The relationship between hotel staff service delivery with customer attitudinal loyalty and financial outcomes

by

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This research study and dissertation represents a significant milestone in my academic accomplishments. However, it is only a first step in my pursuit of contributing to the broader body of knowledge. In my journey of research and discovery, I have only arrived at base camp and plan to continue to a lifelong climb to reach the summit of Mount Everest. For climbers just embarking on the journey, please know that the knowledge one creates will also pave the way for others.

Reaching this dissertation base camp was made possible by the support of my family, friends, and academic mentors. I am indebted with love to my wife, Hae Timmerman, as she's supported my academic journey by keeping me company in my office during the late nights of research and writing. I am also grateful to my children—Derek, Zachary, Parker, and Taylor—for keeping the house quiet or as quiet as teenagers can be while I'm analyzing data. I have also benefited from the encouragement of my friends, including Cheryl Moodie for challenging me to start my bachelor's degree, Herve Humler for recommending me for a masters program, and John Adams for "moving heaven and earth" to enable me to have time to embark and complete a doctorate program. I have also greatly benefited from my academic mentors who have invested in my development, including Drs. James Bardi for motivating me to finish my first college course, Robert Nelson in role-modeling a student-centric philosophy, James Jacobs for teaching me to think, Tianshu Zheng for collaborating in the research proposal, and my Program of Study Committee for their commitment to my success.

ABSTRACT

This research study tests the conceptual model of the service-profit chain construct that suggests a strong linkage between external service value, customer satisfaction, customer loyalty, and financial growth (Heskett, Jones, Loveman, Sasser, & Schlesinger, 2008). The study identified key variables of staff service delivery, customer attitudinal loyalty, and financial outcomes that conceptually match the service-profit chain construct within the context of the hotel experience. These key variables were analyzed from a sample of over 600,00 survey responses from 314 full-service hotels in North America over a two-year period of time.

Quantitative statistical methods were employed, including principal component analysis to identify latent factors of staff service delivery, customer attitudinal loyalty, and financial outcomes. A systematic eight-stage structural equation modeling was utilized to test the interdependent relationships of the staff service delivery, customer attitudinal loyalty, and financial outcome factors. Results from the study suggest that staff service delivery is an important measure of external service value and strongly correlated with customer attitudinal loyalty. Although the study did not provide results that indicate customer attitudinal loyalty influences financial outcomes, the findings demonstrated that customer satisfaction is a key component of customer attitudinal loyalty. This research study illustrates the importance for hotel owner and operators to measure, evaluate, and invest in staff service delivery to improve overall customer attitudinal loyalty.

CHAPTER 1. OVERVIEW

Introduction

The purpose of this research was to build upon the conceptual framework of the service-profit chain that suggests there is a strong linkage between service excellence and economic performance (Heskett et al., 2008). Although the service-profit chain framework of "customer satisfaction = profitability" appears somewhat intuitive, there is limited research that confirms higher levels of customer loyalty derived from superior service delivery will positively influence hotel financial performance. This research explored and tested the relationship between hotel financial performance and indicators of customer loyalty and service delivery.

Previous research has verified a high-level relationship between customer satisfaction and hotel financial performance as evidenced by Chi and Gursoy (2009), that utilized a structural equation method that demonstrated a relationship between customer satisfaction and profitability for 250 hotels from the study. Similarly, a restaurant study conducted by Gupta, McLaughlin and Gomez (2007) indicated a positive correlation between patron satisfaction and repeat purchase behavior that projected a $1.3 million gain in incremental revenue if there was a one percent increase in the survey question of "likeliness of return." Although such studies have established a relationship between financial performance and the customer experience, there is limited empirical evidence that identifies the importance of service value within the context of the service-profit chain and the hotel industry.

In testing the service-profit chain, previous studies utilized statistical methods that correlate the relationship between customer attitudinal loyalty but do not clearly demonstrate a causality of the relationship. For example, it is not clear if hotels with high levels of customer service positively influence customer attitudinal loyalty and financial outcomes or if hotels with higher financial outcomes create a condition that positively influences customer attitudinal loyalty and service levels. Although the latter of the two statements appears counter-intuitive, it is certainly not beyond the realm of possibilities and potential fallacy in the service-profit chain theory. Therefore, this dissertation will employ advanced statistical procedures to measure the relationships between financial performance in relation to customer experience and importance of service value in influencing such referrals.

Statement of the Problem

Hotel owners and management organizations utilize financial outcomes such as average daily rate, occupancy, and revenue per available room (RevPAR) to evaluate the effective financial growth and efficient inventory control (Cross, Higbie, & Cross, 2009). These financial measures are typically managed through the sales, marketing, and yield management functions, which are mostly lagging indicators because they are by-products of a transaction and not necessarily influenced by the customer experience. Additionally, financial systems are inadequate in forecasting customer loyalty derived by the customer experience because they measure sales transactions and not the value derived from such a purchase (Reichheld, 1993).

Therefore, utilizing current levels of average daily rate, occupancy, and revenue per available room as an indicator of future financial growth is problematic because it does not account for other possible variables that influence a purchase decision such as customer attitudinal loyalty that is shaped by the customer experience. Although hotel operators might believe that poor customer experience can negatively influence customer attitudinal loyalty and repeat business, there is limited evidence that quantifies the economic advantage derived from delivering higher levels of service value as suggested by the service-profit chain model.

Significance and Purpose of the Study

The service-profit chain suggests that there are more predictive measures of revenue growth that reside in the customers' attitude toward their service provider as measured with customer loyalty surveys. Although previous studies have identified positive relationships between customer attitudinal loyalty and financial outcomes, there is limited evidence that tests the complete framework to include the service value component of the service-profit model. Therefore, the purpose of this dissertation is to identify the linkage and relationships between financial outcomes, customer attitudinal loyalty, customer satisfaction, and service value. The relationships identified by this research will be utilized to develop a statistical model that will measure the impact service value, customer satisfaction, and customer attitudinal loyalty has on financial outcomes.

Objectives of the Study

The objectives of the study were to:

1. Define key variables of external service value, customer satisfaction, customer loyalty, and financial outcomes within the context of a hotel experience.

2. Identify latent constructs for the measureable variables of service value, customer satisfaction, customer loyalty, and financial outcomes.

3. Measure the relationship between external service value and customer satisfaction.

4. Measure the relationship between customer satisfaction and customer loyalty.

5. Measure the relationship between customer loyalty and financial outcomes.

6. Quantify the relational linkages between external service value, customer satisfaction, customer loyalty, and financial outcomes.

Assumptions

Key assumptions for this research were:

1. Secondary data are available for measures of external service value customer satisfaction, customer loyalty, and financial outcomes.

2. The sample data will be generally representative of the North American population to allow for extrapolation of the results and findings.

3. The data set will be adequate in size and representativeness to allow for cross-validation of the model.

Dissertation Organization

This dissertation is presented using the traditional format that includes the five chapters, comprised of: (1) Introduction and Significance; (2) Literature Review; (3) Methodology; (4) Results; and (5) Conclusions and Recommendations.

Definitions of Terms

The following terms were defined for this research:

Average daily rate (ADR): The average daily room rate or selling price (room revenue / rooms sold) (Smith Travel Research, 2012c).

Chi-square (χ^2): Measures the difference from the observed and estimated covariance (Hair Jr., Black, Babin, & Anderson, 2010, p. 612).

Coefficient of determination (R^2): The coefficient of determination as a statistical value ranging from 0 to 1 that measures the degree of variance for the dependent variable that is explained by independent variables (Hair, Jr., et al., 2010, p. 156).

Correlation coefficient: The correlation coefficient is the statistical value that measures the strength of the relationship between variable with +1 or -1 indicating a mirrored relationship and a value of 0 signifying a lack of a relationship (Hair, Jr., et al., 2010, p. 156).

Covariance: Represents the variability in comparing two variables that can range from a positive or negative relationship with higher value representing a stronger relationship (Furr & Bacharach, 2008, p. 42).

Customer attitudinal loyalty: Synonymous with the term customer loyalty, it is defined by the likelihood of recommending and repeat purchase (Kandampully, Juwaheer, & Hu, 2011).

Customer satisfaction: A two dimensional characterization of customer satisfaction derived from either an outcome of the experience or evaluative process of the experience in relation to expectations (Vavra, 1997, p. 4).

Degrees of freedom: Calculated by subtracting the total number of observations from the number of estimated parameters. The degree of freedom statistic estimates the level of model restriction in prediction with a low value representing that most of the observations were incorporated into the model (Hair, Jr., et al., 2010, p. 157).

Error variances: The degree of error in measurement for the observable variables and residual terms for the latent factors and structural component of a structural equation model (Diamantopoulos & Siguaw, 2000, p. 60).

Latent factor: A construct that is not directly measurable and is comprised of multiple measureable variables (Hair, Jr., et al., 2010, p. 614).

LISREL (linear structural relations): A structural equation modeling program that provides path diagrams that illustrate the relationship between measurable and latent factors in the model (Jöreskog & Söbom, 1983, p. xxiv).

Measurement error: The degree in the latent construct is not reflected by the measurable variables (Hair, Jr., et al., 2010, p. 614).

Multicollinearity: A correlation coefficient between two variables with a value of 1 representing collinearity and contrast value of 0 indicating a absence of collinearity (Hair, Jr., et al., 2010, p. 156).

Occupancy: The number of rooms sold (rooms sold / rooms available) (Smith Travel Research, 2012c).

Occupancy Index: Calculated by dividing hotel occupancy by the competitive set and then multiplying it by 100 (Smith Travel Research, 2012c).

Parameter: A measurement characteristic representing the population and derived from a sample (Hair, Jr., et al., 2010, p. 158).

Principal component analysis: A statistical technique that reduces a large set of correlated variables into a smaller set of unrelated variables (Jackson, 2003, p. xv).

Revenue per available room (RevPAR): Calculated by dividing the total rooms revenue by the total number of available rooms (room revenue / hotel guestrooms) (Smith Travel Research, 2012c).

Revenue per available room (RevPAR) index: Calculated by dividing the revenue per available room for a hotel by the competitive set and then multiplied by 100 (Smith Travel Research, 2012c).

Root mean square error of approximation (RMSEA): An indicator of badness-of-fit with a value of zero indicating the best fit and values near 0.10 statistic a poor fitting model (Kline, 2011, pp. 205-206).

Service value: The results received such as quality or ease of access in relation to the burden or cost for such services (Heskett, Sasser, & Schlessinger, 1997, pp. 24-25).

Staff service delivery: The intangible component of the customer experience that is enabled by a service delivery system that is comprised of the human element (excluding production processes and supporting systems) (Ford, Sturman, & Heaton, 2012).

Standard error: The standard deviation of the predicted values and is a measurement of the predictive accuracy of the model with smaller values indicating a higher degree of predictive accuracy (Hair, Jr., et al., 2010, p. 165).

Standardized parameter estimate: Determined from using a metric that is uniform across all measures to determine the relevant importance of the predictors. The standardized parameter estimate is similar to the coefficient of determination (R^2) in calculating the amount of variance explained by the statistic (Raykov & Marcoulides, 2006, p. 93).

Standardized root mean square residual (RMR): The difference between the observed and predicted correlation values with a precise value of zero and acceptable threshold of 0.08 statistic (Kline. 2011, pp. 208-209).

Structural equation modeling (SEM): A multivariate method that measures the relationships across both latent factors and measureable variables through a combination of factor analysis and regression equations (Hair, Jr., et al., 2010, p. 616).

t-value: The square root of an f-value that measures how accurate a variable contributes to the prediction of the model in relation to other variables contained within the equation. A low *t*-value indicates the variable has an minor contribution to the accuracy of the model (Hair, Jr., et al., 2010, p. 159).

Unstandardized parameter estimate: The change in the dependent variable from

a one-unit change in the independent variable with all other variables held constant

(Diamantopoulos & Siguaw, 2000, p. 59).

CHAPTER 2. LITERATURE REVIEW

Introduction

This review of literature provides definitions, exploration of concepts, and theories in explaining the interrelationships of the service-profit chain construct. The key concepts of the service-profit chain include service value, customer satisfaction, and customer attitudinal loyalty on financial outcomes. Within the context of the hotel industry, financial outcomes are collected by the finance discipline and can include average daily rate, occupancy, and revenue per available room. Metrics such as service value, customer satisfaction, and customer loyalty are most often measured by customer satisfaction survey instruments.

The concept of value creation underpins the service-profit model in that all the activities of the service-profit chain enable employees in the delivery of external service value to customers, whereby customers create economic value for investors. The authors of the service-profit chain, Heskett, Sasser, and Schlesinger (2003, p. xviii-xx) define the customer value equation as results plus process quality divided by price plus customer access cost. Within the context of the hotel industry, the value equation could be calculated by adding the benefit of a guestroom and service delivery that is divided by the price for the guestroom and travel burden to the hotel location. The value equation and hotel example are shown in Table 1 to illustrate the translation of the concept within the context of the hotel industry.

Table 1. Value equation and hotel example

Value equation	Value = (results + process quality) / (price + customer access costs)
Hotel example	Value = (guestroom + service delivery) / (price paid for the guestroom + travel to the hotel location)

The value equation accounts for the overall benefits derived by the customer in relation to the burden for such benefits and is important in determining if there is a surplus, equilibrium, or deficit in customer derived value. It is reasonable to infer that customers would prefer a value proposition with a high degree of surplus value. An extreme example would be characterized by providing a customer with a guestroom at no cost with error-free service delivery and at the most desirable location. However, the absolute value derived by a customer is more meaningful when compared to other available choices. For example, it is possible for a customer to select a value proposition with the lowest deficit in value if the alternatives provide a higher degree of overall burden. Heskett et al. (2003, p. xx) suggested that customer value creation should be viewed within the broader framing of employee and investor value. Employee value relates to the capabilities of employees in relation to their economic cost, whereas investor and partner value is calculated by evaluating economic return in relation to investment. However, it is beyond the scope of this study to explore the employee, partner, and investor value equations. This study focuses on the customer value equation part of the service-profit chain.

Given the purpose of this dissertation was to measure and evaluate the service-profit chain within the context of the hospitality industry, the literature review utilizes the service-profit chain illustrated in Figure 1 (Heskett et al., 2008) as a framework to systematically explore the key components of the customer value equation component of the diagram. The service-profit chain diagram illustrates the operating strategy and service delivery system that creates employee value, customer value, partner, and investor value. For purposes of this study and the literature review, customer value includes the external service value, customer satisfaction, customer loyalty, revenue growth, and profitability components of the service-profit chain.
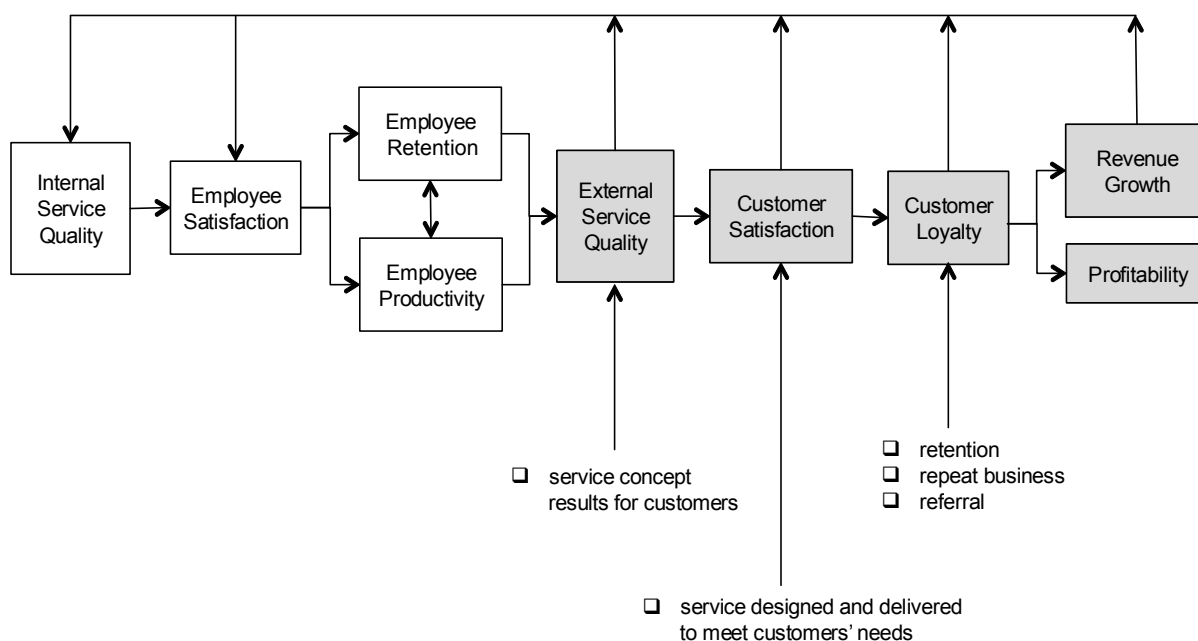
Source: Heskett et al. (2008, July-August). Putting the Service-Profit Chain to Work. *Harvard Business Review*, *86*(7), 118-129.

