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Toward a resolution of the cost of equity conundrum in the lodging industry: a conceptual framework

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Abstract

The firm value estimate is derived from accounting and finance practices that focus on physical assets as opposed to intangible assets (Arthur Andersen Hospitality Leisure Executive Rep. 5 (1998) 2). The cost of equity estimation models used in firm valuation and capital investment decisions fall short of tapping important constructs to firm value, especially the intangible ones. The purpose of this study is to assess the present cost of equity capital determination models and provide a view of their relevancy for the lodging industry while simultaneously attempting to propose new options to meet the valuation and capital budgeting needs of the lodging industry.

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1. Introduction

As 2002 ended, it represented the third year in a row that the US stock market has ended the year in decline. There are many reasons behind this weakening in overall value. While different pundits will express their ideas on what reason is

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most important, one on everyone's list would have to be the crisis in confidence with respect to corporate leaders, regulators and investment bankers. This crisis is born in part due to accounting scandals and misstatements regarding earnings but it is also a function of the rather marginal valuation models used such as the Capital Asset Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964) and the Dividend Growth Model (DGM) (Gordon, 1962). The challenge for investors and management going forward is to improve upon the entire valuation process.

The traditional approaches to assessing value are based upon financial theories that suggest that growth in shareholder wealth is a result of the discounted cash flow streams generated by investments made by management as it seeks to establish competitive advantage for the firm. To accomplish this difficult task managers face a daunting challenge that requires them to properly estimate the cash flow stream, the life of the investment, the cost of capital, the type of the investment itself, and the risks associated with the investment. While trying to analyze all these factors managers utilize the value estimates for investments that are derived from accounting and finance practices that focus on physical assets such as land, buildings, and equipment as opposed to intangible assets such as employees and customer relationships (Cline and Blatt, 1998).

The hospitality industry is a part of the overall service industry whose products and services are supported by physical assets but are generally recognized as being intangible. Intangibility includes the temporal nature of service (i.e., perishability and the inability to store or inventory the resulting product), inseparability/customer participation in the delivery process, heterogeneity of customer perceptions, simultaneous production and consumption, and the ease and speed by which services can be copied by competitors (Barrington and Olsen, 1987). This creates many difficulties in calculating the cost and the value of these important value-producing intangibles. Of more recent interest among industry professionals, in terms of estimating value, are the important intangibles such as human resources, technology, and safety and security (Olsen et al., 1998). Moreover, the challenges with valuing hospitality companies that derive future earnings from management contracts or franchise relationships is also troubling for investors and executives alike.

While there are many questions surrounding these valuation activities, underpinning this array of challenges is the determination of the appropriate costs of capital. Cost of capital is defined as the rate of return a firm must earn on its investment projects in order to maintain its market value and to continue attracting needed funds for its operations (Fields and Kwansa, 1993; Gitman, 1991). Consequently, a firm adds shareholder wealth only if it undertakes the projects which generate a return higher than the cost of capital of the project. The cost of capital is an anchor in firm valuation, project valuation, and in capital investment decisions. The cost of capital is generally referred to as the Weighted Average Cost of Capital (WACC):

$$WACC = (E/V) \times R_E + (D/V) \times R_D \times (1 - T_c),$$

where, E is the market value of the equity, D is the market value of the debt (and thus $V = E + D$), T_c is corporate tax rate, R_E is the cost of equity, and R_D is the cost of debt (Copeland et al., 2000). While the cost of debt is relatively easy to calculate (by computing the firm's average of bond yields to maturity, and/or long-term debt obligations), the proper estimate of the cost of equity remains a challenging issue.

It appears quite certain that this dilemma has not been resolved either in the financial literature, real-estate literature or hospitality industry activities. While a few models have achieved dominance in this area, present thinking is that they are inadequate to meet today's capital market needs especially with respect to valuing intangibles. Therefore, the purpose of this paper is to assess the present cost of equity capital determination models and provide a view of their relevancy for the lodging industry while simultaneously attempting to propose new options to meet the valuation and capital budgeting needs of the lodging industry.

2. Description of current practices

2.1. Capital Asset Pricing Model

Practitioners are seeking cost of equity capital models which are easy to use, accurate, and relatively stable over time. However, a model encompassing all these features is difficult to find. The generally accepted model for estimating cost of equity capital is the Capital Asset Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964). The model states that

$$E(R_i) = R_f + [\beta(R_m - R_f)],$$

where, R_m is the market return of stocks and securities, R_f is the risk-free rate, β is the coefficient that measures the covariance of the risky asset with the market portfolio, and $E(R_i)$ is the expected return of i stock.

The CAPM model postulates that the expected return on a security is equal to the risk-free rate plus the market risk premium ($R_m - R_f$) multiplied by the company's β . The model assumes that: the relation of expected returns and β is linear, only β is necessary to explain differences in returns among securities, and attempts to describe the way the market compensates for risk and, therefore, assumes a correct estimate of the cost of equity (Lintner, 1965; Sharpe, 1964).

However, over the last 10 years, strong evidence has been developed against the CAPM (Fama and French, 1992, 1993; Roll and Ross, 1994). These researchers challenged the model by contending that it is difficult to find the right proxy for the market portfolio. Also, the CAPM does not appear to accurately reflect firm size in the cost of equity calculation, and that not all systematic risk factors are reflected in returns of the market portfolio. A great deal of anomalous evidence has been produced suggesting that things other than β are important in determining expected returns (Jagannathan and McGrattan, 1995). Although several limitations regarding the CAPM still exist, the model was used by almost 65% of the Fortune 1000 companies in 1997 (Gitman and Vandenberg, 2000) and $\frac{3}{5}$ of the CFOs indicated

that CAPM was their primary cost of equity calculation method (Graham and Harvey, 2001).

