overall performance beyond some threshold. Third, it is important for top management to identify other organizational factors such as culture and top managerial attitude toward customer satisfaction that may enhance or impede the success of incentive plans. While our study has documented an average effect across the eighteen properties, individual properties could exhibit varying levels of effectiveness. A more detailed comparative study of individual hotels will be of help in identifying such contextual factors.

Endnotes

1. Ittner, Larcker, and Rajan reported that 36 percent of the companies surveyed in their study use nonfinancial measures in executive compensation. C. Ittner, D. Larcker, and M. Rajan, "The Choice of Performance Measures in Annual Bonus Contracts," *Accounting Review*, April 1997, pp. 231-55. For details on the various studies that report increasing use of nonfinancial measures in compensation, see *Journal of Accountancy*, May 1993, pp. 17-18; and J. R. Hauser, D. Simester, and B. Wernerfelt, "Customer Satisfaction Incentives," *Marketing Science* 13, no. 4 (1994): 327-50. Other studies of Japanese and British companies also indicate increasing use of nonfinancial measures in performance measurement (T. Hiromoto, "Another Hidden Edge—Japanese Management Accounting," *Harvard Business Review*, July-August 1988, pp. 22-26; W. Rees and C. Sutcliffe, "Quantitative Non-financial Information and Income Measures: The Case of Long Term Contracts," *Journal of Business Finance and Accounting*, April 1994, pp. 331-47).
2. The argument that nonfinancial measures are better indicators of future financial performance is based on cause and effect. An implicit assumption is that managerial actions result in outcomes such as innovation, quality, or customer satisfaction, which, in turn, drive future financial performance (R. Kaplan and D. Norton, "The Balanced-Scorecard: Measures that Drive Performance," *Harvard Business Review*, January-February 1992, pp. 71-79, at 71; Hauser, Simester, and Wernerfelt, "Customer Satisfaction Incentives," 330). However, current financial measures do not reflect the value of these long-term oriented managerial actions. Therefore, nonfinancial measures of performance are useful to help refocus managers on the long-term aspects of their actions (T. Hemmer, "On the Design and Choice of 'Modern' Management Accounting Measures," *Journal of Managerial Accounting Research*, 1996, pp. 87-116, at 87-88).
3. C. Ittner and D. Larcker, "Coming Up Short on Nonfinancial Performance Measurement," *Harvard Business Review*, November 2003, pp. 88-95).
4. R. Kaplan and D. Norton, *The Balanced Scorecard* (Boston: Harvard University Press, 1996).
5. C. Ittner and D. Larcker, "Innovations in Performance Measurement: Trends and Research Implications," *Journal of Managerial Accounting Research*, 1998, pp. 205-38.
6. A principal justification for the uses of nonfinancial performance measures described above is that they are leading indicators of financial performance. Two surveys (Ittner and Larcker, "Innovations in Performance Measurement"; Arthur Andersen & Co. SC., *Customer Satisfaction Strategies and Tactics* [1994]) suggest that many firms did not find a significant association between customer satisfaction and accounting or market returns. Using cross-sectional annual data from seventy-seven Swedish firms from diverse industries, Anderson et al. found that, on average, customer satisfaction is positively associated with contemporaneous ROI but found weaker or negative associations in service firms. See E. Anderson, C. Fornell, and D. Lehmann, "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden," *Journal of Marketing*, July 1994, pp. 53-66; E. Anderson, C. Fornell, and R. Rust, "Customer Satisfaction, Productivity and Profitability: Differences between Goods and Services," *Marketing Science* 16, no. 2 (1997): 129-45. Ittner and Larcker's analyses based on customer- and business-unit-level data for two service firms indicated that customer satisfaction measures are positively related to future financial perfor-

mance (see C. Ittner and D. Larcker, "Are Non-financial Measures Leading Indicators of Financial Performance? An Analysis of Customer Satisfaction," *Journal of Accounting Research* 36 [1998]: 1-35). However, their firm-level analysis of cross-sectional data did not find consistent associations between customer satisfaction and market returns. Time-series data can help overcome some potential shortcomings such as omitted variables, endogeneity, and spurious correlation associated with analyses based on cross-sectional data. Our research setting with more than sixty time-series observations per business unit provides a greater statistical power to detect such a relation. Moreover, unlike previous studies that assume the lag period (such as a quarter, six months, or a year) because of data limitations, we are able to explore the timing of the lead-lag relation based on a statistical search.