Figure 1. Links in the service-profit chain

The service-profit chain components of external service value, customer satisfaction, customer loyalty, revenue growth and profit comprise the key areas of investigation for the literature review and are depicted in the boxes and arrows above the dashed line as depicted in Figure 2. Next, the research objectives were translated into key areas of exploration for the literature review as illustrated by the boxes and arrows below the dashed line (Figure 2). The purpose of the literature review is to identify metrics within the hospitality industry that represent the service-profit chain and relationships between service value, customer satisfaction, customer attitudinal loyalty, revenue growth, and profitability.
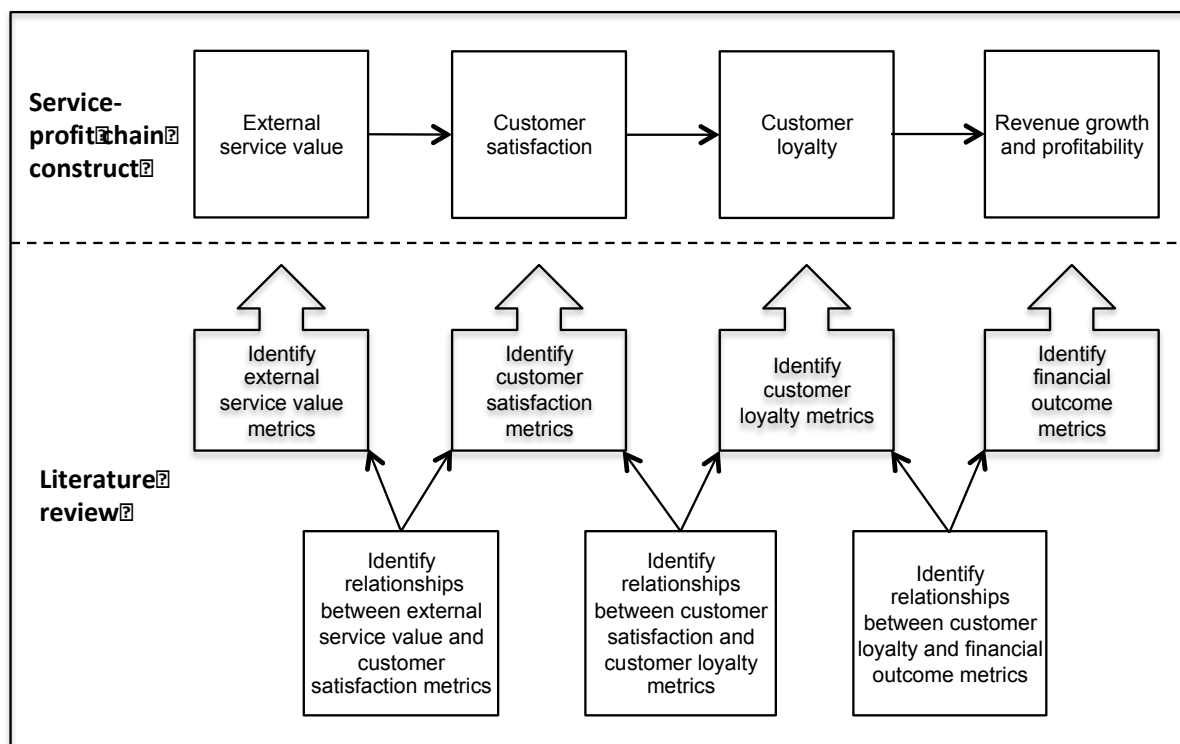
Figure 2. Literature review key areas of exploration

Revenue Growth and Profitability Metrics

Banker, Potter, and Srinivasan (2005) indicate the hospitality industry also employs unique instruments for measuring financial performance to include occupancy percentage (room nights / available rooms), average daily rate (room revenue / occupied room nights), RevPAR (room revenue / available room nights), and average food check (food revenue / customers served). These metrics of financial performance are corroborated by an examination of performance measures from the 2011 annual reports for the largest hotel companies (Weinstein, 2011) that include Intercontinental, Marriott International, Wyndham, Accor, and Starwood. The 2011 annual reports of these five hotel companies were analyzed to identify financial performance metrics related to the service-profit chain components of profit and growth. Common metrics across the sample include sales and revenue, occupancy, average daily rate (ADR), RevPAR, operating costs and margins, income and profit, stock price, earnings per share, dividends per share, debt structure, and growth of guestroom inventory. The RevPAR metric is a common metric found across these annual reports. From the literature review, RevPAR appears like an industry benchmark in evaluating hotel financial performance and will be given special consideration in testing the service-profit chain construct.

Smith Travel Research (2012b, p. 6) provides industry benchmarks for RevPAR statistics and defines the calculation as the total customer room revenue divided by the total number of available rooms as expressed by "Occupancy x ADR = RevPAR." Occupancy refers to the number of rooms sold (rooms sold / rooms available) and ADR is defined as the average daily room rate or selling price (room

revenue / rooms sold) that are key variables for calculating revenue per available room (Smith Travel Research, 2012c). Banker et al. (2005) cite RevPAR as a key financial metric for hotels that is analogist to the measure of average food check for restaurants. These hotel statistics are reported to Smith Travel Research on a monthly basis and include competitive comparison rankings and indexes across a time horizon of monthly, running three months, running twelve months, and year-to-date results (Smith Travel Research, 2008). Given the reporting of revenue per available room in the annual reports for large hotel companies and multiple literature citations, it appears that revenue per available room is a key measure of financial performance for the hotel industry.

Revenue per available room influences stakeholders such as customers as well as hotel owners and operators because it can be used to estimate the economic value of the hotel guestrooms. In terms of the customer, it might be a value proposition hurdle in deciding if room rate is worth the benefits received. For example, a study of 67,008 hotel observations spanning from 2001 to 2007 by Enz, Canina, and Lomanno (2009) indicated that hotels can use market segmentation (i.e., luxury, upscale, midscale, and economy) as a basis for setting price premiums in that a luxury hotel that priced 20- to 30 percent higher than the competitor generated a 13 percent higher RevPAR, whereas on the opposite side of the continuum an economy hotel with a 20- to 30 percent lower price than the competitor can generate a 16 percent increase in occupancy. Similarly, Ismail, Dalbor, and Mills (2002), and Kim and Canina (2011) also provide evidence of this phenomenon in that there tends to be higher RevPAR variation among luxury hotels in contrast to

lower volatility within an economy budget segment. These examples help illustrate the elasticity of price and demand in comparison to the market segment such as a luxury hotel customer might to be less sensitive to price increases in comparison to the economy customer. Therefore, the impact of factors such as customer loyalty and staff service delivery might demonstrate a strong relationship with revenue per available room in upper luxury tier because it appears there is less price sensitivity. In contrast, the relationship between revenue per available room and the variables of customer loyalty and service delivery might be weaker or limited across the economy budget tier due the inelasticity of these segments.

Hotel owners utilize RevPAR among other metrics such as profit margins, capital reserves, and cash flow as performance statistics in support of hotel acquisition decisions (Ganchev, 2000). Hotel owners also use RevPAR targets in selection of branded hotels as indicated by a study of 2,012 hotels from the Smith Travel Research database from 2003 to 2005 that indicates brand affiliation explains a large portion of revenue per available room variance (Xiao, O'Neill, & Mattila, 2012).

It appears from the literature review that hotel operators consider RevPAR as a standard metric of hotel supply and demand performance that is utilized to measure both individual hotel and comparable industry results (Slattery, 2002). For example, RevPAR is used in evaluating hotel yield performance (Revenue realized / Revenue potential) to achieve the optimal occupancy and room rate (Bardi, 2007). Revenue per available room is also utilized as measure of growth in relation to competition and evaluation of efficient inventory control (Cross et al., 2009). For

example, hotel RevPAR is an indicator of revenue realized and RevPAR Index can be a proxy for revenue potential from which hotel management can use these metrics to evaluate if they have optimally priced their room rate and efficiently managed the hotel inventory.

Customer Loyalty Metrics

Jones (1997) indicates that there are three indicators of customer loyalty to customer retention, likeliness to return, and the likeliness of a customer referral. Of the three proposed indicators of customer loyalty, the customer referral metric might best measure the customers attitudinal loyalty that is influenced by the quality of the hotel services and facilities because it reflects their willingness to act as an advocate for the company, whereas measures such as customer retention or likeliness to return can be influenced by factors that are external to the customer experience.

A literature review conducted by Kandampully et al. (2011) indicated that customer loyalty is measured by both repeat purchase behaviors and customer attitudes such as their willingness to recommend a service provider, and that these two metrics have an additive effect on customer loyalty. However, this relationship does not guarantee that attitudinal loyalty will consistently translate into behavioral loyalty and likewise that behavioral loyalty will reciprocate into attitudinal loyalty. For example, Bowen and Chen (2001) propose that repeat behaviors do not reflect attitudinal loyalty because a customer might select a hotel based upon on access or convenience of the location. Similarly, Jones (1997) indicates that other variables to include hotel access, employment factors, brand affiliation, marketing, and overall

economic conditions will influence loyalty outcomes. Barsky and Lin (2004) suggest that customers can have higher behavior than attitudinal loyalty because they are "trapped by inertia or indifference" due to convenience or budget, however would not merit a recommendation.

A customer's likeliness to recommend a service provider is a key indicator of attitudinal loyalty and might generate incremental revenue that stems from customer referrals (Jones & Sasser Jr., 1995). The likeliness of a customer referral appears to have a geometric effect on customer advocacy because research indicates that 23 percent of customers with a positive experience will share the story with ten or more other people and an adverse encounter has a more dramatic effect because 48 percent of these customers told ten or more people about the negative experience (Dixon, Freeman, & Toman, 2010). Therefore, attitudinal loyalty metrics might provide an indicator to evaluate both the customer experience and is also a leading measure of financial outcomes such as revenue per available room. In addition to customer retention, likeliness to return, the likeliness of a customer referral (Jones, 1997), the literature also classified customer satisfaction within the domain of attitudinal loyalty (Allen, 2004, p. 17) that influences actual behavior. Therefore, the service-profit chain classification of referral might be more closely related to satisfaction than the actual manifestation of the consumer behavior such as realized retention or actual return patronage.

Customer Satisfaction Metrics

Differences between a customers' actual experience in relation to their expectations will modulate attitudinal dimensions of contentment, pleasure, relief, novelty, or surprise and overall satisfaction can comprise the cumulative effect from multiple transactions (Clemes, Gan, & Ren, 2011, pp. 533-534). Vavra (1997, pp. 39-43) reports that customer expectations comprise the beliefs, desires, and past experiences of a product or service transaction that can be confirmed (perceived experience equals expectation), affirmed (perceived experience exceeds expectations), or disconfirmed (perceived experience is less than the desirable expectation). For example, a customer might formulate an expectation that all luxury hotels have separate showers and baths from prior experience or influencing sources such as advertising. Given this expectation prior to arriving at a luxury hotel, the customer might be dissatisfied if the shower and bath were combined (disconfirmed expectations), satisfied to a moderate degree if the bath and tub were separate (confirmed expectations), or satisfied to a higher degree if the separate shower and bath were significantly larger than expected (affirmed expectations).

Ramanathan and Ramanathan (2011) classify attributes such as room or food quality as dissatisfiers because meeting customer expectations will mitigate dissatisfaction, however higher levels of performance above the customer expectation might not significantly increase customer satisfaction and attitudinal loyalty. Although the literature suggests that certain factors have a stronger influence on either the satisfaction (satisfier) or dissatisfaction (dissatisfier) domains, the literature did not provide enough evidence to further classify all potential factors

into discrete categories. Additionally, the review of literature suggests that certain attributes might modulate both satisfaction and dissatisfaction. A meta-analysis conducted by Szymanski and Henard (2001) indicated that disconfirmation of customer expectations is a dominant factor in creating dissatisfaction when customers feel they are being treated unfairly. The modulation of customer attitudes of both satisfaction and attitudinal loyalty might stem from their perception of a fair and basic expectation versus the type of factor (i.e., food quality or service staff delivery) and help explain the phenomena that certain factors influence both satisfaction and dissatisfaction.

To account for confirmed or disconfirmed experiences, Johnson and Gustafsson (2000, p. 185) incorporate the satisfaction concept in survey instrument design by asking the customer to rate their satisfaction based upon the consideration of all experience. The concept of satisfaction can be measured in terms of the overall experience and grouped with other questions that predict customer loyalty such as likelihood to choose again and recommend (Hayes, 2008, p. 180). The satisfaction metric is also used to evaluate discrete attributes of the customer experience that includes items such as tangibles, reliability, responsiveness, assurance and empathy that are included in the SERVQUAL instrument (Zeithaml & Parasuraman, 2004, pp. 48-52).

External Service Value Metrics

Customer experiences can be directly influenced by product and service (Allen, 2004; Kenett & Salini, 2012) that modulate customers' level of dissatisfaction

or satisfaction related to the experience. Schall (2003, p. 55) provides a more granular characterization of product and service attributes from a study of over 300 factor analysis of hotel survey results that identified three key factors that influence hotel customer experience that include: the guestroom (i.e., cleanliness, smell, amenities, quietness, and comfort); food (i.e., quality, taste, appearance, temperature, prompt/accurate service); and staff (i.e., friendliness, helpfulness, and accuracy/promptness of service). A factor analysis of hotel customers conducted by Choi and Chu (2001, p. 285) corroborated the factors of staff service and provide additional factors to include room quality, business services, value, security, facilities, food and beverage, and amenities. The attributes of product and service quality in influencing the customer experience are also observed for restaurant customers in that food product (i.e., presentation, portion, temperature, delicious, and quality) and service (i.e., staff appearance, friendly, and timely/attentive service) were identified as key factors that influence the customer satisfaction (Gupta et al., 2007).

Levels of service delivery are typically measured through quality assurance audits, mystery shoppers, and survey tools that are mostly lagging indicators in that they measure the outcome of a service episode. Customer satisfaction is a key metric for hospitality companies and the SERVQUAL survey instrument is utilized to measure customer satisfaction across attributes such as reliability, assurance, tangibles, empathy, and responsiveness (Gracia, Bakker, & Grau, 2011). For example, Hesford and Potter (2010) illustrate that hospitality companies have deployed a balanced scorecard approach that includes customer satisfaction metrics such as surveys and comment cards with an array of other diagnostic and

compliance based assessment tools to include mystery shoppers and brand standard audits. Additionally, hospitality organizations can employ leading indicators of customer satisfaction as demonstrated by a UK-based hotel chain that uses employee surveys as a gauge for service outcomes that includes measures of employee training and the staffs' internal assessment of service delivery (Eccles & Durand, 1997). Employee perceptions might be an effective barometer of customer loyalty because a study of twelve full service hotels demonstrated a correlation between employee's views of service levels in relation to the actual customer survey results (King & Garey, 1997).

Hotel staff are at the center of the stage for creating a positive disconfirmation and must go beyond ensuring defect-free service because "having nothing go wrong is not the same as having everything go right" (Gilmore & Pine II, 2002). Zeithaml and Parasuraman (2004, pp. 2-3) cite key attributes of employees in delivering service to include assurance in persona that exhibits confidence, empathy, reliability in delivering service, responsiveness in helping customers, and tangible attributes to include the physical appearance of employees. Given the highly interpersonal aspects of these attributes, the external service value derived from the staff service delivery process might be dependent upon internal service quality components to include work and job design, employee selection, and development.

The external service value variables identified by the literature review are provided in Table 2. These variables demonstrate a strong association with interpersonal interaction between the employee (staff) and the customer. For example, the attribute of friendliness is a common theme associated with staff

Table 2. External service variables

Source	Cited variables
Choi & Chu (2001)	Staff service, room quality, business services, value, security, facilitates, and amenities.
Cronin, Brady, & Hult (2000)	Delivery of service quality.
Gupta et al. (2007)	Food product (presentation, portion, temperature, delicious, and quality) and service (staff appearance, friendly, and timely/attentive service).
Han, Kim, & Hyun, (2011)	Employee interactions.
Jones (1997)	Hotel location, employment rates, brand affiliation, marketing, and economic climate.
Knutson, Beck, Kim, & Cha (2009)	Hotel environment, convenience, physical layout, price/value, and loyalty program.
Schall (2003)	Guestroom (clean, smell, amenities, quiet, and comfort), food (quality, taste, appearance, temperature, prompt/accurate service), and staff (friendliness, helpfulness, and accuracy/promptness of service).
Slevitch & Oh (2010)	Quality of service delivery.
Tanford, Raab, & Kim (2011)	Emotional connection with customers during service delivery.
Walls, Okumus, Wang, & Kwun (2011)	Individual characteristics, situational factors, and human interactions during service delivery.
Wu & Liang (2009)	Service interactions (reliable and professional)

service delivery. The staff service delivery variables identified by the literature review and exhibited in Table 2 served as a reference for the testing of the external service value component of the service-profit chain construct.

Relationship between Financial Outcomes and Customer Loyalty

In support of the service-profit chain construct and similar theory, a research study of a multi-billion dollar hotel corporation demonstrated a positive relationship between financial performance and customer loyalty measures in that a 0.10 increase in the survey measure of likeliness to return by a customer was related to a $1.56 increase in total revenue per available room and $1.00 improvement in gross operating profit per available room (Banker et al., 2005). Similarly, Heskett et al. (2008) propose that profit can be increased by 25% to 85% with only a 5% increase in customer loyalty. In further examining the relationship of customer loyalty as a leading indicator for financial performance, Banker et al. (2005) conducted a regression analysis of customer survey and financial data indicated that a 0.10 increase in the survey response for the "likeliness to return" question would generate a 3.7% growth in hotel occupancy. Additionally, an investigation of customer survey questions related to the likeliness of customer return indicated that this metric has a positive correlation with customer loyalty for a study of 586 hotels and 571 restaurant customers (Gracia et al., 2011).

Glenn (1995) proposes that financial performance such as RevPAR is not a composite of hotel performance and is rather a function of the overall performance of a hotel. This is because hotels that meet the needs of their customers and have the

best quality services and facilities also benefit from higher RevPAR premiums. Additionally, RevPAR measures are challenging in forecasting future customer demand because they measure the financial result of the sales transactions and not the customer experience and value derived from such a purchase (Reichheld, 1993). Given the construct that quality of services and facilities in meeting customer needs influence customer demand, RevPAR can be viewed as a lagging indicator of hotel performance. Therefore, it appears there is a relationship between how customers evaluate the quality of services and facilities in relation to RevPAR results because it seems that both are indicators of how customers ultimately vote with their share of wallet. It is possible that hotel owners and operators do not forecast revenue growth based upon customer satisfaction and loyalty measures because the two metrics might be separated by intervals in time that make it difficult to identify such a relationship from day-to-day observations and short-term reporting cycles.

Meyer and Schwager (2010) suggest that organizations might not view the customer's attitudinal loyalty as a leading indicator of financial outcomes because corporate leaders who would never tolerate a large gap between forecasted and actual revenues prefer to look the other way when company and customer assessments diverge. Therefore, it appears there is an opportunity to provide leadership with empirical evidence that helps validate the linkage between how customers cast their ballot in a loyalty survey in relation to how they vote with their dollars and share of wallet.

Relationship between Customer Loyalty and Satisfaction

Hayes (2008, p. 80) indicates that customer satisfaction and loyalty might exist within the same factor and that commonly used customer loyalty instruments contain an overall satisfaction measure in concert with measures of repurchase such as likelihood to choose the offering again or purchase additional products and services. In similar respect, Szwarc (2005, pp. 28-29) classified customer satisfaction and loyalty as one factor that influences financial outcomes such as profitability. It appears from the research that customer satisfaction and loyalty are interrelated and important concepts related to financial outcomes; however, they might not be unique components of the service-profit chain.