2.2. Arbitrage Pricing Model

The Arbitrage Pricing Model (APM) developed by Ross (1976) postulates that factors other than beta affect the systematic risk. Unlike the CAPM, the APM gives up the notion that there is one efficient portfolio for every investor in the world, and is based on the underlying premise that asset returns, R_i , are generated by a factor model that can be stated as

$$R_i = E_i + \sum_{j=1}^k b_{ij}\delta_j + \varepsilon_i,$$

where, R_i is the uncertain return to asset i , E_i is the expected return to asset i , b_{ij} is the factor loading for asset i related to factor j , or asset i 's sensitivity to movements in factor j , δ_j is the factor j ($j = 1, \dots, k$), and ε_i is the error term for asset i . In addition, the model assumes that the factors and error terms have a mean of zero.

Although the model does not explicitly specify the risk factors, the APM depicts a world with many possible sources of risk and uncertainty, instead of seeking for equilibrium in which all investors hold the same portfolio. More formally, the APM is based upon the assumption that there are some major macroeconomic factors that influence security returns. The APM states that no matter how thoroughly investors diversify, they cannot avoid these factors. Thus investors will “price” these factors precisely because they are sources of risk that cannot be diversified away. That is, they will demand compensation in terms of expected return for holding securities exposed to these risks. Just like the CAPM, this exposure is measured by a factor beta (Goetzmann, 1996).

A decade after the inception of the APM, Chen et al. (1986) managed to identify five macroeconomic factors that, in their view, explain the expected asset returns:

- The industrial production index which is a measure of state of the economy based on the actual physical output,
- the short-term interest rate measured by the difference between the yield on Treasury bills and the Consumer Price Index (CPI),
- short-term inflation, measured by unexpected changes in CPI,
- long-term inflation, measured as the difference between the yield to maturity on long- and short-term US government bonds,
- default risk, measured by the difference between the yield to maturity on Aaa and Baa-rated long-term corporate bonds (Chen et al., 1986; Copeland et al., 2000).

The APM describes a world in which investors behave intelligently by diversifying, but they may choose their own systematic profile of risk and return by selecting a portfolio with its own peculiar array of betas. The APM allows a world where occasional mispricings occur. Investors constantly seek information about these

mispricings and exploit them as they find them. Put in other words, the APM somewhat realistically reflects the world in which we live (Goetzmann, 1996).

Although the APM provides the benefits explained above those benefits come with some drawbacks. The APM demands that investors perceive the risk sources and that they can reasonably estimate factor sensitivities. In fact, even professionals and academics are yet to agree on the identity of the risk factors, and the more betas they have to estimate, the more statistical noise they have to put up with.

2.3. Dividend Growth Model

An alternative forward-looking methodology is the Dividend Growth Model (DGM) originally developed by Myron Gordon in 1962. The dividend growth approach to the cost of equity states that:

$$k_e = \frac{\text{dps}}{p} + g,$$

where, k_e is the cost of common equity, dps is the projected dividend per share, p is the current market price per share, and g is the dividend growth rate.

The model assumes that over time, successful reinvestment of the value received by retained earnings will lead to growth and thus growing dividends. This approach suffers from oversimplification, because firms vary greatly in their rate of dividend payout, and the method does not specifically address the effect of reinvestment of retained earnings (Helfert, 2003). This is due to the fact that common stockholders are the residual owners of all earnings not reserved for other obligations, and dividends paid are usually only a portion of the earnings accruing to common shares. The other major difficulty in applying this model lies in determining the specific dividend growth rate, which is based on future performance, tempered by past experience.

2.4. The Fama–French three factor model

Fama and French (1993) found that the relationship between average returns and beta was flat and there was a strong size effect on stock returns. As a result, they developed a model that has gained popularity in recent years among the scholars and practitioners in the hospitality industry. The Fama–French (FF) model is a multi-factor model which, postulates that factors other than the movements of the market and the risk-free rate impact security prices. The FF model is a multiple regression model that incorporates both size and financial distress in the regression equation. The FF model is typically stated as

$$E(R_i) - R_f = (\beta_i \text{ERP}) + (s \text{SMB}) + (h \text{HML}),$$

where, $E(R_i)$ is the expected return of i stock, R_f is the risk-free rate β is the coefficient that measures the covariance of the risky asset with the market portfolio, ERP is the Equity Risk Premium and can be expressed as $R_m - R_f$, s is the slope coefficient and SMB is the difference between the returns on portfolios of small and

big company stocks (below or above the NYSE median), h is the slope coefficient, and HML is the difference between the returns on portfolios of high- and low-Book Equity/Market Equity (BE/ME) stocks (above and below the 0.7 and 0.3 fractiles of BE/ME) (Fama and French, 1993).

The size factor is denoted as small-minus-big premium (SMB) where size is measured by market capitalization. SMB is the average return on three small portfolios minus the average return on three big portfolios as described by Fama and French (1993). High minus low (HML) is the average return on two value portfolios minus the average return on two growth portfolios (Fama and French, 1993). High BE/ME (value) stocks are associated with distress that produces persistently low earnings on book equity that result in low stock prices.

Hence, the FF model anticipates an additional risk premium for investors holding stocks of small capitalization companies and firms with high book-to-market value ratios (Annin, 1997). The size argument is supported by Barad (2001) who reports that small stocks have outperformed their larger counterparts by an average of 5.4% over the last 75 years (1926–2000). On the other hand, Fama and French (1993) report that the book-to-market factor (HML) produces an average premium of 0.40% per month ($t = 2.91$) for the 1963–1990 period, which in the authors' view is large both in practical and statistical terms.

Fama and French (1997) researched industry costs of equity by testing the CAPM and FF models on industry costs of equity. Their study indicated that the FF method explained more variance ($R^2 = .72$) for the equity premium than the CAPM model did ($R^2 = .64$) for the “Meals” portfolio which included hotels, motels, restaurants, and entertainment companies listed under the following Standard Industry Codes (SICs): 5800–5813, 5890, 7000–7019, 7040–7049, and 7213.