7. Despite an increasing use of nonfinancial measures in managerial compensation (Ittner, Larcker, and Rajan, "The Choice of Performance Measures in Annual Bonus Contracts"), there is little empirical evidence of the performance impacts of such plans. Incentive plans that include nonfinancial measures can affect financial performance either directly or indirectly by improving nonfinancial performance, which then impacts financial performance. Although prior empirical studies have documented the performance impact of including financial measures in incentive plans (J. A. Wagner, P. A. Rubin, and T. J. Callahan, "Incentive Payment and Nonmanagerial Productivity: An Interrupted Time Series Analysis of Magnitude and Trend," *Organizational Behavior and Human Decision Processes* 42 [1988]: 47-74; R. D. Banker, S. Lee, G. Potter, and D. Srinivasan, "Contextual Analysis of Performance Impacts of Incentive-Based Compensation," *Academy of Management Journal* 39, no. 4 [1996]: 920-48), empirical support for the hypothesized performance impacts of including nonfinancial measures in compensation plans is at best weak (Ittner and Larcker, "Innovations in Performance Measurement"). Ittner, Larcker, and Rajan, in "The Choice of Performance Measures in Annual Bonus Contracts," analyzed the determinants of the use of nonfinancial measures in CEO compensation but did not examine the performance impacts of such compensation plans. Symons and Jacobs's study of a total quality management (TQM)-based reward system for production workers found that operational performance improved, but it did not examine the effects on financial performance. R. T. Symons and R. A. Jacobs, "A Total Quality Management-Based Incentive System Supporting Total Quality Management Implementation," *Production and Operations Management* 4, no. 3 (1995): 228-41.
8. D. Huckestein and R. Duboff, "Hilton Hotels: A Comprehensive Approach to Delivering Value for All Stakeholders," *Cornell Hotel and Restaurant Administration Quarterly*, August 1999, pp. 28-37.
9. American Accounting Association, "Report of the Committee on Non-financial Measures of Effectiveness," *Accounting Review* 46 (1971 suppl.): 165-211; H. Johnson and R. Kaplan, *Relevance Lost: The Rise and Fall of Management Accounting* (Boston: Harvard Business School Press, 1987); R. Kaplan and D. Norton, "Having Trouble with Your Strategy? Then Map It," *Harvard Business Review*, September-October 2000, pp. 167-76.
10. Kaplan and Norton, "The Balanced Scorecard: Measures that Drive Performance"; B. Singleton-Green, "If It Matters, Measure It," *Accountancy*, May 1993, pp. 52-53.
11. G. Feltham and J. Xie, "Performance Measure Congruity and Diversity in Multi-task Principal/Agent Relations," *Accounting Review*, July 1994, pp. 429-53; Hemmer, "On the Design and Choice of 'Modern' Management Accounting Methods."
12. K. Kefgen, "Price/Value Relationship Also Usable as Measure for Executive Talent," *Hotel Business*, January 21, 1996, p. 34.
13. J. L. Heskett, T. O. Jones, G. W. Loveman, W. E. Sasser Jr., and L. A. Schlesinger, "Putting the Service-Profit Chain to Work," *Harvard Business Review*, March-April 1994, pp. 164-74.
14. The new incentive plan provides the same maximum bonus eligibility as the old plan for most managers, with the exception of the general manager and controller, who have higher maximum bonus than before. Now the general manager can earn up to 50 percent of his base salary as bonus, achieving only the operating profit goals will earn him one-third of the maximum bonus (or 17 percent of the base salary). The remaining two-thirds of the maximum bonus (or 33 percent of the base salary) is earned only if nonfinancial goals are achieved.

15. HOTELCORP also computes for each hotel a monthly composite index of customer satisfaction (CSINDEX) based on customer responses to a number of questions that cover various aspects of customer service such as front desk encounters, cleanliness of rooms, quality of food and beverage services, and general upkeep of the hotel. However, this measure is not used for incentive purposes because the senior management wanted to use a simple measure of customer satisfaction in the incentive plan and they were also uncertain about how customer satisfaction measured on these dimensions translates into repeat business. Although not reported in the article, the regression results based on CSINDEX indicate that the relationship between this alternative measure of customer satisfaction and financial performance is very similar to the relationship between LRETURN and financial performance. The total variation explained by the two sets of regressions are very similar, suggesting that the explanatory power of the two different measures of customer satisfaction is nearly the same. In addition, the regression results of the models using both these measures as independent variables suggest that CSINDEX does not have any explanatory power over and above LRETURN. Overall, the simple measure used at HOTELCORP captures virtually all of the explanatory ability of a complex measure of customer satisfaction.

16. S. M. Keaveney, "Customer Switching Behavior in Service Industries: An Exploratory Study," *Journal of Marketing*, April 1995, pp. 71-82.

17. Kaplan and Norton, *The Balanced Scorecard*; Ittner and Larcker, "Innovations in Performance Measurement."

18. T. O. Jones and W. E. Sasser Jr., "Why Satisfied Customers Defect," *Harvard Business Review*, November-December 1995, pp. 88-99.