Whether classified as customer satisfaction or loyalty, these metrics can quantify the customer emotions across a range of positive to negative ends of the continuum. Analyses of customer complaints from the National Restaurant Association and the American Hotel and Motel Association survey data by Cadotte and Turgeon (1988) have expanded the typology of satisfiers and dissatisfiers to include core attributes such as the helpfulness of an employee can elicit both a positive (satisfier) or negative (dissatisfier) response that influence loyalty. Similarly, a study conducted by Slevitch and Oh (2010) indicates that core attributes, sometimes referred to as dissatisfiers, such as cleanliness, bedding, front desk, and safety/security can modulate satisfaction and work in concert with attributes such as personalized service or public area aesthetics that facilitate higher levels of satisfaction. Analogous to Maslow's Hierarchy of Needs, these findings suggest that core attributes represent minimum requirements that must be addressed before

achieving a higher level of customer satisfaction before achieving a higher level of attitudinal loyalty. Therefore, the literature suggests that the customer experience is influenced by multiple dimensions including satisfiers, dissatisfiers, and variables that overlap both domains. Similarly, it appears from the cited research that certain attributes might stimulate either one or both domains of satisfaction and dissatisfaction.

A meta-analysis of hospitality customer experience research proposed that: (1) individual characteristics, (2) situational factors, (3) physical experience elements, and (4) human interactions can influence the customer experience (Walls et al., 2011, p. 17). In contrast, Kenett and Salini (2012, p. 12) suggest the customer experience is shaped by psychological factors (i.e., service provider behavior) or technical attributes (i.e., product quality). Similarly, Allen (2004, p. 17) proposes that customer satisfaction is influenced the two key domains of product and service quality that work in concert with attitudinal loyalty (cognitive and effective drivers), perceived value (price and quality), and brand image will effect consumer behavior and financial outcomes. Certain product and service attributes might not always exist on the same continuum, as illustrated by the Kano Model that suggests that certain attributes are core requirements that satisfy a basic expectation and might not create higher levels of customer satisfaction that influence attitudinal loyalty (Yang, Cheng, Sung, & Withiam, 2009).

Relationship between External Service Value and Customer Satisfaction

The service-profit chain construct refers the exchange between a provider and customer as external service value that is operationalized by a service delivery system (Heskett et al., 1997, p. 9) that includes people, technology, and facilities. In contrast the literature review within the context of the hotel industry segmented the external service value into the dimensions comprised of product and service. The people component of external service value appears like a dominant factor of the customer experience in that staff regulate the exchange of products and services. This interaction between a service provider and the customer can have a significant influence on the overall customer experience to include the modulation customer satisfaction and attitudinal loyalty.

Structural equation modeling of the luxury-hotel restaurant customers conducted by Wu and Liang (2009, p. 591) indicates the service interaction (i.e., reliable and professional service) between employees and customers has a direct and positive influence on customer satisfaction. Kong and Muthusamy (2011) indicate that the service experience can result in one of three distinct outcomes to include: (1) negative disconfirmation by delivering poor service below customer expectations, (2) confirmation of customer expectations with satisfactory service, and (3) positive disconfirmation by delivering service that exceeds expectations and delights the customer.

Although the previous findings support the service-profit model, there are contradictions in the evidence such as the findings from an analysis of 364 city hotel customers that demonstrated a weak relationship between customer satisfaction and indicators of customer loyalty (Skogland & Siguaw, 2004). These contradictions might result from a requirement that hotels must first satisfy basic customer requirements before they can achieve a higher level of customer satisfaction similar to Maslow's Hierarchy of Needs. Yang et al. (2009) suggest that the customer experience is built upon a platform of core requirements defined as "must-have attributes" that create a base level of satisfaction from which "attractive attributes" build upon this base platform with higher levels of satisfaction and delight. For example, a study of restaurant patrons indicated that customer satisfaction derived from service has a stronger influence when reinforced by a foundation of basic requirements such as food quality (Wall & Berry, 2007).

This phenomenon might be somewhat explained by a study that identified non-staff service delivery related factors such as the atmosphere and product could influence customer loyalty (Heide & Grønhaug, 2009). Additionally, a study comprised of 152 hotel customers discovered core factors that shape the customer experience such as the environment, convenience, physical layout, price and loyalty programs (Knutson et al., 2009). Jones (1997) corroborates this point of view that extraneous variables such as the convenience of the hotel location can influence customer loyalty. Such non-service delivery related factors are important considerations and potential limitations for this study that is designed to primarily

measure the relationship between customer attitudinal loyalty and staff service delivery related variables.

Heskett et al. (2008) indicate that the human resource function is a critical platform that requires investments in employee skill development and leadership reinforcement of empowerment to cultivate customer satisfaction. The Harvard Business School (as cited in Keiningham, Vavra, Aksoy, & Wallard, 2005, pp. 161-162) suggests that there are four elements related to employee performance that can influence customer satisfaction to include: (1) employee capabilities that are supported by training, tools, and procedures, (2) satisfaction of the employee, (3) employee loyalty as measured by retention and support of organizational goals, and (4) employee productivity that enables competitive pricing through improved efficiencies. Of the four elements, employee loyalty might be of significant concern for management because a study conducted by Walker Information and the Hudson Institute (as cited by Lowenstein, 2005, p. 151) indicate that only 30 percent of employees consider themselves loyal and committed to the organizational goals.

Although the objective of management is to ensure consistent execution of procedures across the organization, these policies should be balanced with employee empowerment that help enable agility and responsiveness to solve customer problems (Gjerald & Ogaard, 2010). Barsky and Nash (2007, p. 14) suggest that human resource management policies that promote employee responsiveness to solve service problems is a critical factor to ensure customer satisfaction because their study indicated that 90 percent of customers will avoid future patronage of the business if their problem is not effectively resolved. Given

the human resource function involves the management of employee capabilities (Baldrige Performance Excellence Program, 2011; Fitz-enz & Davison, 2002), the literature indicates human resource practices are an important factor to enable effective service delivery.

Summary

The literature review identified similar concepts and attributes that align with the service-profit chain construct to include the Gallup Path that proposes engaged employees will engage customers and deliver profitable growth (Coffman & Gonzalez-Molina, 2002, p. 14). Johnson and Gustafsson (2000, p. 7) suggest a similar theory whereby internal quality can positively influence customer satisfaction, which in turn creates customer loyalty and improved financial performance in terms of cost savings and revenue growth. Likewise, Kandampully, Mok, and Sparks (2009, p. 106) propose that service quality can positively influence customer satisfaction and also suggest that service quality will influence the customer's perception of overall value that they define as a mediating variable.

In terms of financial outcomes, the literature review indicates RevPAR is an industry recognized metric for evaluating hotel financial performance and that both customer satisfaction and loyalty metrics have demonstrated a positive relationship with financial outcomes. Profit and occupancy were also cited as key financial metrics used to measure financial performance and influenced by customer attitudinal loyalty. Although the service-profit chain delineates between customer satisfaction and customer loyalty, both of these two concepts were often described

as predictors for the customer share of wallet. Alternative models of prediction suggest that customer satisfaction derived from service quality directly influences financial outcomes such as repeat purchases and profitability (Rust & Oliver, 1994, pp. 247-254). The utility of customer satisfaction as a loyalty metric is illustrated in customer engagement survey developed by Gallup that includes overall satisfaction as one of the eleven indicators of customer loyalty (McEwen, 2005, p. 129). Preiss (2007, p. 42-43) corroborates the concept that customer satisfaction is a predictor of customer loyalty and profitability. Although the conceptual service-profit-chain model suggests that customer satisfaction is an antecedent of customer loyalty, it appears customer satisfaction is utilized as a metric of customer loyalty in concert with the metrics of likeliness to recommend and return.

Although the literature does not clearly differentiate concepts of customer satisfaction and customer loyalty because they are both used to predict repeat patronage, it does appear both concepts are important in predicting future sales and financial performance. For example, Rust, Zahorik, and Keiningham (1994, p. 71) estimate that satisfied customer will exhibit an 84.7% repurchase intention in comparison to a dissatisfied customer with only a 31.3% repurchase intention. The literature review indicated that staff service is an important factor of the external service value for the hotel industry and can influence customer satisfaction and loyalty. Additionally, the literature indicates that employee interactions are an important component of staff service delivery that requires support from the human resource to enable effective staff service delivery. However, the literature does not appear to provide a substantial amount of evidence that validates a causal linkage

across the multiple relationships of staff service delivery, customer satisfaction, customer attitudinal loyalty and financial outcomes, thus indicating the relationship between these main variables requires further examination and confirmation.

CHAPTER 3. METHODS

Research Design

Based on the theoretical construct of the Service-Profit Chain (Heskett at el., 2008), this research was designed to measure the relationship between customer attitudinal loyalty and financial outcomes based upon staff service delivery variables. The study identifies key variables associated with external service value and develops a structural model to measure the relationships of these variables with customer satisfaction, customer loyalty, and financial outcomes across a sample of full service hotels in North America.

The objectives of the study were to:

1. Define key variables of external service value, customer satisfaction, customer loyalty, and financial outcomes within the context of a hotel experience.

2. Identify latent constructs for the measureable variables of service value, customer satisfaction, customer loyalty, and financial outcomes.

3. Measure the relationship between external service value and customer satisfaction.

4. Measure the relationship between customer satisfaction and customer loyalty.

5. Measure the relationship between customer loyalty and financial outcomes.

6. Quantify the relational linkages between external service value, customer satisfaction, customer loyalty, and financial outcomes.

This chapter provides a characterization of the research design, research variables, data sample, and quantitative methods of analysis. Additionally, a literature review is provided that identifies the most appropriate methods for the quantitative methods of analysis. This study does not require new or primary data to test the research hypothesis and therefore existing and secondary data will be utilized in this study. Given this study will involve the utilization of secondary data, the study does not require an approval by the Institutional Review Board.

Hypotheses

The research methodology is designed to test the hypothesis that external service value variables will exhibit a positive correlation with the customer satisfaction and loyalty variables. In similar manner, it is hypothesized that customer loyalty variables will also demonstrate a positive relationship with financial outcomes. Although previous studies have investigated the bivariate relationship of external service value in relation to customer loyalty or customer attitudinal loyalty relative to financial outcomes, this study will employ advanced statistical methods to investigate the composite effects of these relationships. Additionally, previous studies had measured the bivariate relationships, whereas this study will utilize structural equation modeling to help identify the interrelationships of these variables.

The literature review indicated product and service are key components of external service value within the context of the hotel industry. Additionally, the intangible interactions between employees and customer play a dominant factor in satisfying customers. Given the importance of the delivery of service by employees,

the concept of staff service delivery that involves employees directly providing service to customers and were used to measure external service value. For purpose of the analysis, discrete variables such as staff responsiveness are classified as staff service delivery variables (SSDV), whereas the composite of these variables is defined as the staff service delivery factor (SSDF).

Given the literature review indicated that customer satisfaction is a potential predictor of customer loyalty, customer satisfaction will be included in the concept of customer attitudinal loyalty that includes likeliness to recommend or return. In contrast, the service-profit chain construct treated customer satisfaction as a different concept from that of customer loyalty. The service-profit chain component of customer loyalty appears to contain both measures of the intended attitudes such as referral in addition to the behavior of retention and repeat business. Allen (2004, p. 178) combines overall satisfaction of the customer experience with likeliness to return and recommend into an attitudinal loyalty factor. Therefore, customer satisfaction will be combined with likeliness to recommend and return into a customer attitudinal loyalty concept defined as customer attitudinal loyalty factor (CALF). The individual variables of likeliness to return, likeliness to recommend, and overall satisfaction are defined as customer attitudinal loyalty variables (CALV).

The literature review provided indicators of revenue growth and profitability to include occupancy and RevPAR. Profit for hotels is calculated by subtracting cost from revenue, thus occupancy and RevPAR influence profitability because occupancy generates room revenue that is used in the calculation of profit. Likewise, RevPAR is a product of revenue in that total hotel room revenue by available rooms

and can positively influence profit when a guestroom yields more revenue in relation to the cost to provide the guestroom. RevPAR is also cited by the literature as a metric of revenue growth in that owners and operators use the metric to evaluate current performance and future potential of the hotel asset. Additional financial measures were explored to include RevPAR and occupancy index that measure the RevPAR and occupancy levels to a comparative set of hotels. These metrics are defined within the study as financial variables (FV) and the composite of these metrics are referred to as the financial factor (FF).

Figure 3 illustrates the hypothesized relationship between the staff service delivery (SSDV) and customer attitudinal loyalty variables (CALV) that were collected from guest survey data. The staff service delivery and customer attitudinal loyalty factors were derived from the confirmatory factor analysis (CFA) to ensure they represent the construct identified in the literature review. The financial variables were uniformly collected by Smith Travel Research (STR) data to ensure consistent reporting and comparisons. The variable name, label, description, and source are listed in Table 3.

Based upon the literature review and research objectives, the hypotheses was framed in the alternative and positive format (Creswell, 2011, p. 188) to include:

H_1 Staff service delivery variables (SSDV) are positively correlated with a staff service delivery factor (SSDF).

H_2 Customer attitudinal loyalty variables (CALV) are positively correlated with a customer attitudinal loyalty factor (CALF).

H_3 Financial variables (FV) are positively correlated with a financial factor (FF).
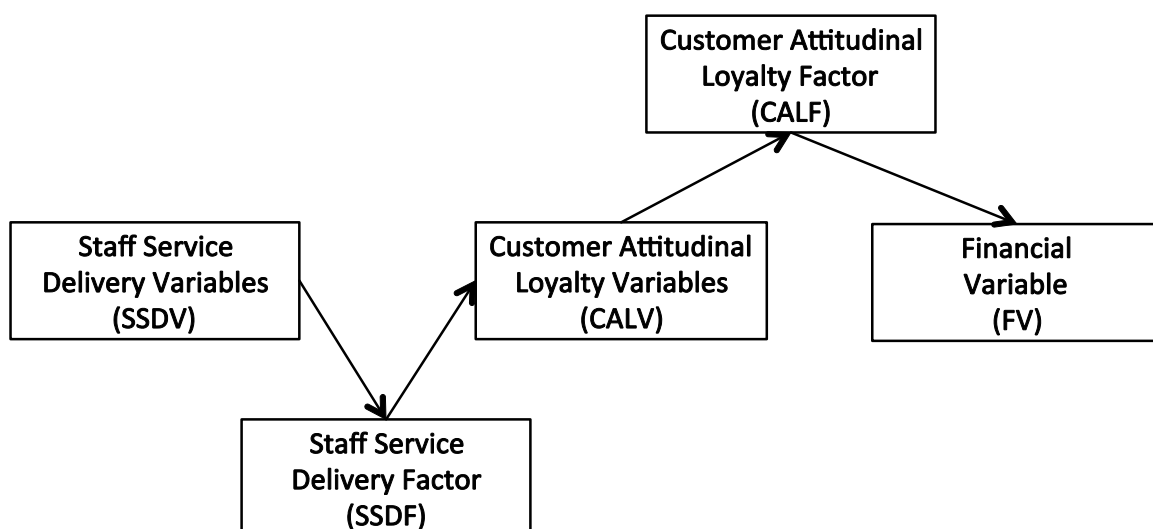
Figure 3. Research hypotheses

Table 3. Research variables

Variable Name	Label	Variable Description	Source
Staff Service Delivery Variable	SSDV	The delivery of product or service by an employee to a customer.	Guest satisfaction survey
Staff Service Delivery Factor	SSDF	Latent variable that comprises and reflects multiple staff service delivery variables.	Confirmatory factor analysis
Customer Attitudinal Loyalty Variable	CALV	The cognitive satisfaction that is derived by a hotel experience and is manifested in the propensity to recommend and return to the hotel.	Guest satisfaction survey
Customer Attitudinal Loyalty Factor	CALF	Latent variable that comprises and reflects multiple customer attitudinal loyalty variables.	Confirmatory factor analysis
Financial Variable	FV	Hotel variables that measure profit and growth.	Smith Travel Research
Financial Factor	FF	Latent variable that comprises and reflects multiple financial variables.	Confirmatory factor analysis

H₄ Staff service delivery factor (SSDF) is positively correlated with the customer

attitudinal loyalty factor (CALF).

H₅ Customer attitudinal loyalty factor (CALF) is positively correlated with the

financial factor (FF).

H₆ Staff service delivery (SSDV) and customer attitudinal loyalty variables (CALV)

measurable variables predict financial variables (FV).

Sample

This study used existing survey and financial outcome data to test the

research hypothesis (Table 4). The data provides observations for one full service

brand that is classified by Smith Travel Research within the upper scale brand

segment. The data set is comprised of 314 hotels in North America and with both

the customer survey and financial outcome data aggregated at the individual hotel

level for a two-year period of time. This data set was selected because the staff

service delivery and customer attitudinal loyalty variables contained within the

survey sample data are consistent with the variables identified in the review of

literature that provide conceptual match and comparison (Table 5). Additionally, the

survey data were collected by a well renown market research company and

recognized experts in design, collection, and reporting of customer experience

survey data that provide a high level of confidence in the reliability and validity of

survey instruments utilized to collect the data. A third-party market research

company collected the customer satisfaction survey data on a monthly

Table 4. Survey sample

Variable	Customer Survey Data	Financial Data
Source	Independent Market Research Company	Smith Travel Research
Geographic location	North America	North America
Brand segments	Upper scale brand	Upper scale segment
Sample size	652,787 observations	628 hotel observations
Time frame	2009 – 2010	2009 – 2010

Table 5. Structural equation modeling process

Stage	Method
1.	Development of a theoretical model (model conceptualization).
2.	Construction of a path diagram (of causal relationships).
3.	Conversion of path diagram into a set of structural and measurement equations (model specification).
4.	Select input matrix type and assess the adequacy and impact of the sample size selection of the method of model estimation (model identification).
5.	Assessment of identification of the model (parameter estimation) and parameter estimation.
6.	Evaluation of the results for goodness-of-fit (estimate of model fit) and interpretation of the model.
7.	Modification of the model if theoretically justified (model modification) and develop final model.
8.	Model cross-validation.

basis via an online web survey administered to customers that have stayed in one of

the 314 full-service hotels in North America.

The financial data to include average daily rate, occupancy, occupancy index,

revenue per available room, and revenue per available room index were derived

from Smith Travel Research (STR). Although profit was identified in the literature review as a key financial metric, it was not available from STR and inconsistently reported by the individual hotels and therefore not included in the study. STR is an industry standard for the collection and reporting of hotel statistics to include the financial outcome measures of occupancy, occupancy index, average daily rate, revenue per available room (RevPAR), and revenue per available room index. Smith Travel Research (2011) confirms the reliability of financial outcome data through established reporting guidelines to ensure uniform data and comparable reporting. For example, a partial night stay or rollaway fee can be included in the room revenue figures of total revenue per available room, however room revenue attributed from items such as group attrition and resort fees are excluded. The financial outcome data is reported by hotels to STR on a monthly basis that is then disseminated to the reporting hotels in an aggregate report.