As can be seen in the analysis thus far, the cost of equity estimation models did not succeed in tapping important constructs to firm value, especially the intangible ones. Given that firms in the hospitality industry depend heavily on human capital and technology to achieve the realization of their strategies, it can be concluded that these contemporary models have fallen short in addressing the valuation questions raised earlier in this paper. Some preliminary work has been attempted to address this challenge in the human resources area.

2.5. *Cost of equity model including human capital*

Empirical evidence suggests that human capital has an effect on security prices (Campbell, 1996; Jagannathan and Wang, 1996; Jagannathan et al., 1998). In 1996, Jagannathan and Wang postulated that in equilibrium, expected returns on securities are determined by market betas and human capital betas in a linear way. Human capital cannot be identified precisely by solely analyzing returns on financial assets like mortgages. Hence, the authors assumed that return on human capital is an exact linear function of the growth rate in per capita labor income. They further asserted that adding a human capital beta into the CAPM would significantly improve the performance of CAPM in explaining the cross-sectional variations of stock returns.

Another argument made by the same researchers was that the assumption of a static beta is not realistic. Jagannathan and Wang (1996) analyzed the cross-variation of 100 stock portfolios and found that dynamic CAPM (where betas are allowed to vary over time) explained 30% of the returns which was a substantial improvement over the static CAPM ($R^2 = 1\%$). In an effort to encompass all possible assets (both traded and non-traded) the researchers followed Mayers (1972) and included a measure of return on human capital. The researchers reported that when human capital is added into measuring wealth, the dynamic CAPM is able to explain 50% of the cross-sectional variance in the stock returns. Although their study found that CAPM performance is improved with the addition of human capital, it did not answer the question of why the risk of human capital is not captured by the stocks' market return, or why the relationship between return and human capital is linear.

3. Shortcomings of present models for the lodging industry

Seminal to finance theory is that the use of capital imposes an opportunity cost to investors. Since investors have access to a wealth of choices of financial investments, the corporations' use of capital tends to be benchmarked against these capital market alternatives (Bruner et al., 1998). As a result, lodging companies eventually compare themselves against the return of the market measured by the major stock indices such as FT100, S&P 500, NYSE, AMEX, NASDAQ, CAC40 and DAX. These indices are mainly comprised of large companies which demonstrate firm characteristics that are different than that of lodging firms. A more useful approach for lodging firms would be to benchmark themselves against the industry peers or the aggregate of the lodging stocks portfolio.

Also, publicly traded multinational lodging companies tend to differ on some key points regarding how assets are treated on the balance sheet. Many of these companies do not actually own assets and produce their future cash flows from management contracts or franchise agreements. In many cases they may also lease hotels and the leases do not appear on their balance sheets. Instead, these firms hold an equity position in a different company that holds these leases. Therefore, it is almost unfeasible to properly assess the book value of the lodging firms which confounds the application of the FF model.

Sheel (1995) was the first researcher in the hospitality industry to point out that CAPM does not seem to meet the industry needs and called for further research into industry-specific factors. In the mainstream financial economics field, Downe (2000) argued that in a world of increasing returns, risk cannot be considered a function of only systematic factors, and thus beta. He postulated that the position of the firm in the industry, as well as the nature of the industry itself become risk factors. Thus, firms with a dominant position in the industry that succeed to adapt to the complexities of the business environment will have a different risk profile than their competitors. This argument is particularly well-fitting in the context of the lodging industry.

Barrows and Naka (1994) demonstrated that macroeconomic factors fail to explain the common variation of lodging stock returns. Their study encompassed the 27-year period between 1965 and 1991 and employed five factors that were slightly different than the five factors of Chen et al. (1986). Barrows and Naka postulated that the return of the stocks is a function of the following five factors:

$$\text{Return} = f(\text{EINF}, \text{M1}, \text{CONN}, \text{TERM}, \text{IP}),$$

where, EINF is expected inflation, M1 denotes money supply, CONN is domestic consumption, TERM is the term structure of interest rates, and IP is industrial production. The five factors accounted for the 7.8% of the variance in the lodging stocks which yielded an *F* ratio of 6.71 that was significant at .01 level. This finding looks very ambiguous given the fact that none of the five variables was significant at .05 level.

Barrows and Naka (1994) results can be attributed to the fact that unlike financial institutions that are heavily influenced by the changes in term structure and unexpected inflation, other industries (such as lodging) seem not to respond to these changes immediately (Chan et al., 1998). Chan et al. (1998) went a step further in their argument by contending that widely used factors such as unanticipated inflation and change in industrial production do not seem to be more useful than a randomly generated series of numbers. Sheikh (1996) further supports this view by pointing out that although macroeconomic factors seem to be intuitively appealing for managers and scholars, they account for merely 10.9% of the variation in security returns.

As for the Fama–French factors, professionals in the lodging industry are skeptical about such measures as book-to-market value ratio (HML). Slattery (personal communication, 2002) stated that HML is an inappropriate measure for the industry since the difference between firms whose value is captured by the assets they own and the firms whose value is derived from their intangible assets is not as distinct as in some manufacturing firms. While Jagannathan and Wang's (1996) study added a human capital variable to their cost of equity capital model, it measured human capital effects from the macroeconomic perspective as opposed to a microlevel where most hotel firms operate. Put in other words, overall labor index may not properly reflect the state of the human capital in the lodging industry.