19. Hotel Association of New York City, Inc., *A Uniform System of Accounts for Hotels* (1996).

20. We employ the following models:

$$\begin{aligned} \text{TREVPAR}_{it} &= \alpha_0^R + \sum_{i=1}^{17} \beta_i^R \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^R \text{HOTEL}_i \text{COMPREV}_{it} + \lambda^R \text{REVENUE}_{i,t-1} \\ &+ \eta_1^R \text{AVGLRETURN}_{i,t6} + \eta_2^R \text{AVGCOMPLNTS}_{i,t6} \\ &+ \varepsilon_{it}^R \end{aligned}$$

$$\begin{aligned} \text{COSTPAR}_{it} &= \alpha_0^C + \sum_{i=1}^{17} \beta_i^C \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^C \text{HOTEL}_i \text{OCCRATE}_{it} + \lambda^C \text{COST}_{i,t-1} \\ &+ \eta^C \text{ECI}_i + \eta_i^C \text{AVGLRETURN}_{i,t6} \\ &+ \eta_2^C \text{AVGCOMPLNTS}_{i,t6} + \varepsilon_{it}^C \end{aligned}$$

$$\begin{aligned} \text{GOPPAR}_{it} &= \alpha_0^P + \sum_{i=1}^{17} \beta_i^P \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^P \text{HOTEL}_i \text{COMPREV}_{it} + \lambda^P \text{PROFIT}_{i,t-1} \\ &+ \eta_1^P \text{AVGLRETURN}_{i,t6} + \eta_2^P \text{AVGCOMPLNTS}_{i,t6} \\ &+ \varepsilon_{it}^P \end{aligned}$$

where COMPREV = competitive set's room revenue per available room and ECI = employment cost index.

21. Autocorrelation of error terms is controlled with the 1954 Prais Winsten adjustment.

22. Anderson, Fornell, and Lehmann, "Customer Satisfaction, Market Share, and Profitability."

23. Specifically, Akaike's Information Criterion (AIC) is used to determine the lag length (see W. H. Greene, *Econometric Analysis* [New York: Macmillan], 515-17). AIC is similar in spirit to adjusted R^2 in that it rewards good fit but penalizes the loss of degrees of freedom. A search over a maximum length of twelve lags indicated that the model with a lag length of six resulted in the minimum AIC and hence was chosen as the most appropriate model. The coefficient η of a nonfinancial measure is interpreted as its average long-run impact (see *ibid.*, 512-13).

24. Ittner and Larcker, "Are Non-financial Measures Leading Indicators of Financial Performance?"

25. Feltham and Xie, "Performance Measure Congruity and Diversity in Multi-task Principal/Agent Relations."

26. Estimating whether the new incentive plan resulted in a change in nonfinancial performance requires a model of the behavior of nonfinancial measures. It is difficult to specify a model of customer satisfaction measures (LRETURN and COMPLNTS). Data on likelihood of return are available for HOTELCORP's franchised hotels that did not implement the new incentive

plan and thus serve as a control for exogenous factors affecting this performance measure. HOTELCORP's franchised hotels form a natural control group because they follow the same operational rules and guidelines, but they did not implement the incentive plan or make any major organizational changes that affect performance. Therefore, we specify

$$\begin{aligned} \text{LRETURN}_{it} &= \alpha_0^L + \sum_{i=1}^{17} \alpha_i^L \text{HOTEL}_i \\ &+ \beta^L \text{LRETRURNF}_t + \delta^L \text{PLAN}_t + \varepsilon_t^L \end{aligned}$$

where LRETURNF_t = average likelihood of return index for franchised hotels in month t and PLAN_t = a dummy variable representing time periods following new incentive plan implementation. No such comparative data are available for COMPLNTS that can serve as a control for exogenous factors affecting this nonfinancial measure. Therefore, we employ a commonly used impact assessment method in time-series analysis known as intervention or the transfer function model. For most models with COMPLNTS as the dependent variable an AR(1) process with a constant parameter, resulted in residuals that are white noise, justifying the use of lagged values as independent variables. Therefore, we specify

$$\begin{aligned} \text{COMPLNTS}_{it} &= \alpha_0^M + \sum_{i=1}^{17} \alpha_i^M \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \beta_i^M \text{HOTEL}_i \text{COMPLNTS}_{i,t-1} + \delta^M \text{PLAN}_t \\ &+ \varepsilon_t^M \end{aligned}$$

- 27. Singleton-Greene, "If It Matters, Measure It."
- 28. A direct test of the impact of the new incentive plan on financial performance is conducted by estimating the following intervention models:

$$\begin{aligned} \text{COSTPAR}_{it} &= \alpha_0^C + \sum_{i=1}^{17} \beta_i^C \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^C \text{HOTEL}_i \text{OCCRATE}_{it} \\ &+ \delta^C \text{ECI}_t + \delta^C \text{PLAN}_t + \varepsilon_{it}^C \end{aligned}$$

$$\begin{aligned} \text{TREVPAR}_{it} &= \alpha_0^R + \sum_{i=1}^{17} \beta_i^R \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^R \text{HOTEL}_i \text{COMPREV}_{it} + \delta^R \text{PLAN}_t + \varepsilon_{it}^R \end{aligned}$$

$$\begin{aligned} \text{GOPPAR}_{it} &= \alpha_0^P + \sum_{i=1}^{17} \beta_i^P \text{HOTEL}_i \\ &+ \sum_{i=1}^{18} \gamma_i^P \text{HOTEL}_i \text{PROFIT}_{i,t-12} + \delta^P \text{PLAN}_t + \varepsilon_{it}^P \end{aligned}$$

- 29. Ittner and Larcker, "Are Non-financial measures leading indicators of financial performance?"
- 30. Securities and Exchange Commission Release nos. 33-8350, 34-48960 (December 29, 2003).

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