Methods of Analysis

Vavra (1997, p. 325) indicates that LISREL structural equation modeling (SEM) is the most appropriate method of confirmatory analysis with a specified structure such as the service-profit chain construct. The study employs the eight-stage SEM process (as cited in Reisinger & Turner, 1999, p. 77) to test the research hypothesis (Figure 3). In addition to SEM, the method will utilize principal component analysis to reduce and confirm variables (Hair, Jr., et al., 2010, p. 107).

CHAPTER 4. RESULTS

This chapter provides the analysis and reporting of the results for the study to include the data set characteristics, descriptive statistics, and test of the hypotheses for the research variables. The analysis employs a systematic eight step modeling process (as cited in Reisinger & Turner, 1999, p. 77) and LISREL 9.10 (as cited in Diamantopoulos & Siguaw, 2000, p. 4) to test the research hypothesis. Figure 4 provides a schematic of the inputs, process, and outputs of the analysis.

Characteristics of the Data Set

The data set is comprised of customer survey data that were collected by a market research company and contains 314 unique full service hotels that represent a nationally recognized brand. The 314 observations span a two-year horizon of time and are aggregated by unique hotel for each year. For example, the first unique hotel contains 794 completed surveys that are aggregated for 2009 and 964 completed customer surveys that are likewise aggregated for 2010. The entire data set contains 628 hotel observations (314 unique hotels for 2009 and 2010) that represent a total of 611,934 customer surveys (316,542 for 2009 and 295,392 for 2010) that help ensure external validity. Of the 314 unique hotels (Table 6), 44.6% are located within a downtown or metro area with the remaining 55.4% comprised of airport (14.3%), expressway (1.9%), resort (7.0%), suburban (30.6%), and unclassified locations (1.6%). The data set is comprised of both franchised (56.4%) and managed (42.4%) hotels across the North America with half the hotels in the
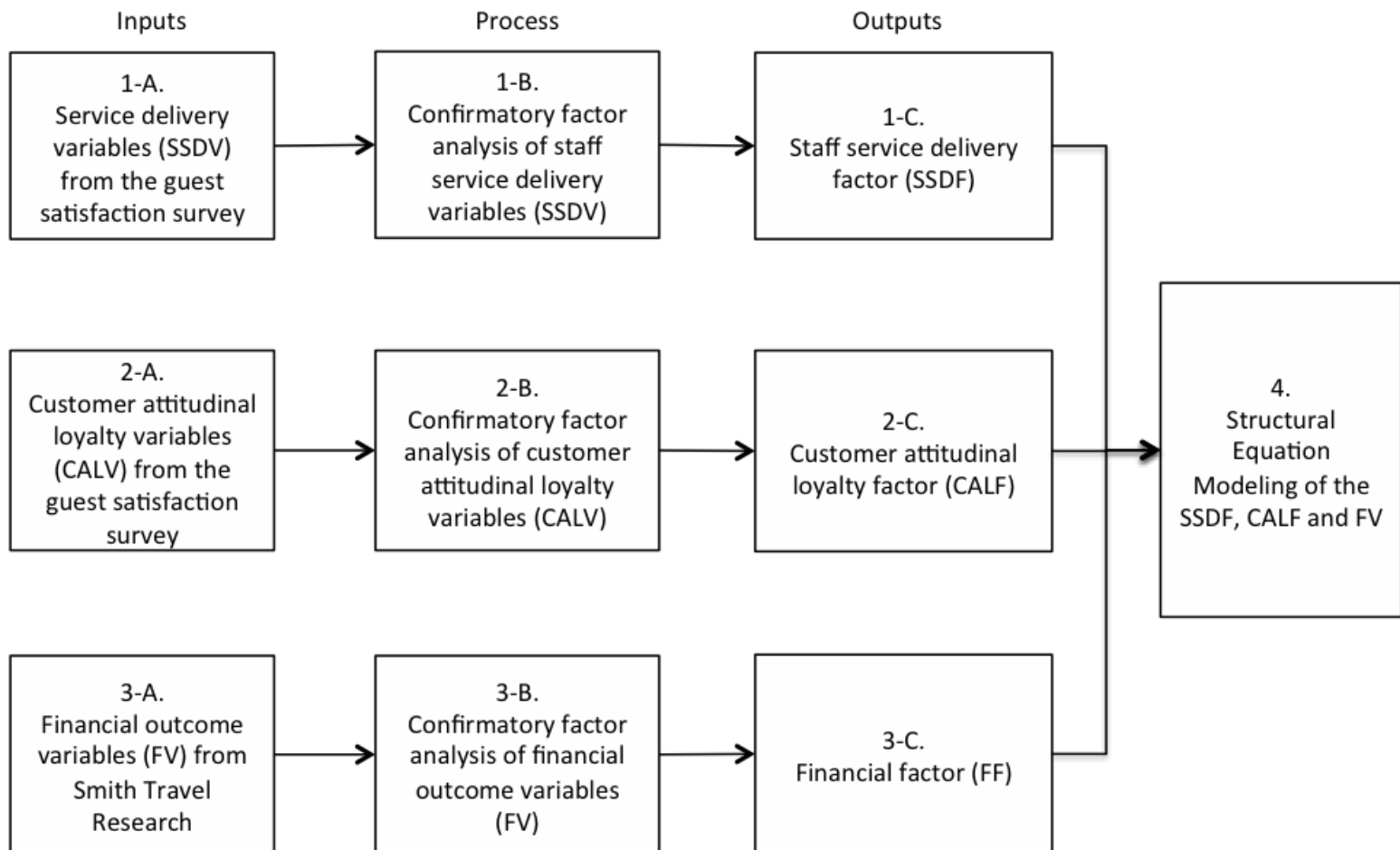
Figure 4. Process of analysis

Table 6. Characteristics of guest survey and financial data for 2009 *and* 2010

Characteristics		Frequency	Percentage
Unique Hotels (*n*=314)			
	Airport	45	14.3%
	Downtown	77	24.5%
	Expressway	6	1.9%
	Metro	63	20.1%
	Resort	22	7.0%
	Suburban	96	30.6%
	Unclassified	5	1.6%
Ownership (*n*=314)			
	Franchised	177	56.4%
	Managed	133	42.4%
	Unclassified	4	1.3%
Region (*n*=314)			
	East	90	28.7%
	South	61	19.4%
	West	159	50.6%
	Unclassified	4	1.3%

Western region (50.6%) and remaining hotels distributed across the Eastern (28.7%)

and Southern (19.4%) regions. The customer survey instrument records the

purpose of the customer's visit to the hotel with 62% of the respondents indicating

the main purpose of their trip was for business and the remaining 38% stating the

visit was for pleasure. The data set contains the financial performance data to include RevPAR that were collected and reported by Smith Travel Research. The observations provided in the data set include RevPAR statistics for each of the 314 unique hotels for 2009 and 2010. The pairing and matching of the customer satisfaction survey and RevPAR data allow for the testing of relationships between customer attitudinal loyalty and staff service delivery variables with the financial variables that include RevPAR.

To ensure the customer satisfaction data were collected from a reliable and valid instrument, the data set was collected by an independent market research company that is recognized as an expert in the measurement of the customer experience and provides such measurement services for 25 other hotel brands. The survey questions in the data set are consistent with the literature review (Table 2) and support composite and convergent validity in that they accurately measure the customer experience and are similar to other questions found in the literature review. This research study also tested the discriminant and nomological validity of the questions through the factor analysis method that will identify highly correlated variables and structural equation modeling to determine the staff service delivery variables predicting the customer attitudinal loyalty and financial outcomes.

Descriptive Statistics of the Data Set

The literature review provided cross-validating references for definition, application, and acceptance of customer attitudinal loyalty and financial variables (Table 8). The customer attitudinal loyalty and financial variables appear to

Table 7. Characteristics of customer attitudinal loyalty for the data set

Customer attitudinal loyalty construct variables	*n*	Mean	SD	Min.	Max.
CALV_1. Overall satisfaction	628	8.50	0.24	7.49	9.15
CALV_2. Likely to stay again	628	4.13	0.15	3.58	4.52
CALV_3. Likely to recommend	628	4.21	0.15	3.53	4.68
CALV_4. Perfect Hotel	628	7.90	0.37	6.39	9.02
CALV_5. Value	628	8.14	0.28	7.12	8.80

have an established theoretical construct (Thompson, 2004, p. 4-5) and do not

require exploratory factor analysis. With the exception of variables CALV_2 and

CALV_3 that used a five-point scale, the other customer attitudinal loyalty variables

for data set utilized a 10-point. The question of perfect hotel (CALV_4) is included

because the Gallup research cites it as an indicator of loyalty (McEwen, 2005) and

value because Kandampully et al. (2009, p. 106) cites it as a mediating variable.

The descriptive statistics for the financial variables are listed in Table 8 with

624 observations that contain four fewer observations than the customer satisfaction

survey observations because financial data are not provided for four hotels in 2010.

Average daily rate and revenue per available reported in US dollars, whereas

occupancy is reported as a percentage of 1 with the mean of 0.63 representing an

average 63% of the rooms were occupied. RevPAR index and occupancy index

Table 8. Characteristics of financial variables for the data set.

Financial construct variables	*n*	Mean	SD	Min.	Max.
FV_1. Average daily rate	624	133.71	32.17	81.29	298.51
FV_2. Occupancy	624	0.63	0.090	0.34	0.91
FV_3. RevPAR index	624	115.96	25.17	35.73	241.18
FV_4. Occupancy index	624	102.93	14.72	43.71	175.60
FV_5. Revenue per available room	624	86.16	30.04	36.72	263.84

provide a comparison of these statistics to a predefined competitive set with an index of 100 representing an equal share compared to other hotels in the market.

A total of 26 variables were extracted from the data set and have a conceptual match with the staff service delivery construct. To protect the proprietary instrument, the actual phrasing of the questions and survey instrument is not disclosed in this study. However, the abbreviated description is provided in Table 9, which gives the connotation of the variable. The literature review indicates that human behaviors and interactions with customers are a core element of staff service delivery. For example, Choi & Chu (2011) cited helpfulness, and friendliness as attributes of staff service delivery. Staff service delivery variables from the data set such as staff responsiveness and hospitableness conceptually match the attributes of helpfulness and friendliness. Although customers might recognize discrete behaviors of the service delivery process such the friendliness of a restaurant server, these staff behaviors are interlaced with the delivery of the service or product Cronin et al. (2000).

Table 9. Characteristics staff service delivery construct variables

Staff service delivery construct variables	*n*	Mean	SD	Min	Max
SSDV_1. Staff service overall	628	8.80	0.20	7.94	9.49
SSDV_2. Staff warm and hospitable	628	8.92	0.20	8.15	9.58
SSDV_3. Staff responsive	628	8.73	0.22	7.76	9.47
SSDV_4. Staff going the extra mile	628	8.57	0.25	7.56	9.44
SSDV_5. Staff skilled and trained	628	8.81	0.20	7.89	9.46
SSDV_6. Staff take care of issues	628	8.73	0.22	7.75	9.46
SSDV_7. Staff genuinely caring	628	8.32	0.27	7.33	9.16
SSDV_8. Staff problem resolution satisfaction	628	5.90	0.42	4.83	7.92
SSDV_9. Arrival Experience	628	8.69	0.22	7.50	9.37
SSDV_10. Departure Experience	628	8.86	0.17	8.12	9.42
SSDV_11. Amenities and services	628	8.50	0.23	7.69	9.32
SSDV_12. Safe and secure	628	8.90	0.22	7.82	9.58
SSDV_13. Amenities and services available when needed	628	8.56	0.22	7.92	9.26
SSDV_14. Amenities and services to support getting work done	628	8.10	0.39	6.63	9.27
SSDV_15. Lounge amenities and services	558	8.72	0.23	7.96	9.28
SSDV_16. Restaurant breakfast service	628	8.38	0.29	7.23	9.14
SSDV_17. Restaurant lunch and dinner service	628	8.16	0.32	7.19	9.18
SSDV_18. Concierges lounge breakfast service	558	8.77	0.42	5.01	9.66
SSDV_19. Concierges lounge lunch and dinner service	558	6.66	0.40	6.20	9.62
SSDV_20. In-room dining breakfast service	628	8.62	0.37	7.00	9.59
SSDV_21. In-room dining lunch an dinner service	628	8.53	0.30	7.56	9.58
SSDV_22. Lobby and bar breakfast service	628	8.16	0.71	3.00	10
SSDV_23. Lobby/bar lunch and dinner service	628	8.27	0.39	7.07	9.54
SSDV_24. Conference room breakfast service	628	8.57	0.38	7.45	9.80
SSDV_25. Conference room lunch and dinner service	628	8.63	0.34	7.32	9.47
SSDV_26. Provided helpful information about local area	628	8.46	0.25	7.41	9.16

Slevitch and Oh (2010) emphasize the overall quality of the staff service delivery that will encompasses all the staff interactions within a service delivery process.

Therefore, variables that involve a dominant human interaction between the staff and customer were extracted from the data set such as the guest arrival process (SSDV_9) that involves multiple human interactions such as a greeting and

assistance by the door staff along with an efficient and friendly check-in by the front office staff. Similarly, variables that are regulated by staff such as a restaurant breakfast service (SSDV_16) or a safe environment (SSDV_12) and conceptually align with staff service delivery construct are included in the study.

Twenty-three of the 26 staff service delivery variables for the data set contain 628 observations (314 hotels for 2009 & 2010). However, variables SSDV_15, SSDV_18, and SSDV_19 contain 558 observations because 35 hotels within the data set do not provide a lounge facility and services.

Principal Component Analysis

Principal component analysis (PCA) was selected to reduce the 26 staff service delivery variables and identify a smaller set of latent variables for the model estimation that encapsulates most of the variance (Hair, Jr., et al., 2010, p. 107). The 26 staff service delivery variables extracted from the data set are based upon established theory derived from the literature review and therefore it is appropriate to utilize PCA in testing the measured responses in identifying the fewest variables related to the staff service delivery component (DeCoster, 1998, p. 3).

Staff service delivery variable

JMP 10.0 was utilized to conduct the PCA in reducing dimensionality for staff service delivery factors. First, the data set that comprised 628 observations was spilt in half to provide 314 observations that represent the timeframe of 2009 for the PCA and testing of the structural equation model and utilize the remaining 314 observations from 2010 for the cross-validation of the structural equation model

(Diamantopoulos & Siguaw, 2009, p. 129). The data set was split by year and not randomly 50/50 split to allow for year over year comparisons of the data. Additionally, the benefits of a random split were not greater than maintaining a data set that was representative of types of hotels, ownership mix, and geographic region. Given that each year contains hundreds of thousand of aggregated customer responses (316,542 for 2009 and 295,392 for 2010), the split year data should be reasonably representative of full service hotel customers.

Lehman, O'Rourke, Hatcher, and Stepanski (2005, p. 442) suggest the extracting variables based upon key criteria to include an Eigenvalue value of ≥1.00 and a cumulative variance of greater than 70 percent. Five factors with Eigenvalues ≥1.00 were selected for further analysis that accounted for 76 percent of the total variance (Table 10). From the five factors (Table 11), variables with factor loadings of at least .80 were selected for the structural equation model and highlighted in bold (Hair, Jr., et al., 2010, p. 117).

Table 10. Eigenvalues for staff service delivery variables

No.	Eigenvalue	Percent	Cum %	Chi-square	df	Prob>ChiSq
1	14.47	55.66	55.66	11349.20	312.73	<.001
2	1.69	6.51	62.17	6256.38	314.64	<.001
3	1.47	5.65	67.83	5778.36	292.14	<.001
4	1.20	4.61	72.45	5320.98	270.10	<.001
5	1.10	4.23	76.68	4935.79	248.34	<.001

Table 11. Factor loadings for staff service delivery variables

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
SSDV_1	**0.847**	0.380	0.223	0.153	0.179
SSDV_2	**0.824**	0.402	0.158	0.203	0.157
SSDV_3	**0.868**	0.343	0.200	0.161	0.158
SSDV_4	**0.865**	0.351	0.180	0.177	0.143
SSDV_5	**0.853**	0.369	0.217	0.149	0.168
SSDV_6	**0.860**	0.351	0.195	0.147	0.155
SSDV_7	0.763	0.499	0.207	0.204	0.179
SSDV_8	0.752	0.141	0.062	0.042	0.035
SSDV_9	0.789	0.425	0.152	0.104	0.183
SSDV_10	0.725	0.518	0.145	0.124	0.189
SSDV_11	0.391	0.780	0.236	0.216	0.107
SSDV_12	0.473	0.685	0.159	0.046	0.191
SSDV_13	0.446	0.746	0.229	0.228	0.132
SSDV_14	0.300	0.657	0.120	0.077	0.035
SSDV_15	0.282	0.537	0.178	0.637	0.067
SSDV_16	0.400	0.060	0.612	0.109	0.228
SSDV_17	0.312	0.223	0.635	0.041	0.292
SSDV_18	0.147	0.053	-0.030	**0.857**	0.072
SSDV_19	0.108	0.154	0.157	**0.816**	0.058
SSDV_20	0.496	-0.102	0.494	-0.072	0.060
SSDV_21	0.526	-0.024	0.402	0.228	0.147
SSDV_22	-0.081	0.228	0.597	-0.007	-0.031
SSDV_23	0.205	0.202	0.580	0.186	0.001
SSDV_24	0.202	0.141	0.111	0.094	**0.857**
SSDV_25	0.184	0.105	0.099	0.059	**0.844**
SSDV_26	0.627	0.564	0.190	0.113	0.153

Customer attitudinal loyalty variables

The Eigenvalues for the customer attitudinal loyalty variables are shown in Table 12. The results of the analysis (Table 13) indicate that overall satisfaction (CALV_1), likely to recommend (CALV_3), and perfect hotel (CALV_4) are highly related on factor one which explains 86% of the variance. Likeliness to stay again (CALV_2) demonstrates a high loading with likeliness to recommend (CALV_3)

Table 12. Eigenvalues for the customer attitudinal loyalty variables

No.	Eigenvalue	Percent	Cum %	Chi-square	DF	Prob>ChiSq
1	0.27	4.32	86.57	86.57	4649.63	6.67
2	0.02	0.29	5.96	92.53	1099.48	8.50
3	0.01	0.27	5.44	97.98	896.02	4.74
4	0.01	0.07	1.59	99.57	256.40	1.92

Table 13. Factor loadings for the customer attitudinal loyalty variables

Variable	Factor 1	Factor 2	Factor 3	Factor 4
CALV_1	**0.846**	0.368	0.377	0.066
CALV_2	0.355	**0.855**	0.357	0.116
CALV_3	0.637	0.645	0.321	0.209
CALV_4	0.685	0.414	0.410	0.435
CALV_5	0.364	0.347	**0.854**	0.123

across the second factor and value (CALV_5) does not exhibit a relationship and

loaded in factor three (loadings of 0.80 highlighted in bold font).