As Fama and French (1993) stated, their work (FF model) leaves many open questions. The most important missing piece of the puzzle is that Fama and French (1993) have not shown how the size and book-to-market factors in security returns are driven by the stochastic behavior of firm earnings. This implies that it is not yet known how firm fundamentals such as profitability or growth produce common variation in returns associated with size and BE/ME factors and this variation is not captured by the market return itself. Fama and French (1993) further query whether specific fundamentals can be identified as state variables (variables that describe variation in the investment opportunity set) and whether these variables are independent of the market and carry a different premium than the general market risk. This question is of utmost importance for lodging industry executives who are

aiming to identify the major drivers of their companies' stock returns in their effort to create value for their stockholders.

In their current state the cost of equity models are far from satisfying the needs of the lodging industry. As Fama and French (1997) stated the cost of equity estimates yielded by these models are distressingly imprecise. Standard errors of more than 3% per year were typical when the CAPM and FF models were used to estimate industry costs of equity in their study (Fama and French, 1997). The authors argued that large standard errors are driven primarily by uncertainty about true factor risk premiums. This obviously means that the standard errors and thus cost of equity capital on a per company, single property (establishment) basis and/or in an investment decision in a new project will be even more imprecise since the lodging industry is really the aggregate of individual units that all have their own unique business environments and return on equity structures. Therefore, the risk determinants of cost of equity and risk factor loadings for individual operating units will be even more difficult to estimate. Along with this, uncertainty about true asset pricing adds further to the misestimating of project values (Fama and French, 1997). In answering these challenges posed, it is important not only to validate the APM and FF models across hospitality industry segments, but also to strive to identify additional determinants and variables and test them in a more industry relevant cost of equity estimation model.

4. Proposed conceptual framework for the lodging industry

The major goal of the lodging industry should be to look beyond the CAPM, APM, FF and DGM versions of the cost of equity models and properly measure the attributes that are unique to the industry and assess their influence on the estimate of the appropriate cost of capital. Based on the implications from previous studies the present authors make the following arguments. These represent a contextual view of the lodging industry and offer proposed constructs to be considered in the estimates of cost of capital.

4.1. Human capital

Since lodging industry is part of the overall service sector, it is dependent on human capital in order to maintain and grow its operations. In an increasingly competitive environment, the human factor becomes one of the keys in creating sustainable competitive advantage. Therefore, Murphy (2003) stated that the hospitality industry should learn to view its employees from a new paradigm—that is that human capital is a strategic intangible asset (knowledge, experience, skills, etc). This implies that, like other assets, it is an important determinant of firm value. However, studies have concluded that “the research of human resources expenditures” is in its infancy and is seriously hampered by the absence of publicly disclosed corporate data on human resources (Lev, 2001).

Caroll and Sikich (1999) argued that keeping track of at least a 3-year history of labor costs would serve to identify the dollar value of “premium” labor-related costs: which could be thought of as all labor/benefit costs above federally mandated minimum wage. Other techniques proposed by these authors were: (1) to design a scoring system that illustrates productivity vs. both base-line and premium labor/benefit costs by departments, and (2) to establish metrics to determine a productivity level for guest experience standards, facilities standards, and targeted revenue improvements on a department by department basis.

Bloxham (2003) advocated adjustments to certain human resource expenditures to capitalize them over the time of the investment. In that approach, one-time human resources costs are amortized and capitalized in the value creation equation in an effort to demonstrate that human capital investments go beyond being a cost item in the firms’ operations. These costs can include recruiting, interviewing, hiring; one-time hiring bonuses and relocation expenses; and training costs. The costs are capitalized and amortized over the average employee tenure with the company. In this case, if employee turnover is high these costs would be amortized over a shorter time period (thus the costs will be higher); whereas, the longer tenure of the workforce will enable the firm to spread the costs over a longer period of time.

In a study of the airline industry conducted by Cap Gemini Ernst & Young’s Center for Business Innovation (CBI), Kalafut and Low (2001) reported that the employee category was the single greatest value driver that had an impact on the firm’s market value. The employee factor had a positive correlation of 0.68 with the firm value. Thus, Kalafut and Low (2001) conclude that in the aggregate, quality and the talent of the workforce, quality of labor management relations, and diversity are critically important in the value creation process of the airline companies.

The arguments above can be justified on the grounds that higher quality human resources decreases labor turnover and increases employee productivity. This results in better organizational performance which results in stabilization of cash flows which in turn decreases the uncertainty of firms’ stock returns. Based on these claims plus the plethora of literature pointing to the value of human resources in the lodging industry, the following proposition is offered:

- P1. Hospitality firms that have institutionalized quality human resource management practices will achieve a more realistic cost of equity estimate that reflects the lower risk associated with these practices.

4.2. *Brand value*

Although definitions of the concept of brand differ across the professional and trade literature, the underlying notion is that of a distinctive name with which the customer has a higher level of awareness and a willingness to pay a higher than otherwise average price or make a higher than otherwise purchase frequency (Barth et al., 1998). A brand is the product or service of a particular supplier which is differentiated by its name and perceived expectations on the part of the consumer. Brands are important and valuable because they provide a “certainty” as to future

cash flows (Murphy, 1990). However, since the task of estimating brand value is yet an improbable one, its value is not specifically reflected on the company's balance sheet. Yet, the lodging industry has made much of the importance of the value of the brand but has not been able to unequivocally substantiate the role of the brand in reducing the variance in firm cash flows, and thus contributing to lower cost of capital for the firm.

Srivastava et al. (1998) provided an analytical example of how successful market-based assets (the term authors use in lieu of intangibles) lower costs by building superior relationships with customers, enable firms to attain price premiums, and generate competitive barriers (via customer loyalty and switching costs). All these factors lead to the conclusion that a strong brand reduces the uncertainty pertaining to the future cash flows which in turn decreases the required return by the investors for the risk they bear by investing in a particular firm.