Financial outcome variables

In analyzing the financial variables, factors one and two explained 84% of the

variance with an Eigenvalue above 1.0 (Table 14). As shown in Table 15, the

average daily rate (FV_1) and revenue per available room (FV_5) exhibited a strong

loading for factor one with the three remaining financial variables of occupancy

(FV_1), revenue per available room index (FV_3), and occupancy index (FV_4)

demonstrating a strong loading under different factors (loadings 0.80 highlighted in

bold font).

Table 14. Eigenvalues for the financial variables

No.	Eigenvalue	Percent	Cum %	Chi-square	DF	Prob>ChiSq
1	2.69	53.80	53.80	3520.80	8.350	<.001
2	1.51	30.27	84.07	2767.63	7.571	<.001
3	0.57	11.57	95.65	1915.69	5.197	<.001
4	0.21	4.20	99.86	1291.00	2.319	<.001

Table 15. Factor loadings for the financial variables

Variable	Factor 1	Factor 2	Factor 3	Factor 4
FV_1	**0.991**	0.102	0.059	-0.011
FV_2	0.307	**0.920**	0.112	0.211
FV_3	0.085	0.092	**0.935**	0.330
FV_4	0.014	0.240	0.456	**0.856**
FV_5	**0.891**	0.435	0.067	0.073

Summary

The factor loading values illustrate that the human behavior related variables SSDV_1 through SSDV_6, such as staff responsiveness, produced high loading values for factor one. In contrast, variables that are interlaced with food and beverage processes, such as SSDV_13 through SSDV_23, demonstrated a lower factor loading. Staff service delivery variables highlighted in bold (Table 11) will be incorporated in structural equation modeling of the service-profit chain construct. From the customer attitudinal loyalty variables, overall satisfaction (CALV_1)

appears highly correlated with likely to recommend (CALV_3). The financial variables of average daily rate (FV_1) and revenue per available room (FV_5) exhibited a strong relationship. Given the conceptual match and relatively small number of customer attitudinal loyalty and financial variables, all ten variables will be retained for the testing of the service-profit chain construct with the structural equation modeling procedure. As shown in Table 16, the staff service delivery and customer attitudinal loyalty variables exhibited a high degree of reliability with a Cronbach's α greater than 0.70, and the financial variables were below the lower threshold of 0.60 (Hair, Jr., et al., 2010, p. 92).

Table 16. Cronbach's *alpha* for PCA

Factors	α
Staff service delivery variables	0.933
Customer attitudinal loyalty variables	0.930
Financial variables	0.521

Structural Equation Model

Stage 1. Model conceptualization

When following the sequential steps of developing a structural equation model (Diamantopoulos & Siguaw, 2000, p. 7), the first step involves the development of conceptual construct for the model. Diamantopoulos and Siguaw (2000) provide criteria for conceptualizing the structural and measurement model. The conceptualization of the structural model (Diamantopoulos & Siguaw, 2000, p.

15) requires is based upon established theory. This requirement has been satisfied in that the variables were extracted from the data set and corroborated by the literature review. Next, Diamantopoulos and Siguaw (2000) suggest the variables are classified with ordering and annotation of the expected relationship. Table 17 illustrates the expected positive relationship between of the financial endogenous variable (FV) and customer attitudinal loyalty (CALV) endogenous variables.

Table 17. Expected linkages between CALV and FV

| | Dependent (endogenous) variable | | | | |
Independent (exogenous)	FV_1	FV_2	FV_3	FV_4	FV_5
CALV_1	(+)	(+)	(+)	(+)	(+)
CALV_2	(+)	(+)	(+)	(+)	(+)
CALV_3	(+)	(+)	(+)	(+)	(+)
CALV_4	(+)	(+)	(+)	(+)	(+)
CALV_5	(+)	(+)	(+)	(+)	(+)

Table 18 illustrates the expected positive relationship between the staff service delivery (SSDV) variables and customer attitudinal loyalty (CALV) variables. In ordering the model, the staff service delivery variables (SSDV) construct the first level in that they are hypothesized in having a formative relationship second level of customer attitudinal loyalty variables (CALV) that in turn positively influences the financial (FV) endogenous variable.

Table 18. Expected linkages between SSDV and CALV

Independent (exogenous) variables	Dependent (endogenous) variables				
	CALV_3	CALV_2	CALV_1	CALV_4	CALV_5
SSDV_1	(+)	(+)	(+)	(+)	(+)
SSDV_2	(+)	(+)	(+)	(+)	(+)
SSDV_3	(+)	(+)	(+)	(+)	(+)
SSDV_4	(+)	(+)	(+)	(+)	(+)
SSDV_5	(+)	(+)	(+)	(+)	(+)
SSDV_6	(+)	(+)	(+)	(+)	(+)
SSDV_18	(+)	(+)	(+)	(+)	(+)
SSDV_19	(+)	(+)	(+)	(+)	(+)
SSDV_24	(+)	(+)	(+)	(+)	(+)
SSDV_25	(+)	(+)	(+)	(+)	(+)

The final step of model conceptualization involves the development of the measurement model (Diamantopoulos & Siguaw, 2000, p. 19) that illustrates the relationship latent variables conveyed as factors (Table 19) in relation to the measurable variables that are represented as manifest variables because they are reflective indicators of their associated factors. All major variables contained within the data set that matches the literature review and were refined by the principal component analysis are included to minimize specification error.

The final model conceptualization is comprised of three latent factors and 17 manifest variables that are hypothesized as positively influencing the latent factors. The 3 latent factors and 21 manifest variables conceptual model is aligned with the recommendations of Diamantopoulos and Siguaw (2000, p. 116)

Table 19. Measurement of latent variables

Latent variable	Manifest variables	Measure description
Customer attitudinal loyalty factor	CALV_1. Overall satisfaction	Average of 5-point scale
	CALV_2. Likely to stay again	Average of 5-point scale
	CALV_3. Likely to recommend	Average of 10-point scale
	CALV_4. Perfect hotel	Average of 10-point scale
	CALV_5. Value	Average of 10-point scale
Staff service delivery factor	SSDV_1. Staff service overall	Average of 10-point scale
	SSDV_2. Staff warm and hospitable	Average of 10-point scale
	SSDV_3. Staff responsive	Average of 10-point scale
	SSDV_4. Staff going the extra mile	Average of 10-point scale
	SSDV_5. Staff skilled and trained	Average of 10-point scale
	SSDV_6. Staff take care of issues	Average of 10-point scale
	SSDV_18. Concierges lounge breakfast service	Average of 10-point scale
	SSDV_19. Concierges lounge lunch and dinner service	Average of 10-point scale
	SSDV_24. Conference breakfast service	Average of 10-point scale
	SSDV_25. Conference lunch and dinner service	Average of 10-point scale
Financial factor	FV_1. Average daily rate	Average of U.S. dollars
	FV_2. Occupancy	Percentage of 100%
	FV_3. RevPAR index	Percentage of Index
	FV_4. Occupancy index	Percentage of Index
	FV_5. Revenue per available room	Average of U.S. dollars

that recommend a model designed with a small set of variables that would include about 5 to 6 latent factors and 15 to 20 manifest variables.

Stage 2. Path diagram of causal relationships

Upon completion of conceptual model, Diamantopoulos and Siguaw (2000, p. 22) recommend the second stage involve the development of a path diagram for the model. The path diagram provides an illustration of how the variables relate to each other, helps illustrate the research hypothesis, and helps identify errors related to variable omission in both the model and statistical analysis.

The initial path diagram of the service-profit chain for the context of a hotel experience is exhibited in Figure 5. The final step of the path diagram construction process involved the translation of the model into LISREL notation to provide a mathematical specification and standard (Figure 6) for replicating the statistical testing method (Diamantopoulos & Siguaw, 2000, p. 25).

Stage 3. Development of the model specification

Upon completion of the path diagram construction, stage three requires the development of model specifications that involves the conversion of the path diagram into set of linear measurement equations for the LISREL program (Diamantopoulos & Siguaw, 2000, p. 30). The data set for 2009 was imported to LISREL 9.10 and the variables were classified in LISREL as continuous to include the staff service delivery variable (SSDV) and customer attitudinal loyalty variables (CALV) were derived from the survey data, likewise the number of guests that
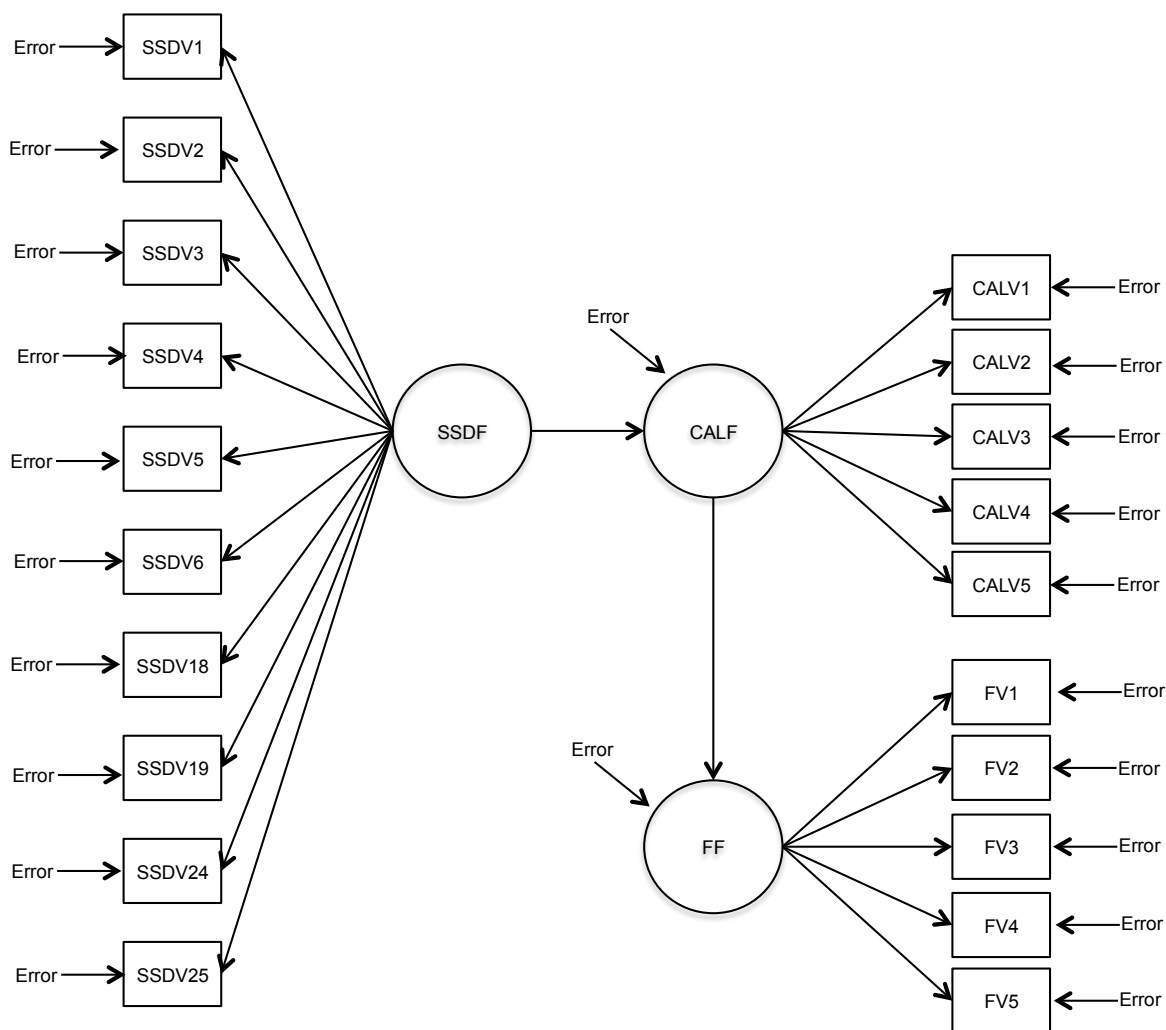
Figure 5. Path diagram of the service-profit chain for the hotel industry context

completed the survey and financial variables (FV) were coded as continuous (Mels, 2006, p. 16). Next, the latent variables for staff service delivery factor (SSDF), customer attitudinal loyalty factor (CALF), and financial factor (FF) were defined and translated to SIMPLIS language with free parameters because the literature review did not identify a rationale for fixing or constraining the parameters and will be therefore estimated by the model.
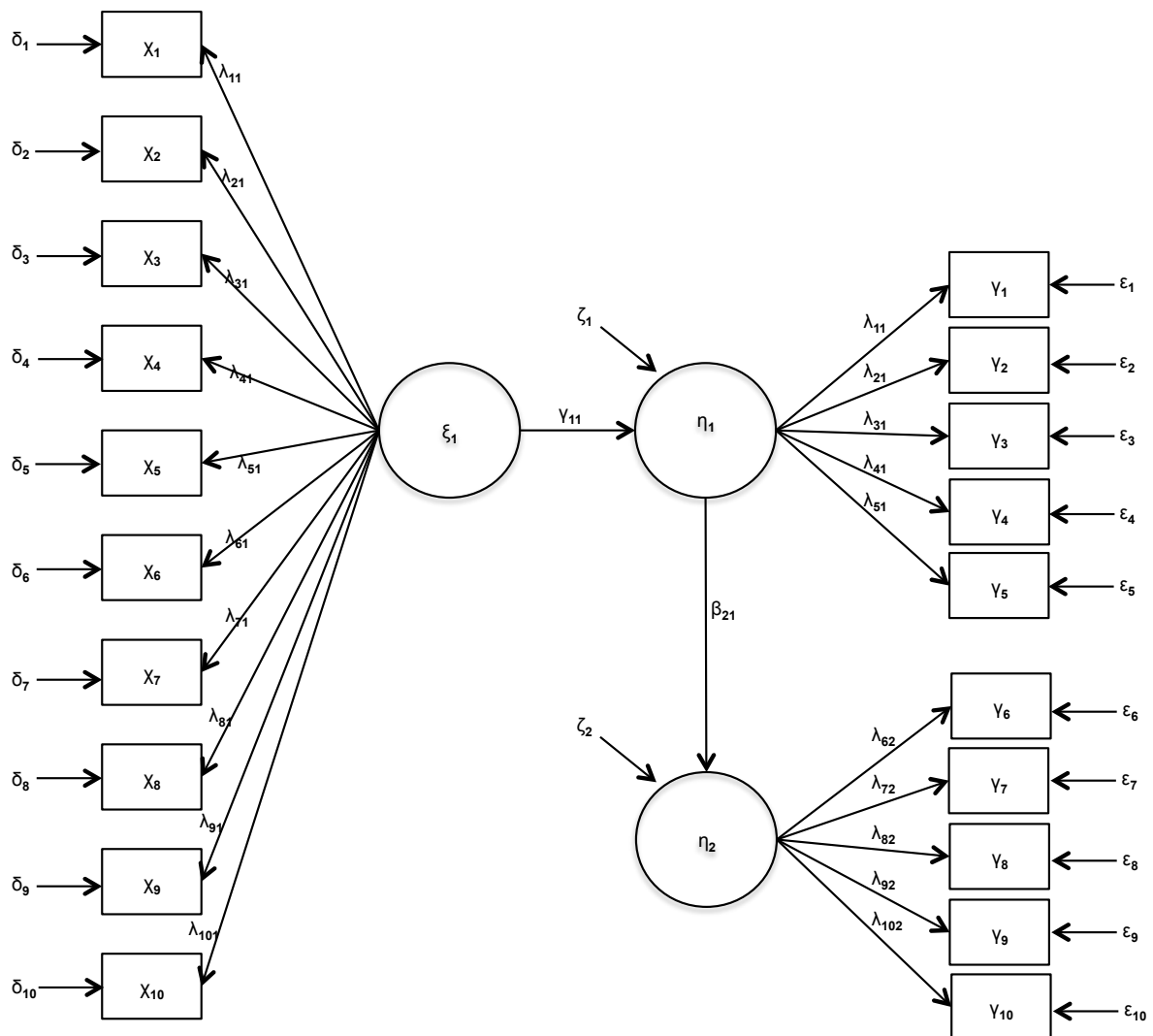
Figure 6. Path diagram of hotel service-profit chain with LISREL notation

Stage 4. Input matrix selection and sample size evaluation

Stage four requires the sample size to be evaluated for adequacy in estimating the model and selection of the SEM input matrix. Fowler (2009, p. 41) indicates a sample of 300 provides a confidence interval of 5 at the 95 percent confidence level. The sample size of 314 observations exceeds the minimum critical sample of 200 and a standardized model with a covariance matrix was selected

because it is the most appropriate method for testing the research hypothesis
(Reisinger & Turner, 1999, p. 78).

Stage 5. Assessment of perimeter estimation

Stage five involves the identification of the model to include the parameter
estimation. Diamantopoulos and Siguaw (2000, pp. 48-49) provide a formula of $t \leq$
$s/2$ to determine if the model satisfies the requirements for identification. The current
model contains 42 parameters, 10 x-variables, and 10 y-variables. Therefore one
can conclude the model is over identified because $t \leq s/2$ as calculated by *42
parameters* ≤ than the 210 variances within the model. A just-identified model ($t =$
$s/2$) is preferable to an over-identified model ($t \leq s/2$) because an over-identified
model might inadequately fit the data (Diamantopoulos & Siguaw 2000, pp. 51-52)
as illustrated by the value of df=187 in Figure 7 that represents the first run of the
model.

The first test of the model demonstrated a strong relationship between the
staff service delivery factor (SSDF) and customer attitudinal loyalty factor (CALF)
with a standardized estimate of 0.75 and coefficient of determination of = 0.555.
However, the error of the variance for SSDF and CALF was 0.445 and above the
0.05 threshold (Hancock & Mueller, 2006, p. 63). The financial factor (FF) and
customer attitudinal loyalty factor (CALF) did not exhibit a predictive relationship with
a standardized estimate of -0.01 and coefficient of determination = 0.000124 with an
error variance of 1.00. The first test of the model produced high values for chi-
square of 180.33 and 168 degrees of freedom which indicate an
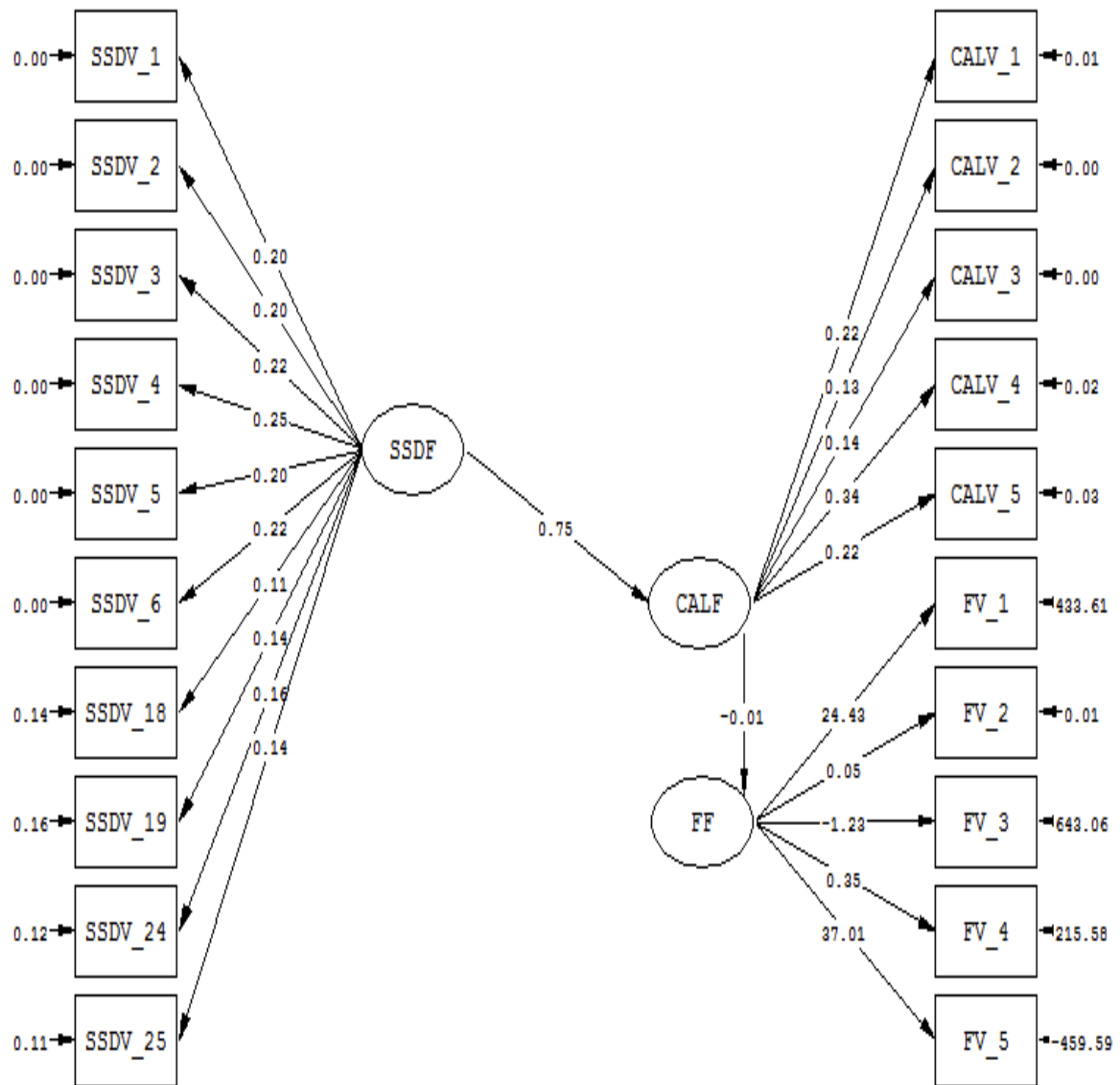
Figure 7. Model one of the SEM paths and statistics

inadequate model and the root mean square of approximation (RMSEA) of 0.188 is
greater than the critical value of 0.10 that indicates a mediocre fit of the model
(Diamantopoulos & Siguaw, 2000, pp. 83-85). Additionally, the first test produced a
high condition number of 2287.720 indicating severe multicollinearity.

Kline (2011, pp. 54-55) indicates that variable outliers and missing data can inflate the estimates and should be screened from the sample. The sample for 2009 contained 28 outlier variables that were above three standard deviations from the mean and were removed from the data set. Additionally, the data set contained 34 missing variables for SSDV_18 and SSDV_19 because these hotels do not offer a concierges lounge and the SSDV_18 and SSDV_19 variables were removed in lieu of the hotel observations because of the lower conceptual match of concierges lounge service delivery from the literature review. The screened data set provided 286 observations that are greater than the minimum acceptable threshold of 250 (Schumacker & Lomax, 2010, p. 42).

The second test of the model (Figure 8) illustrated a strong relationship between staff service factors (SSDF) and customer attitudinal loyalty factors (CALF) with a standardized estimate of 0.73 and coefficient of determination = 0.527 and still a high error of the variance of 0.473 statistic. Likewise the financial factors (FF) and customer attitudinal loyalty factors (CALF) did not demonstrate a statistical relationship with a standardized estimate of - 0.01 and coefficient of determination = 0.000145 with an error variance of 1.00. The second test produced a high condition number of 2151.287 indicating multicollinearity and only marginal improvements of the RMSEA statistic that indicates the variables need to be further reduced to improve the parameter estimation.

Dunteman (1989, p. 51) suggests principal component analysis can be employed to reduce the variables by selecting the variable with the highest weight to
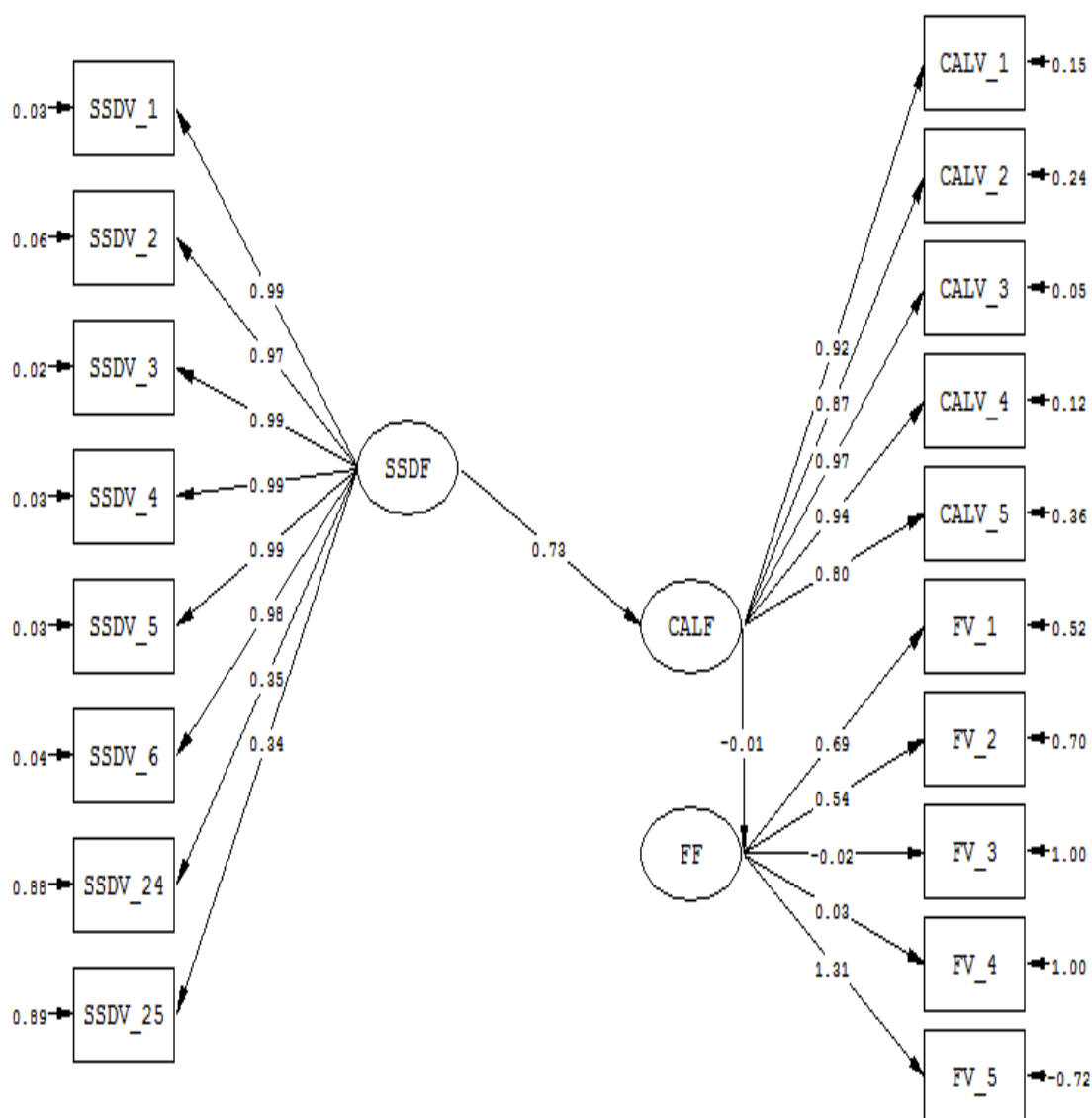
Figure 8. Model two of the SEM paths and statistics

represent each factor. The screened data set with 286 observations was used to
reduce the staff service delivery variables (SSDV), customer attitudinal loyalty
variables (CALV), and financial variables (FV) that are provided in Table 20. First,
the financial variables were examined using a principal component analysis (refer to
Table 20) to reduce the variables and improve the model parameter

Table 20. Principal component analysis with varimax rotation for FV

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
FV_1	**0.994**	0.090	0.042	0.002	-0.037
FV_2	0.285	**0.919**	0.141	0.231	-0.001
FV_3	0.072	0.119	**0.935**	0.324	0.001
FV_4	0.047	0.260	0.438	0.858	0.002
FV_5	0.869	0.468	0.084	0.109	0.069
Eigenvalue	2.76	1.44	0.55	0.23	0.01
% Variance	55.29	28.88	11.10	4.60	0.11
Cum. % Var.	55.29	84.17	95.28	99.88	100.00

estimation. In utilizing this method, average daily rate (FV_1), occupancy (FV_2), and RevPAR index (FV_3) were selected for the model (bolded in Table 20) with the first three factors accounting for over 95% of the variance. Although RevPAR (FV_5) was not selected based upon the statistical test, it was retained for further consideration and analysis because it is a key variable of the study.

Next, the customer attitudinal loyalty variables (CALV) were investigated in which overall satisfaction (CALV_1), likeliness to stay again (CALV_2), and value (CALV_5) were retained because they demonstrated the highest loadings for their respective factors that represent greater than 97% of the variance (Table 21). In addition to the low factor loading, the perfect hotel variable (CALV_4) was less frequently cited by the literature and thus conceptually appropriate to remove from the model. The likeliness to recommend variable (CALV_3) was frequently cited as

Table 21. Principal component analysis with varimax rotation for CALV

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
CALV_1	**0.850**	0.347	0.357	0.168	0.002
CALV_2	0.309	**0.875**	0.333	0.158	-0.019
CALV_3	0.597	0.658	0.308	0.273	0.197
CALV_4	0.610	0.400	0.416	0.540	0.022
CALV_5	0.342	0.340	**0.857**	0.173	0.026
Eigenvalue	4.24	0.33	0.30	0.09	0.02
% Variance	84.87	6.69	6.01	1.87	0.54
Cum. % Var.	84.87	91.56	97.58	99.45	100

a key indicator of customer attitudinal loyalty and will be removed from the model for the next iteration of analysis; however, this variable appears conceptually important and will remain a consideration during the test of the structural equation model.

The conference room breakfast service (SSDV_24) and lunch and dinner service (SSDV_25) were excluded from the principal component analysis because the second test of the model indicated these variables have a very low statistical relationship with a coefficient of determination of less than 0.130 (Table 22). Additionally, the conference room variables have a lower theoretical match to the staff service delivery concept. The variables SSDV_1 through SSDV_6 were included in the analysis because they all demonstrated a coefficient of determination of greater than 0.950 of which staff warm and hospitable (SSDV_2), staff skilled and trained (SSDV_5), and staff take care of business (SSDV_6) were selected for the

Table 22. Principal component analysis with varimax rotation for SSDV

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
SSDV_1	0.563	0.500	0.577	0.279	0.137
SSDV_2	**0.740**	0.465	0.424	0.228	0.023
SSDV_3	0.497	0.598	0.483	0.391	0.034
SSDV_4	0.602	0.577	0.409	0.361	0.006
SSDV_5	0.524	0.545	**0.604**	0.240	-0.053
SSDV_6	0.490	**0.723**	0.433	0.216	0.043
Eigenvalue	5.82	0.07	0.045	0.02	0.01
% Variance	97.00	1.22	0.75	0.47	0.31
Cum. % Var.	97.00	98.22	98.98	99.44	99.76

model. Given staff service overall (SSDV_1) is a key variable of the study, it will be retained for further consideration and analysis.

The revised model contains 20 parameters that are less than the 45 variances and satisfies the $t \leq s/2$ requirements for identification (Figure 9). Although the model is not just-identified ($t = s/2$), it is better justified and demonstrates a stronger relationship between the staff service factor (SSDF) and the customer attitudinal loyalty factor (CALF) with a standardized estimate of 0.82 and increased coefficient of determination = 0.681 and error of the variance of 0.31 statistic.

The condition number was lowered from 2151.28 to 888.51, which indicates a reduction in collinearity among the predictor a variables. However, the financial factor (FF) and
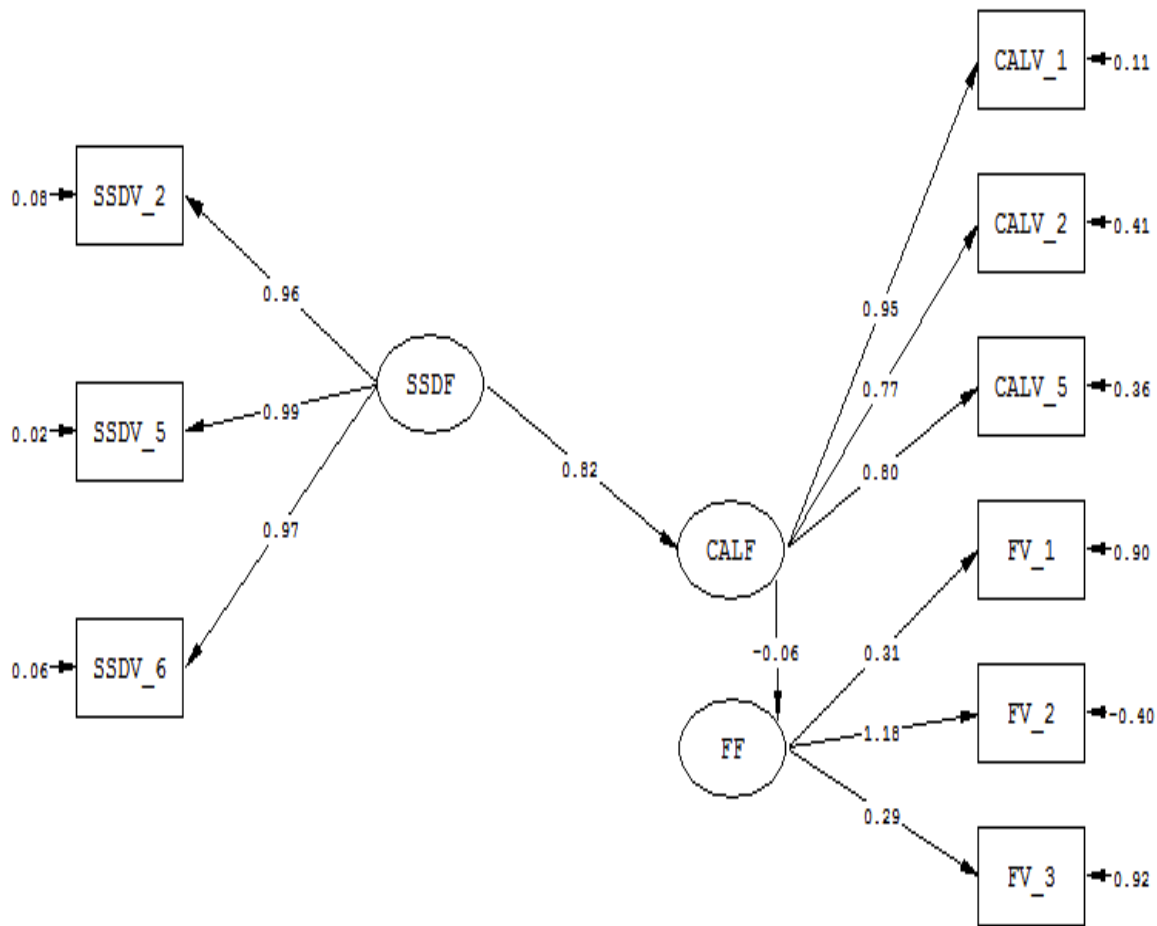
Figure 9. Model three of the SEM paths and statistics

customer attitudinal loyalty factor (CALF) did not demonstrate a statistical

relationship with an unstandardized estimate of - 0.06.

A fourth model was constructed by reducing variables to improve the stage 5

objective of parameter reduction. The occupancy (FV_2) demonstrated a negative

error variance and estimated statistic greater than the value of 1.00 that indicates a

possible sampling or measurement error (Hair, Jr., et al., 2010, p. 105). Therefore,

the occupancy variable (FV_2) was removed in lieu of setting the variance to a

preset value that would restrict the parameter (Kolenikov & Bollen, 2008, p. 1).

The fourth test of the model contained 18 parameters that are less than the 36 variances and satisfies the $t \leq s/2$ requirements for identification and is closer to being just-identified ($t = s/2$) than the three previous iterations of the model (Figure 10). The path estimate of 0.82 between the staff service factor (SSDF) and customer attitudinal loyalty factor (CALF) remained constant between iteration three and four of the model. The standardized estimate for the customer attitudinal loyalty factor (CALF) and financial factor (FF) increased from -0.06 from the third test to 0.21 in the fourth test of the model (Figure 10).

Stage 6. Estimate of model fit

Stage six involves analyzing and interpreting the model fit to include estimating the goodness-of-fit for the model.   Within the model fitting stage, Reisinger and Turner (1999, p. 81) suggest setting any negative variances to a small value such as (0.05) as in the case of FV_3 and eliminating standardized estimates greater than 1.00. After setting the negative standard error for variable FV_3 to 0.005 in the fifth test of the model (Figure 11), the standard estimate of FF and FV_3 was reduced to within the tolerance of not greater than 1.00.