In attempts to value the brand in the manufacturing industries Murphy (1990) cited the use of the following methods:

- Valuation based on the aggregate cost of all marketing, advertising and research and development expenditures devoted to the brand over a stipulated period.
- Valuation based on premium pricing of a branded product over a non-branded product.
- Valuation at market value.
- Valuation based on various consumer-related factors such as esteem, recognition or awareness.
- Valuation based on future earnings potential discounted to present day value.

In further analysis the investigators rejected these methods because, if indeed brand value was the function of its cost of development then failed brands would be attributed high values. In addition, brand valuation based solely on the consumer esteem or awareness factor would bear no relationship to commercial reality (Murphy, 1990).

In an effort to link firms' security returns with brand value Simon and Sullivan (1993) proposed a technique to estimate the firm's brand equity based on the value of the firm. This was done by estimating the cost of tangible assets and then subtracting it from the market capitalization of the firm to obtain the value of intangible assets. As a second step, the researchers tried to break down the intangible assets into brand value and non-brand value components. The authors utilized the EquiTrend brand quality measure of Aaker and Jacobson (1994) to evaluate the quality of 100 major brands. They examined associations between measures of brand quality and stock returns and reported that the relationship is positive.

According to Murphy (1990), the only logical and consistent way to develop a multiple for brand profit was through the brand strength concept. Brand strength is a composite of six weighted factors: leadership, stability, market, trend, support, and protection. The brand is scored on each of these factors according to different weightings and the resultant total is known as "brand strength score." A further addition to the brand strength concept came from Prasad and Dev (2000) who

developed a hypothetical brand equity index via customer ratings of the brands using five key brand attributes in two sets of indicators, brand performance and brand awareness. Brand performance was measured by overall satisfaction with the product or service, return intent, price-value perception, and brand preference, while brand awareness was measured as top-of-mind brand recall. Olsen (1996) proposed additional brand-related value drivers that were specific to the lodging industry such as brand dilution and brand sincerity ratio. Brand dilution is related to the question of how many new corporate sub-brands must be introduced in order to maintain growth. Whereas, brand sincerity ratio deals with what percentage of hotels in the portfolio currently meet the brand standards or promise.

These arguments lead to the following propositions:

- P2. Companies that possess higher brand strength will be able to achieve a lower cost of equity capital.

4.3. *Technology investment and utilization*

According to Connolly (1999), one of the greatest issues plaguing the advancement of technology in the hospitality industry is the difficulty of calculating return on investment. Until recently, most technology investment decisions have been considered using a support or utility mentality that stems from a manufacturing paradigm. Current policies rely more on faith than on a rational business assessment. As a result, the hotel industry is perceived to be lagging rival industries in the use of technology (“Anonymous”, 2000). In part this is attributed to the fragmented nature of the hotel business itself; however, it is also believed to be closely related to hoteliers’ lack of experience and understanding in technology investments (“Anonymous”, 2000).

Connolly further argued that “Today’s financial models are inadequate for estimating the financial benefits for most of the technology projects under consideration. While the hospitality industry has disciplined models and sufficient history to determine the financial gains or success of opening a new property in a given city, it lacks the same rigorous models and historical data for technology, especially since each technology projects are unique. Although this problem is not specific to the hospitality industry, it is particularly problematic since the industry tends to be technologically conservative and unwilling to adopt new technology applications based on the promises of their long-term merits especially if it cannot quantify the results and calculate a defined payback period. When uncertainty surrounds the investment, when the timing of the cash flows is unpredictable, and when the investment is perceived as risky, owners and investors will most likely channel their investment capital to projects with more certain returns and minimal risk. Thus, under this thinking, technology will always take a back seat to other organizational priorities and initiatives. Efforts must be made to change this thinking and to develop financial models that can accurately predict and capture the financial benefits derived from technology (1999; p. iii).”

Although there are no hard and fast rules to facilitate the valuations of technology investments, it is common knowledge that technology is transforming the way business is conducted in the lodging industry. Particularly, the surge in Internet usage in the early years of the new millennium brought about the issue of capacity control for the holders of the hotel room inventory. Therefore, firms which are more adaptive to utilize technology to market and sell their perishable product (hotel rooms) may accomplish a lower variation in their future cash flows since they are able to retain greater control over pricing.

The authors would like to acknowledge the fact that the body of literature does not offer a direct causal relationship between the cost of equity capital and technology utilization. However, based on the arguments discussed above, the authors of this article contend that firms that invest in technology wisely may achieve a higher average daily rate or REVPAR in their properties which in turn will lead to a decrease in the variance of firm's cash flows. Thus, better utilization of information technology can possibly reduce the uncertainty surrounding the future earnings of the firm. As a result, capital markets will assign a lower risk premium to lodging firms that successfully utilize and deploy technology into their operations. This assertion leads to the following proposition:

- P3. Firms that invest in and utilize technology more efficiently will achieve a lower cost of equity capital.

4.4. Industry-specific features of the global lodging industry

In addition to human capital, branding, and technology which are common to all firms in today's environment, the multinational lodging industry has some industry-specific features that the present authors believe will impact cost of capital estimates and thus, overall firm value. The basic nature of companies that chose a strategy of generating cash flows through management contracts, leasing and/or franchising suggest that estimates of their costs of capital are subject to different variables compared to these with large asset valuations. This is partly due to the fact that industry performance is a function of hundreds or even thousands of individual operating units. These units exist in many different business environments and thus, are all subject to varying degrees of risk and uncertainty.

The effect of industry-specific factors on security returns is supported in mainstream financial management literature by [Haugen and Baker \(1996\)](#), [King \(1966\)](#), and [Meyers \(1973\)](#). In addition, in the hospitality industry [Sheel \(1995\)](#) claimed that researchers should look into industry-specific factors that can be candidates in explaining the variance in the security returns. Consequently, the authors of the present paper argue that the industry-specific factors must be considered when trying to make valid estimates of cost of capital. Examples of some of these factors are ([Olsen, 1996](#)):

- Ratio of cash flow generation by locations to total firm cash flow.
- Ratio of investment in cash flow generation capability relative to total cash flow.
- Percentage of foreign vs. national (domestic) operations

- Proportion of locations in high-risk countries.
- Resource allocation effectiveness.
- Ratio of cash flow generation by asset age.
- The relative age of management contracts of individual units relative to average age overall.
- Ratio of high producing cash flow locations relative to total numbers of locations.

An overarching concept that may capture some of the industry-specific features is the property ownership structure of the firms (e.g. owned/managed/franchised business units). In his study of the restaurant industry, [Roh \(2002\)](#) argued that the parent firm's choice of company-owned and operated vs. franchisee-operated units can affect the variability of cash flows. The author contended that the revenue generated through royalties at unit level causes lower variation in the cash flows for the franchisor company. Whereas, on the other hand, a company-owned unit requires a fixed capital investment which increases firm's leverage and thus, its risk. Therefore, [Roh \(2002\)](#) maintained that restaurants which enter into franchise agreements are less risky than non-franchising companies. This view is supported by [Martin \(1988\)](#) who contended that by owning franchised units the franchisor sheds "risky" locations to franchisees and retains the stable locations as company-owned. In addition, [Thomas et al. \(1990\)](#) stated that compared to a wholly company-owned restaurant system, franchise systems are considered less risky because they can be viewed as a portfolio of operating units that can be adjusted in response to changing costs and revenue opportunities.

In the management literature there are two emergent views that explain the relationship between franchising and risk. First, because franchisees invest their own capital they have a powerful financial incentive to excel. Company-owned outlets are managed by employees who confront weaker incentives than franchisees because their capital is not at stake ([Minkler and Park, 1994](#)). Passive investors may recognize this motivational disparity and demand a risk premium when investing in a firm dominated by company-owned outlets ([Lafontaine, 1992](#)). Second, passive investors rely on public information regarding firms' future intentions and abilities ([Martin and Justis, 1993](#)). Franchisees, in contrast, have private information regarding their own intentions and abilities, which reduces the cost of franchisee capital ([Combs and Ketchen, 1999](#)). In essence, franchisees can have greater confidence in themselves than passive investors can have in a firm, suggesting that the latter may demand a larger risk premium ([Combs and Ketchen, 2003](#)).

In the lodging industry, this choice of property ownership structure is evidenced by the leading firms such as Marriott International. The V.P. of Owners and Franchise Relations, [Farrar \(2004\)](#) contended that Marriott is striving to achieve a balance between managed and franchised properties. He stated that franchised properties provide a stable cash flow (in good and bad times), whereas management contracts enable the corporation to record significant profits at times of high consumer demand by virtue of higher incentive fees paid by the property owners to the lodging brand (in this case Marriott International). However, [Farrar \(2004\)](#) cautioned that management contracts may create risks to the parent company in the periods of economic recession due to a severe decrease in profit-based incentive fees.

He further added that company-owned hotel properties are considered the riskiest by the lodging executives and these kinds of properties are almost non-existent in Marriott International's portfolio of hotels.

Indeed, some of the industry-specific features covered in the discussion above can be accounted for through the risk-adjustment of the discount rate (RADR) method. Risk-adjusted discounting accounts both for the time value of money and for risk aversion through the single discount rate. This risk-adjusted discount rate, k , is the sum of the risk-free interest rate r used to discount for the time value of money (pure discount), and of a discount risk premium, p' , used to compensate for the risk associated with the project

$$k = r + p'.$$

As a practical guideline, normal projects in the same line of business as the parent firm and projects having the same risk characteristics (belonging to the same risk class) do not affect the firm's total (overall) riskiness. Therefore, these projects should be discounted at the firm's average cost of capital. Projects that are above or below the average discount rate of the firm tend to change the firm's total risk and thus, should be discounted at a rate other than the firm's average cost of capital.

As a concept RADR is quite simple—the greater the risk, the higher the return required from the investment. This is a very intuitive approach since the process parallels the way people think of their personal investments. However, accepting a return standard as the main expression of riskiness deals only indirectly with true source of risk, that is, the variation of the investment cash flows themselves and key variables they contain. Another constraint with RADR is that a higher discount rate is applied over the life span of the project whereas the risks occur at different points throughout the time pattern. A case in point may be estimating the discount rate for investing in safety and security after recent terrorist attacks to several lodging properties in the major cities worldwide. Applying a single discount for the whole investment period may ignore the risk variations throughout the life of the project. Hence, Helfert (2003) argues that choosing a risk-adjusted rate is fairly subjective. Therefore, the authors of this study conclude that RADR is yet lacking the necessary scientific rigor and consistency to reflect the specific features of lodging firms.

As a result, some of these industry-specific features need to be installed into the cost of equity estimation in the lodging industry through a meticulous scientific process in an effort to develop more empirical and testable measures for the lodging industry. Thus, the authors put forward the following proposition:

- P4. There exist several industry-specific attributes of the lodging industry that will influence the estimates of the firm's cost of capital as a result of risk related to cash flow generation over time.

4.5. *Safety and Security*

Guest safety and security topics in the lodging industry can vary from building safety codes and bacterial contamination of hotel whirlpools to restaurant food

safety and hotel crime statistics (Olsen and Merna, 1991). The need for greater commitment to safety and security for the hospitality industry became evident in 1990 after the San Francisco earthquake and Hurricane Hugo occurred (Olsen and Merna, 1991). The culmination of these events and all the other events sparked an effort by the hotel industry to manage the risk and liability related to guest safety and security.

Ray Ellis, the director of risk management and operations in the American Hotel & Motel Association (at that time in 1991), contended that after the end of the Gulf War the benefits of increased security for the industry go far beyond intangibles like peace of mind (Jesitus, 1991). Ellis stressed that improved safety and security will significantly decrease the insurance premiums of the properties and thus, enable the companies to have more resources to invest in their operations. Although Ellis said that chances of terrorist attacks on US post Gulf War were fairly remote, he warned that the hotels, particularly those serving international markets, should be most wary of arson and bomb threats.