Reisinger and Turner (1999, pp. 82-84) provide criteria in evaluating the overall measurement and structural fit of the model to include the chi-square, degrees of freedom, significance level, goodness-of-fit index, root-mean-square residuals, and normed fit index. Likewise, (Hair, et al., 2010, pp. 653-654) suggest multiple
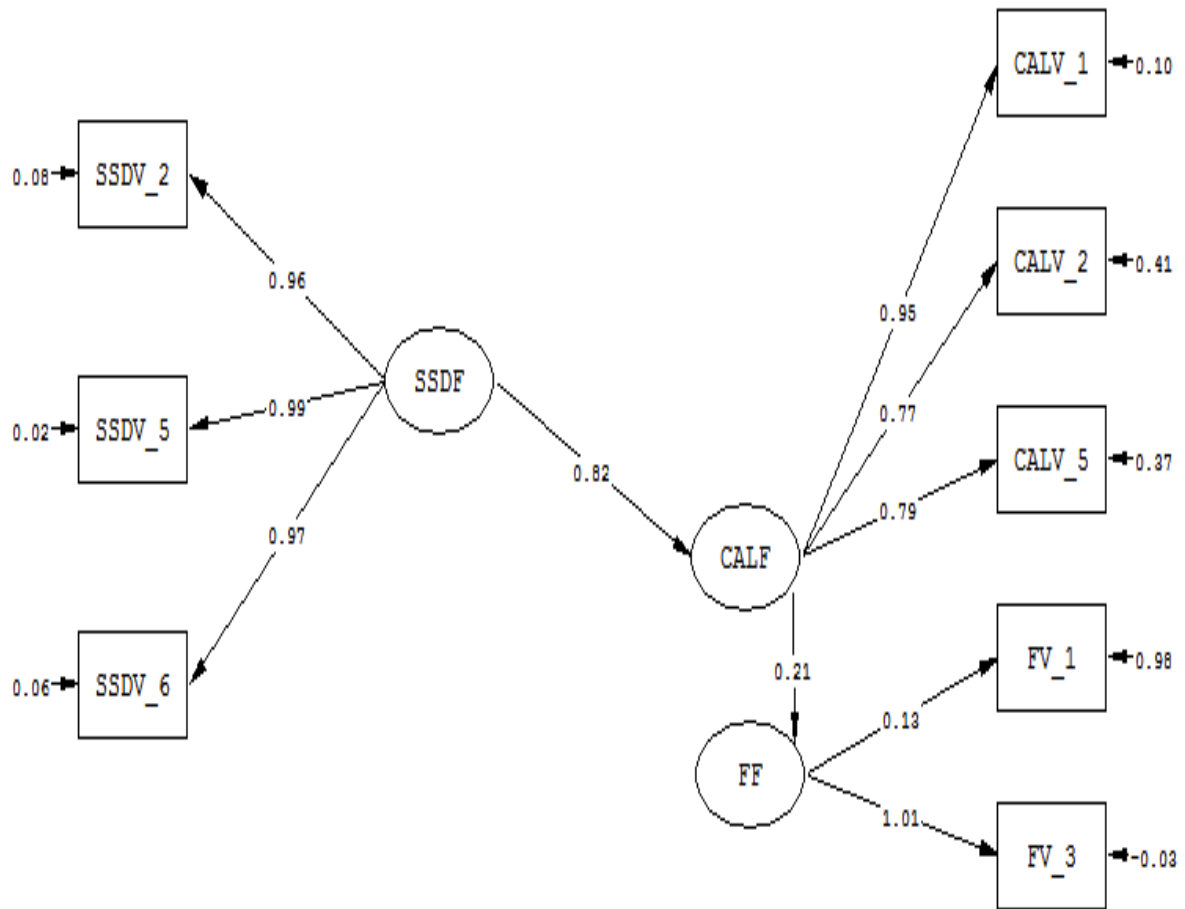
Figure 10. Model four of the SEM paths and statistics

criteria for acceptable fit. The fifth test of the model produced a 0.818 goodness-of-fit index and normed fit index that are within a marginal level of fit compared to the acceptance level of 0.90 (Table 23). The RMR of 0.087 was also reasonably close to the borderline level of 0.05; however the RMSEA of 0.274 is outside of the critical value of 0.05. The normed chi-square value of 15.72 is outside of the recommended level of between 1.0 and 2.0; however the chi-square related statistics as are often discussed in SEM research, e.g., Reisinger and Turner (1999, p. 82) and
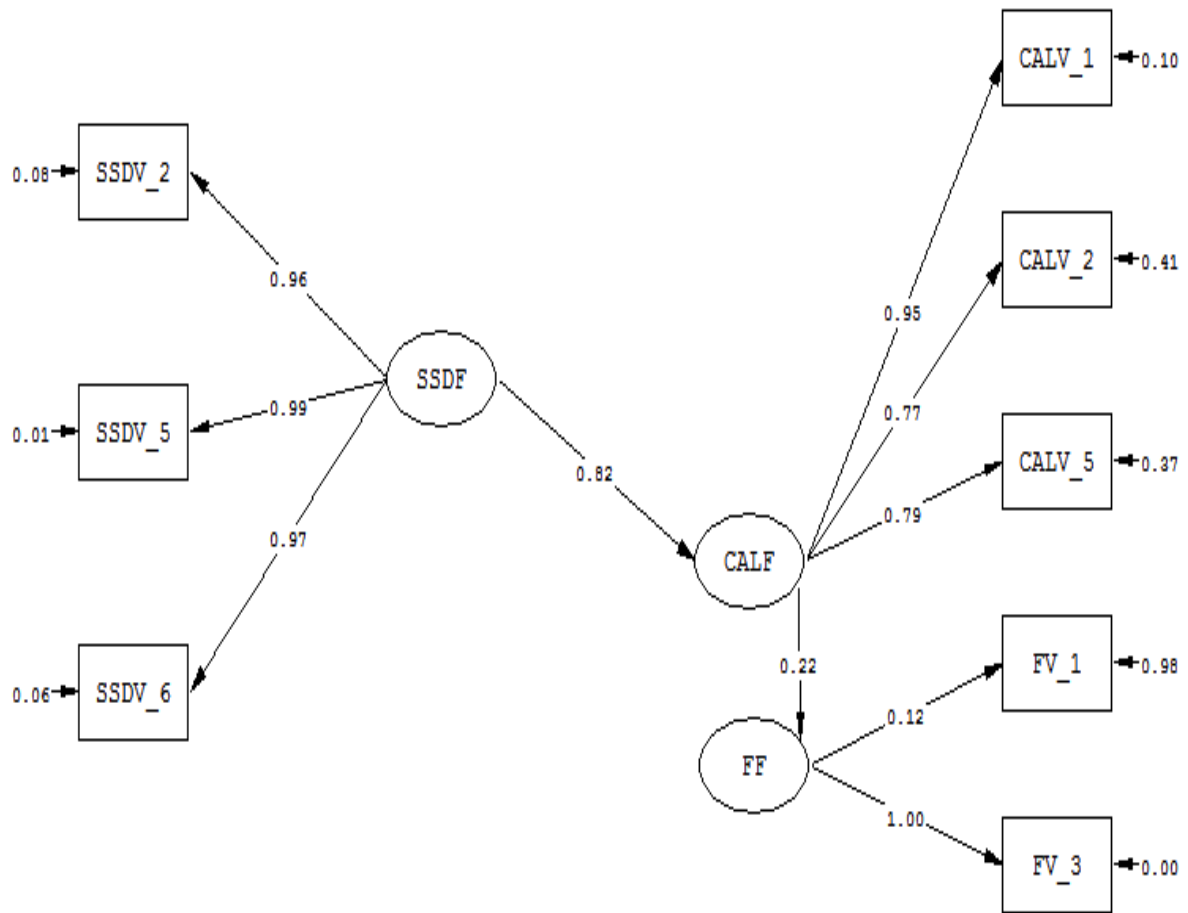
Figure 11. Model five of the SEM paths and statistics

Table 23. Model five measurement fit criteria

Structural fit criteria	Model five
Chi-square (degrees of freedom)	298.711 (19)
Normed Chi-square (Chi-square / degrees of freedom)	15.722
Significance level	P = 0.001
Goodness-of-fit index (GFI)	0.818
Normed fit index	0.877
Standardized Root-mean-square residuals (RMR)	0.087
Root-square-error of approximation (RMSEA)	0.274

might not be the most appropriate measures of fit because the statistic can be inflated by a large samples and specification errors, as is the case with the sample data in this model.

Model five demonstrated a strong relationship between the staff service delivery factor (SSDF) and the customer attitudinal loyalty factor (CALF) with a coefficient of determination of 0.667, *t*-value of 15.874, and *p*-value of 0.001 (Table 24). The CALF = SSDF standardized estimate indicates that a one unit measure increase on average in of the staff service delivery factor (SSDF) is predicted to produce a 0.82 increase the customer attitudinal loyalty factor (CALF). All of the staff service delivery variables (SSDV) and customer attitudinal loyalty variables (CALV) demonstrated *t*-value above the critical statistic of 2.0 and coefficient of determination exceeding 0.58 which together indicates that they are good predictors of the staff service delivery factor (SSDF) and customer attitudinal loyalty factors (CALF).

Table 24. Model five structural statistics

Structural statistics	CALF = SSDF	FF = CALF
Standardized estimate	0.82	0.22
Error of variance	0.323	0.954
Coefficient of determination	0.677	0.046
t-value	15.874	1.815
p-value	0.001	0.070
Standard error	0.051	0.119

Although the path estimate for FF = CALF indicates that a one-unit change in the customer attitudinal loyalty factor (CALF) will result in a proportional 0.22 change to the financial factor (FF), the model five exhibits a *t*-value of 1.815 and 0.070 *p*-value that marginally come near the critical values of 1.96 and 0.050, respectively. Additionally, the FF = CALF exhibit a 0.954 error of variance and 0.119 standard error indicates a high degree of measurement error and reduced precision in estimation. Therefore, it appears there is a lower degree of predictability and precision for the latent factor of financial variables in comparison to the staff service delivery and customer attitudinal loyalty variables and factors.

Stage 7. Development of the final model

Stage seven involves the development of the best fitting model based upon previous analysis and in concert with conceptual theory and the research hypothesis. Given that the statistical parameters were optimized in stage six and new permutations of the model paths and error covariance's did not improve the model estimates, the model was re-tested using the variables of staff service overall (SSDV_1), likelihood to recommend (CALV_3), and RevPAR (FV_5). These variables were selected because they demonstrated a strong conceptual relationship based upon the literature review. To achieve the optimal just-identified model parameter estimation, the variables with the lowest statistical utility as measured by the coefficient of determination value that include SSDV_2, CALV_2, CALV_5, and FV_5 (see Table 25, annotated with an asterisk (*) were replaced with the variables

Table 25. Model five and six measurement variables

Model	SSDV	CALV	FV
Five	*SSDV_2, SSDV_5, and SSDV_6	CALV_1, *CALV_2, and *CALV_5	*FV_1 and FV_5
Six	**SSDV_1, SSDV_5, and SSDV_6	CALV_1 and **CALV_3	**FV_3 and FV_5

with higher conceptual match that comprise SSDV_1, CALV_3, and FV_5 (annotated with **).

The initial test of model six produced a negative error variance for CALV_1 and FV_3 set to 0.005. The final run of model six provided positive values for the error of variance and path values not greater than 1.00 (Figure 12). In comparing standardized model five and six, both models exhibit similar standardized parameter estimates for the structural equations (Figure 11 and 12).

Standardized parameter estimates for the retained variables demonstrated less than a 0.01 variance change between models five and six. Similarly, error variances for free parameters exhibited a change of less than 0.01 in comparing model five with model six. Although both models five and six demonstrated similar model standardized parameter estimates and error variances, the overall fit of model six improved in comparison to model five (Table 26). Model six demonstrated a 61% reduction in normed chi-square, 5 fewer degrees of freedom and RMR near the critical 0.05 value. However, the RMSEA of 0.164 for model six is outside the critical value of the 0.05. Model six exhibited a goodness of fit and normed fit indexes closer to the required value of
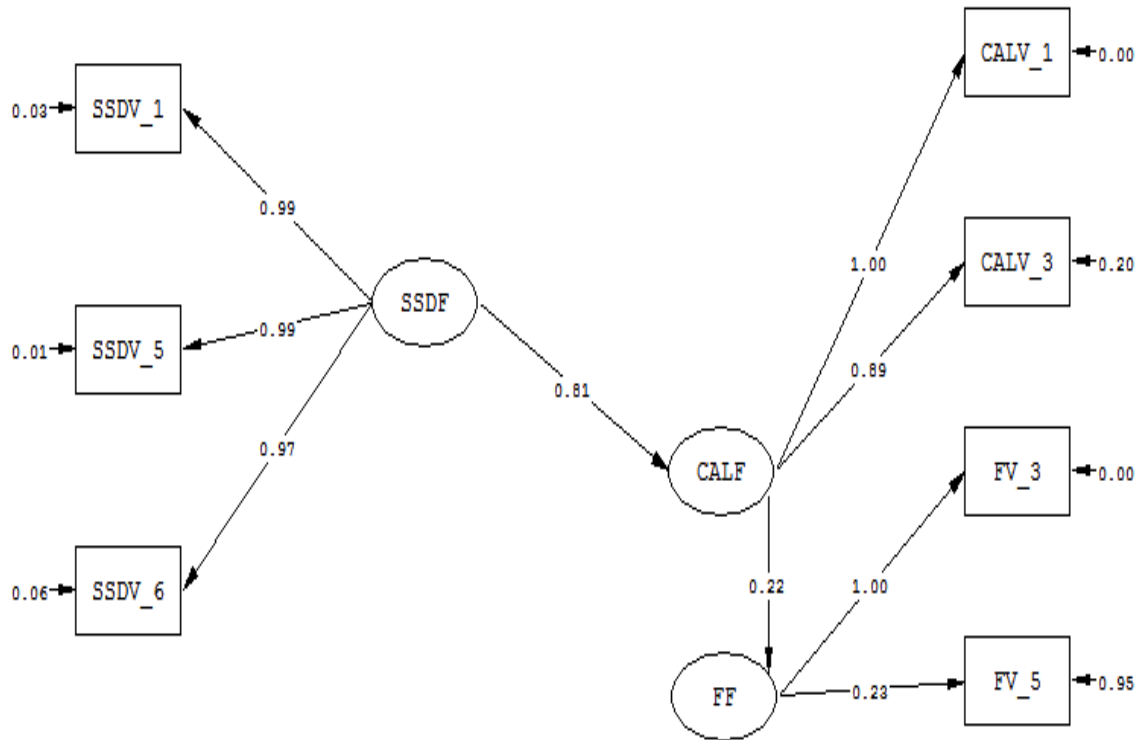
Figure 12. Model six of the SEM paths and statistics

Table 26. Model five and six comparison of measurement fit criteria

Structural fit criteria	Model five	Model six
Chi-square (degrees of freedom)	298.71 (19)	84.96 (14)
Normed Chi-square	15.72	6.07
Significance level	P = 0.001	P = 0.001
Goodness-of-fit index (GFI)	0.818	0.927
Normed fit index	0.877	0.958
Standardized Root-mean-square residuals (RMR)	0.087	0.060
Root-square-error of approximation (RMSEA)	0.274	0.164

0.90. Reisinger and Turner (1999, p. 84) indicate the *t*-values of the model should be examined and the standardized parameter estimates demonstrated values above the critical value of 1.96.

Stage 8. Model cross-validation

Stage eight requires a new set of data to cross-validate model six that was developed based upon the statistical tests and conceptual match with the literature review. Similar to the procedure taken with the 2009 data set, outlier variables and missing data were removed from the 2010 sample (Kline, 2011, pp. 54-55). The sample for 2010 contained 310 observations of which 14 missing values and outliers were removed providing a final data set of 296 observations. As indicated by Schumacker and Lomax (2010, p. 42), the 296 observations exceed the critical threshold of 250 observations.

Using a moderate replication strategy, the first test of validation model seven produced a negative error variance for CALV_1 and was therefore set to the 0.005 value. The second run of the model provided positive values for the error of variance and path values not greater than 1.00 (Figure 13). In comparing model six with the validation model seven (Figure 12 and 13), standardized estimate values were similar and within a value of 0.01 for the staff service delivery variables (SSDV) and customer attitudinal loyalty variables (CALV). Both models exhibited *t*-values above the required value of 1.96 and error variances for free parameters exhibited a change of less than 0.06. The standardized estimate for the customer attitudinal loyalty factor (CALF) and financial factor (FF) increased from 0.22 in model six to
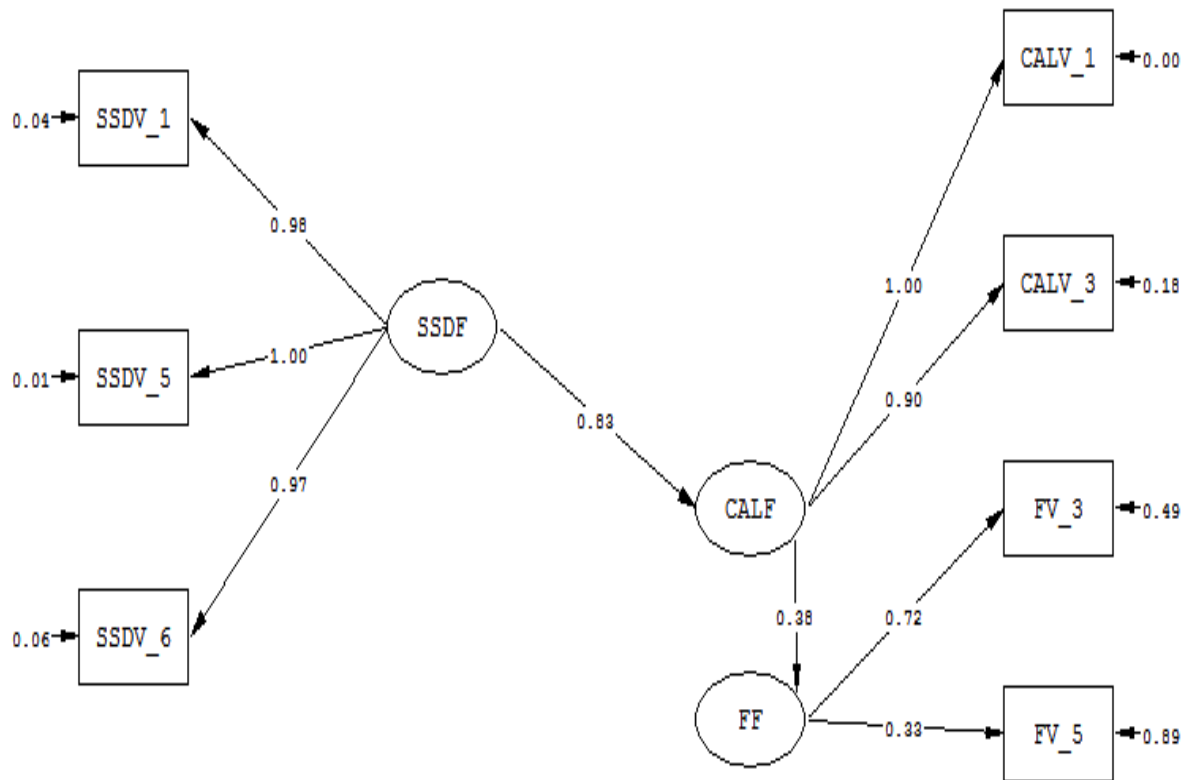
Figure 13. Validation model seven of the SEM paths and statistics

0.38 for the validation model seven. The overall fit of model seven marginally improved (Table 27) with a RMR closer to the critical value of 0.05, improved RMSEA of 0.146, and both goodness-of-fit and normed fit indexes nearer to the critical value of 0.90 statistic.