The International Hotel and Restaurant Association in 1995 identified safety and security as one of the major forces driving change in the global hospitality industry (Olsen, 1995). With the destruction of the World Trade Center in 2001 and subsequent terrorist attacks in Bali (Indonesia) and Kenya it is clear that safety and security has emerged as a major risk factor for all tourism related enterprises. In February 2003, the Federal Bureau of Investigation (FBI) alerted its law enforcement partners that “soft targets,” such as hotels can be subject to terrorist attacks (Arena et al., 2003). This report simply reaffirms the argument proposed by Olsen (1995, 2000) that lodging properties which are situated in an area exposed to terrorist attacks should factor that risk into their cost of capital estimates. Therefore, lodging property executives should apply this risk factor into their future capital investment decisions.

Additionally, food borne related disease outbreaks, infectious bacteria occurrences on cruise ships, increased crime, and the growing threats of human immunodeficiency virus (HIV) and other viral infections such as severe acute respiratory syndrome (SARS) have created a significant management challenge for the hospitality managers world wide. These must be considered as important risk variables that without doubt have an impact upon the estimates of cost of capital. However, little is known of how these variables are going to affect the present models used to determine risk premiums on the cost of capital. Certain assumptions however can be made as identified in Proposition 5.

- P5. The risk premium on cost of capital estimates will be higher in those countries and regions prone to higher levels of safety and security problems.

5. Proposed theoretical and empirical framework

Based upon the discussion in the previous sections, the present paper attempts to propose a contemporary framework that will enable executives and investors to

identify which factors best capture systematic return covariation in the context of lodging security returns. Identification of sources of co-movement, and hence source of firm/industry/portfolio risk is an important issue both for practical and theoretical reasons (Chan et al., 1998). Theoretically, several researchers tried to trace a set of underlying pervasive forces and then use these forces as candidates of priced risk (examples include Ross (1976), Sharpe (1977), and Connor (1984)) and thus, propose equilibrium characterizations of the cross-section of average returns.

Therefore, the present paper advocates a two-step process for the accomplishment of this endeavor. The first step of this inquiry is to put forward a theoretical model that encompasses all of the propositions discussed in this paper. As it can be seen in Fig. 1, the theoretical model describes the relationship between the overarching construct (the Risk Premium (RP)) and the other constructs—Human Capital (Hcap), Technology Investment and Utilization (Tech), Safety and Security Index (SSI), Brand Strength Index (BSI), and Industry Factors (IND). The posited model postulates that there is a negative relationship between Hcap and RP, i.e. the higher the human capital investment the lower the risk premium. The relationship between Tech and RP is negative as well, i.e., the better the technology investment utilization the lower the risk premium. The theoretical model contends that there is a positive relationship between SSI and RP, i.e., the higher the safety and security index (more hotel properties located in locations prone to safety and security problems) the higher the risk premium. The BSI and RP demonstrate a negative relationship, i.e., the higher the brand strength index the lower the risk premium. Since the IND construct is measured by numerous unexplored indicators, the sign of the relationship between IND and RP is unknown.

It should be noted that the constructs proposed in the theoretical model are composed of multiple variables. However, the exact number of empirical indicators

Fig. 1. posited theoretical model: Notes: Hcap = Human Capital; Tech = Technology Utilization and Investment; SSI = Safety and Security Index; BSI = Brand Strength Index; IND = Industry factors; and RP = Risk Premium.

(variables) that represent each of the constructs is not known both to academics and practitioners. In addition, provided that these variables were known to researchers the data that are necessary to empirically test these variables is not readily available in the lodging literature. Hence, given the reality concerned with the available data of lodging firms, it will be safe to say that at the present time it is not possible to obtain time-series data to test the propositions in terms of their full capability of explaining the cross-sectional variation of lodging stock returns. Thus, the present paper takes a step towards proposing an empirical model that attempts to capture industry-specific contextual variables that are conjectured to affect security returns of lodging companies. Heretofore, an empirical model is put forward to trigger the interest among researchers and accelerate the empirical investigation of the industry-specific cost of equity models in the lodging industry.

The first step in developing a sound operable cost of equity lodging model that consistently yields satisfactory results over the years and across hotel firms is to utilize the propositions mentioned above and then incorporate them into a multi-factor model which extends beyond the CAPM, APM and FF models. The authors of this paper introduce the Lodging Asset Pricing Model (LAPM) that attempts to achieve this by including two industry-specific variables that merit immediate empirical investigation: namely, brand strength index and property ownership structure. Consequently, the LAPM can be stated as

$$E(R_i) - R_f = (\beta_i \text{ERP}) + (s \text{SMB}) + (i \text{BSI}) + (p \text{POS}),$$

where, $E(R_i)$ is the expected return of a security j , R_f is the risk free rate, ERP is the Equity Risk Premium, SMB is the size factor (Fama and French, 1993), BSI is the Brand Strength Index (Prasad and Dev, 2002), and POS is the Property Ownership Structure (e.g. franchised vs. managed/company-owned and operated) (Farrar, 2004; Olsen, 1996; Roh, 2002), and β_i , s , i and p are the respective regression coefficients of ERP, SMB, BSI and POS. It should be noted that ERP ($R_m - R_f$) is the equity risk premium which can be used in estimating the industry wide cost of equity for the lodging industry. On the other hand, an individual firm may elect to use the return of the portfolio of all lodging stocks in lieu of market return (R_m) to estimate the equity risk premium.

In the LAPM, the beta coefficient is borrowed from the CAPM due to its strong theoretical foundation. The model adopts SMB from the FF model due to the fact that firm size is believed to proxy for certain firm characteristics such as economies of scale, synergies, and diversification.

On the other hand, the first lodging specific factor, BSI, may be operationalized by using the method suggested by Prasad and Dev (2002). This method is derived from customer satisfaction ratings published by companies such as J.D. Power and Associates, and Texas Market Share Report. Prasad and Dev (2002) argue that those rating are likely to influence the hotel brands' occupancy rates. They further claim that the difference in ratings among two hypothetical hotel brands will serve as a proxy in explaining the variance in occupancy between these brands. Consequently, these consumer ratings may be utilized as proxies for brand strength. Thus, it is

conjectured that a higher BSI will ultimately lead to more stabilized sales and lower cost of equity capital.

The second variable, POS, was introduced as one of the major industry-specific variables in the prior section. Based on the arguments made by Roh (2002) and Farrar (2004) the authors of the present paper postulate that lodging firms with higher POS ratio (higher percentage of owned and managed units), *ceteris paribus*, will have a higher cost of equity capital. POS ratio is derived by dividing the total sales generated by company-owned and managed units with the total sales generated by franchised properties (Olsen, 1996).

Given the discussion outlined above, the authors hypothesize that firms with higher BSI and lower POS will enjoy a lower cost of equity premium than the firms with lower BSI and higher POS. It is the authors' contention that the inclusion of the "lodging industry" factors, namely BSI and POS should contribute considerably to the explanation of common stock variations in the lodging industry and thus, provide more precise cost of equity capital estimations.

As it can be seen from the LAPM equation, "*i*" and "*p*" are the respective coefficients for BSI and POS. These regression coefficients (*i* and *p*) may be estimated by regressing the monthly return of a particular lodging stock (for a 5- or 10-year period) against the brand strength premium (the difference in monthly returns between lodging firms with high and low brand strength indices) and/or property ownership structure premium (the difference in monthly returns between lodging firms with high and low degree of ownership). The most viable way to operationalize these industry-specific variables in the near future may be achieved by following the methodology of Fama and French (1993) and building four risk mimicking portfolios, namely, High BSI vs. Low BSI, and High POS (firms that primarily own or manage lodging properties) vs. Low POS (firms that primarily franchise their hotels). As a next step the difference in monthly stock returns between the respective pairs of portfolios may be used to assess whether these two lodging factors (BSI and POS) account for the cross-sectional variation in the lodging stock returns.

From a practical standpoint, an individual publicly traded hotel firm can estimate the regression coefficients for BSI and POS by regressing its own company's monthly stock return (that covers a 5-year period) over the monthly premiums (differences) between the mimicking portfolios mentioned above (for a 5-year period). Then 5-year BSI and POS premiums can be obtained by averaging and annualizing the monthly 5-year premiums. As a final step, the estimated coefficients can be multiplied by the annualized premiums of the respective factors (BSI and POS) in order to obtain the weights of each of these industry factors in the overall cost of equity estimation of a particular lodging firm.

The following example may serve to illustrate: Let us assume that an executive of Company A regresses his/her firm's monthly stock returns against the monthly premiums of the four factors (MRP, SMB, BSI and POS) and obtains the following regression coefficients: $\beta_i = 0.8$, $s = 0.3$, $i = 0.4$, and $p = 0.5$. Then the executive calculates the average annualized premiums for the four factors in the model. He/she finds the following annual premiums: ERP = 5%, SMB = 4%, BSI = 2% and

POS = 3%. If the risk free rate for the estimation period is 2.5%, then the cost of equity may be estimated as:

$$E(R_i) = 2.5 + (0.8*5) + (0.3*4) + (0.4*2) + (0.5*3) = 10.0\%$$

The above example of the LAPM application shows that estimating cost of equity without the inclusion of BSI and POS would yield an $E(R_i)$ of 7.7% for the hotel firm. That implies that if Company A is planning to invest in a project that is fully funded by equity, then the addition of the two lodging industry factors in the analysis will result in an additional risk premium of 2.3% (10–7.7). This difference in the cost of equity capital is borne because investors who hold the stock of Company A would require a higher rate of return due to the low BSI and the high POS of the firm. To extend the illustration in monetary terms, an investment of 100,000,000 US Dollars in this project by Company A will require the corporation to produce additional 2,300,000 US Dollars of cash flows out of this the project to compensate its shareholders for the risk they undertake.

6. Conclusions

The variables proposed in this study are based on the current state of the industry body of knowledge. There is a lack of publicly disclosed industry data and substantial work done toward development of the cost of equity models in the lodging industry. Consequently, the objective of the current paper is to propose a theoretical framework to further stimulate contemporary research and innovative industry practices geared toward achieving better cost of equity estimates.

While no model will work in every instance, in general, the model should produce valid results on a consistent basis. There might be some models developed by scholars that are based on a sound theoretical foundation but these methods may be too complex to implement which would limit the models' benefits to practitioners in the lodging industry. Therefore, it is vital that the present conceptual framework is further developed and empirically tested in the nearest future. This sense of urgency is also triggered by the increased efficiency in capital markets that demand more transparent information that properly reflects the firm and project values.

Project and firm valuation are vital components to the success of any firm. Recent developments in the financial arena indicate that the task of determining the cost of capital in lodging firms is beset with uncertainty. Then the question becomes which method produces less error and creates a competitive edge for a firm against its competitors, which presumably employ single-factor cost of equity models (such as the CAPM) that fail to reflect the nature and the current structure of the lodging industry.

Achieving a better estimate for the cost of equity in project investment decisions, firm valuation and industry analysis will enable lodging companies to attract more investments in the future. In order to attain this level of achievement, both the academe and the industry should unite their financial and intellectual resources to spur the development of publicly available transparent accounting and financial

measures that will assist in quantifying and assessing the variables proposed in this study.

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