In selecting the most highly predictive model, cross-validation indexes were calculated and compared (Table 28). Model six was selected because it exhibits a higher value of 0.524 that indicates a higher predictive validity than the validation model (Diamantopoulos & Siguaw, 2009, pp. 136-137). Both the measurement and

Table 27. Model six (2009 data) and seven (2010 data) measurement fit criteria

Structural fit criteria	Model six	Model seven
Chi-square (degrees of freedom)	84.96 (14)	95.06 (13)
Normed Chi-square	6.07	7.31
Significance level	P = 0.001	P = 0.001
Goodness-of-fit index (GFI)	0.927	0.924
Normed fit index	0.958	0.957
Standardized Root-mean-square residuals (RMR)	0.060	0.057
Root-square-error of approximation (RMSEA)	0.164	0.146

Table 28. Cross-validation of model six (2009 data) and seven (2010 data)

	Model six	Model seven
Cross validation index	0.524	0.423

structural statistics for model six are provided in Table 29 and Table 30. The optimal

model six is illustrated with LISREL syntax to include:

Latent Variables: FF CALF SSDF

```
CALV_1 = CALF
CALV_3 = CALF
FV_3 = FF
FV_5 = FF
SSDV_1 = SSDF
SSDV_5 = SSDF
SSDV_6 = SSDF
FF = CALF
CALF = SSDF
Set the Error Variance of CALV_1 to 0.05
Set the Error Variance of FV_3 to 0.05
```

Table 29. Model six measurement equations and statistics

SEM path equation	Unstandardized parameter estimate	Error variance	Coefficient of determination	Standardized parameter estimate
SSDV_1 = SSDF	0.18	0.001	0.972	0.99
SSDV_5 = SSDF	0.17	0.001	0.986	0.99
SSDV_6 = SSDF	0.19	0.002	0.941	0.97
CALV_1 = CALF	0.20	0.005*	0.890	1.00
CALV_3 = CALF	0.12	0.002	0.857	0.89
FV_3 = FF	20.89	0.005*	1.00	1.00
FV_5 = FF	5.72	568.181	0.054	0.23

* Denotes error of variance set to 0.005.

Table 30. Model six structural equations and statistics

SEM path equation	Error variance	Coefficient of determination	Standardized parameter estimate
CALF = SSDF	0.353	0.647	0.81
FF = CALF	0.931	0.068	0.22

Hypothesis Testing Results

The results of the principal component analysis and structural equation model demonstrated efficacy in testing the research hypothesis with a summary provided in Table 31. The first hypothesis (H_1) is supported because the staff service delivery variables (SSDV) are positively correlated with a staff service delivery factor (SSDF) as demonstrated by the Cronbach's α statistic of 0.933 which indicates the variables of staff service overall (SSDV_1), staff skilled and well trained (SSDV_5), and staff

Table 31. Hypothesis results utilizing model six

Hypothesis	Result	Validation
H_1: Staff service delivery variables (SSDV) are positively correlated with a staff service delivery factor (SSDF).	*p*-value of 0.001	Support
H_2: Customer attitudinal loyalty variables (CALV) are positively correlated with a customer attitudinal loyalty factor (CALF).	*p*-values of 0.001	Support
H_3: Financial variables (FV) are positively correlated with a financial factor (FF).	*p*-value of 0.070	Reject
H_4: Staff service delivery factor (SSDF) is positively correlated with the customer attitudinal loyalty factor (CALF).	*p*-value of 0.037	Support
H_5: Customer attitudinal loyalty factor (CALF) is positively correlated with the financial factor (FF).	*p*-value of 0.070	Reject
H_6: Staff service delivery variables (SSDV) and customer attitudinal loyalty variables (CALV) predict financial variables (FV).	*p*-value of 0.050	Reject

take care of issue (SSDV_6) demonstrate very high reliability in providing consistent information regarding their predictability as a staff service delivery factor (SSDF). Additionally, the coefficient of determination was 0.940 with *p*-values 0.001 for these variables indicating a very strong correlation with the latent staff service delivery factor.

The second hypothesis (H_2) is supported because the customer attitudinal loyalty variables (CALV) are positively correlated with a customer attitudinal loyalty factor (CALF) and in that these variables produced a Cronbach's α value of 0.930 that indicates the variables of overall satisfaction (CALV_1) and likeness to recommend (CALV_3) exhibit a very high reliability as a predictor of the customer attitudinal loyalty factor (CALF). Additionally, the coefficient of determination was

0.50 with *p*-values of 0.001 for the staff service delivery variables (SSDV), which

demonstrates a strong correlation with the customer attitudinal loyalty factor (CALF).

The financial factor (FF) demonstrated a standardized parameter estimate

value of the 0.22 in relation to the customer attitudinal loyalty factor (CALF), the

financial factor (FF) demonstrated a low Cronbach's α and coefficient of

determination below the critical statistic. The financial variables (FV) exhibited a

marginal reliability of 0.5200 for the Cronbach's α statistic in relation to the financial

factor (FF). In addition to low value for the critical reliability statistic, H_3 is rejected

because of the 0.060 coefficient of determination and *p*-value of 0.0700 in relation to

the financial factor (FF).

The fourth hypothesis (H_4) is supported because the staff service delivery

factor (SSDF) is positively correlated with the customer attitudinal loyalty factor

(CALF) with a standardized parameter estimate of 0.81 and coefficient of

determination of 0.640 with a *p*-value of 0.0370. The fifth hypothesis (H_5) of

customer attitudinal loyalty factor (CALF) being positively correlated with the

financial factor (FF) is rejected because of the low standardized parameter estimate

of 0.22 and error variance of 0.43. Additionally, the correlation coefficient produced

a coefficient of determination 0.0680 and *p*-value of 0.070.

The results of the structural equation model do not support hypothesis six (H_6)

that staff service delivery variables (SSDV) and customer attitudinal loyalty variables

(CALV) predict financial variables (FV). The H_6 hypothesis is rejected because it is

contingent on the acceptance of $H_1 – H_5$, the RMSEA value of 0.160, normed chi-

square 6.00, and *p*-value 0.05 are above the critical values of acceptance. These

higher than critical values indicate a less than desirable fit and predictability of the

model.

CHAPTER 5. DISCUSSION AND CONCLUSIONS

Introduction

This chapter summarizes and provides interpretation of the results reported in Chapter 4. The discussion and conclusions systematically and logically presented to demonstrate the literature review and test of hypothesis addressed the statement of the problem and research objectives. The discussion and conclusions include summary and discussion, conclusions, implications, limitations, and proposals for future research.

Summary and Discussion

Key variables of the staff service delivery factor

The results of the literature review indicated that within the context of the hotel industry, customers derive value from both the product and service dimension of the hotel experience (Allen, 2004; Kenett & Salini, 2012). Of the cited variables from the literature review (Table 2), attributes related to staff service delivery that involve an employee directly serving a customer appear to have a significant influence on the customer experience. Therefore the staff service delivery related attributes were identified as key variables for inclusion in testing the external service value component of the service-profit chain. The data set provided a list of 24 staff service delivery-related variables (Table 9) that related to the perception of employee performance such as responsiveness (SSDV_3), skills and training (SSDV_5), and ability to resolve a problem (SSDV_8). The data set also contained variables

whereby multiple employees could be involved in facilitating a service episode to include the arrival experience (SSDV_9) or delivery of a tangible product such as a restaurant food product (SSDV_16).

Principal component analysis was utilized to group and reduce the staff service delivery variables (SSDV), of which the variables related to staff service overall (SSDV_1), staff warm and hospitable (SSDV_2), staff responsiveness (SSDV_3), staff going the extra mile (SSDV_4), staff skilled and trained (SSDV_5), and staff take care of business (SSDV_6) demonstrated the factor loadings of 0.820 for factor one (Table 11). Results from the analysis exhibited a Cronbach's alpha value of 0.930 that indicated they are reliable measures of factor one related to staff service delivery variables (SSDV). The results also indicated a second tier of variables strongly related to factor one with a loading of 0.720 to include staff take care of business (SSDV_6), staff genuinely caring (SSDV_7), staff problem resolution (SSDV_8), and arrival experience (SSDV_9). The six variables with loadings 0.820 (SSDV_1 through SSDV_6) were selected for the confirmation of the external service value component of the service-profit construct and were further reduced to only three variables that were the most predictive of the service factor (SSDF).

Results from the principal component analysis also indicate that variables associated with a tangible product loaded under different factors. For example, amenities and service related variables (SSDV_11 and SSDV_13) demonstrated a loading of 0.74 under factor two, the concierge's lounge (SSDV_18 and SSDV_19) produced a loading of 0.81 for factor four, and conference room food service

(SSDV_24 and SSDV_25) demonstrated a loading of 0.840 for factor five. These variables with high loadings under factors two, four, and five did not exhibit strong loadings with the service variables extracted from factor one. Therefore, it appears that customers might evaluate employee interpersonal interactions as demonstrated by the staff service delivery variables (SSDV) differently than variables associated with an amenity or food product.

The initial results of the structural equation model (Figure 7) indicated a high degree of multicollinearity that required a second iteration of variable reduction utilizing principal component analysis. The staff warm and welcome (SSDV_2), staff skilled and trained (SSDV_5), and staff take care of business (SSDV_6) items were selected for the final test and validation of the model (Figure 12 and Figure 13). The high factor loadings of ten variables for factor one might indicate an opportunity to reduce the questions in the survey instrument and reduce multicollinearity.

The three key variables of staff warm and welcome (SSDV_2), staff skilled and trained (SSDV_5), and staff take care of business (SSDV_6) both support the concept of external service value as identified in the literature review (Table 2) and the test results of structural equation model that was employed to confirm the external service value component of the service-profit chain construct. These three service delivery variables demonstrated a coefficient of determination of 0.940 with p-value of 0.001 and t-value of 4.00 that indicates they are strongly correlated with the latent staff service delivery factor (SSDF), and these results support the first hypothesis (H_1) that staff service delivery variables (SSDV) are positively correlated with a staff service delivery factor (SSDF).

Key variables of the customer attitudinal loyalty factor

The literature review indicated customer satisfaction is modulated by an expectation in relation to the actual experience (Clemes et al., 2011, pp. 533-534) and that their expectations are either confirmed, affirmed or disaffirmed throughout the experience (Vavra, 1997, pp. 39-43). Customer satisfaction can be measured in terms of the totality of the overall experience, discrete episodes, or product attributes as illustrated by the SERVQUAL survey instrument (Zeithaml & Parasuraman, 2004, pp. 48-52). Although the construct of the service-profit chain defines customer satisfaction as a distinctive driver of customer loyalty (Figure 1), Hayes (2008, p. 180) indicated that both customer satisfaction and loyalty are part of the same customer attitudinal loyalty concept.

The point-of-view that customer satisfaction and customer loyalty are part of the customer attitudinal loyalty concept is supported by the results that indicate overall satisfaction (CALV_1), likely to recommend (CALV_3), and perfect hotel (CALV_5) exhibited a loading of 0.63 for the first factor of the principal component analysis (Table 13). It also appears that likely to stay again (CALV_2) and likely to recommend (CALV_3) are related variables with factor loading of 0.64 for factor two. These results appear to indicate that a customer's likeliness to recommend (CALV_3) might modulate both attitudinal loyalty as associated with the satisfaction of the experience and perceived fit of the hotel for their needs (CALV_5) and the indication they will stay again at the hotel (CALV_2). The statistical overlap of the likely to recommend variable (CALV_3) with overall satisfaction (CALV_1) and likely to stay again (CALV_2) variable is supported by Hayes (2008, p. 80) in that overall

satisfaction, likeliness to recommend are used along with likelihood to repurchase as measures of customer attitudinal loyalty.

The value variable (CALV_5) demonstrated the weakest relationship with the customer attitudinal loyalty factor with a factor loading of 0.360 in relation to the other four variables that might indicate value measures a different factor that influences customer perceptions and decisions. Allen (2004, p. 17) suggests that price and quality influence perceived value and resulting customer retention. Similar to how likelihood to recommend (CALV_3) is a bridging variable for overall satisfaction (CALV_1) and likely to stay again (CALV_2), the value variable (CALV_5) might bridge different factors of behavior economics that include price and burden related to the experience. Heskett et al. (2003, p. 26) suggests the value concept is comprised of variables to include results and quality that are evaluated in relation to access cost and price for the experience. It is possible the value variable of the customer attitudinal loyalty factor (CALF) might only relate to the results and quality of the experience as measured by a metric such as overall satisfaction. However the variable might not demonstrate a high factor loading because half of the equation to include access cost and price are not included in the analysis.

All five variables were tested in the initial structural equation model (Figure 7) because they produced a high degree of reliability with a 0.930 Cronbach's α statistic. However, the variables were further reduced using principal component analysis (Table 21) to improve the fit of the structural equation model and selected based upon their loading across different factors (Dunteman, 1989, p. 51). The overall satisfaction (CALV_1) and likely to recommend (CALV_3) variables were

selected through testing of the structural equation model based upon both statistical results and conceptual match with service-profit chain construct.

The final variables of overall satisfaction (CALV_1) and likeness to recommend (CALV_3) exhibited a coefficient of determination of 0.50 and p-value of 0.001 that supports the second hypothesis (H_2) that states customer attitudinal loyalty variables (CALV) are positively correlated with a customer attitudinal loyalty factor (CALF). These results indicate overall satisfaction and likely to recommend are components of the customer attitudinal loyalty factor (CALF) and therefore suggest a modification to the service-profit chain that groups customer satisfaction with customer return and referral as an antecedent to financial outcomes such as growth and profit.

Key variables of the financial factor

The literature review cited financial outcomes such as hotel occupancy, average daily rate, and revenue per available room as key financial metrics (Banker et al., 2005) that were included in the analysis. From the Smith Travel Research data set, financial outcomes of average daily rate (FV_1), occupancy (FV_2), revenue per available room index (FV_3), occupancy index (FV_4), and revenue per available room (FV_5) were selected to test the financial component of the service-profit chain construct. The literature review indicated that revenue per available room is a dominant metric for evaluating hotel financial performance (Banker et al., 2005) and is also a composite of the occupancy and average daily rate metrics.

Although both the service-profit chain construct and the literature review cited profit as key financial outcome, profitability data was not provided for the data set and therefore not included in the analysis. The exclusion of profit data might not be a significant limitation of the study because profit can be influenced by numerous variables not related to customer attitudinal loyalty variables (CALV) such as the cost basis of the hotel operation. For example, labor is the largest component of a hotels operating cost and can vary by geographic market or larger hotels might benefit from scaled efficiencies in comparison to smaller operations with an economic disadvantage.

The financial variables were analyzed using principal component analysis to measure the relationships and reliability of the variables (Table 14 and 15). These variables demonstrated a Cronbach's α statistic of 0.521 that is below the lower threshold of demonstrating reliability (Hair, et al., 2010, p. 92). The average daily rate (FV_1) and revenue per available room (FV_5) variables demonstrated a 0.891 loading for factor one, whereas the remaining variables of occupancy (FV_2), revenue per available room index (FV_3), and occupancy index (FV_4) each demonstrated high loading values of 0.850 across a different factor. The low factor loading of 0.307524 for occupancy (FV_2) within the first factor is somewhat lower than expected because occupancy in conjunction with average daily rate (FV_1) produces revenue per available room (FV_5). Therefore it appears that fluctuations in revenue per available room (FV_5) levels might be more sensitive to changes in the average daily rate (FV_1) than occupancy levels (FV_2). Given that revenue per available room index (FV_3) and occupancy index (FV_4) are calculated in relation

to an external reference point of hotels, it appears logical that these metrics demonstrate high loading values for different factors.

All five of the financial outcome variables were included in the initial structural equation model (Figure 7), however the variables were further reduced using principal component analysis (Table 20) to improve structural equation model estimate of fit. The average daily rate (FV_1), occupancy (FV_2), and revenue per available room index (FV_3) were extracted based upon the highest weight across different factors (Dunteman, 1989, p. 51). The occupancy (FV_2) variable was removed during the fourth test of the model because it exhibited a parameter estimate greater than the critical statistic 1.00 and high negative error variance (Figure 9).

Although financial metrics of (FV_1), occupancy (FV_2), revenue per available room index (FV_3), occupancy index (FV_4), and revenue per available room (FV_5) are supported by the literature review, the H_3 hypothesis is rejected because of Cronbach's α of 0.521 is below the critical statistic in demonstrating reliability in predicting the financial factor construct. Additionally, the coefficient of determination of 0.060 does not exhibit a predictive relationship with the financial factor (FF) with a *p*-value of 0.070. The financial variables do not demonstrate precision in predicting the financial factor (FF) as measured by the coefficient of determination and the overall effect is measured by that standardized estimate of 0.22 for model six (Figure 12) and 0.38 for model seven (Figure 13). Given the financial variables are products of different scales, this might explain the low

coefficient of determination and high error because the standardized estimate measures effect size and removes the scaling of such dissimilar scales.

Staff service, customer loyalty, and financial outcome relationships

The results of the structural equation model supports the fourth hypothesis (H_4) that staff service delivery factor (SSDF) is positively correlated with the customer attitudinal loyalty factor (CALF). The staff service delivery factor (SSDF) demonstrated a strong positive correlation with the customer attitudinal loyalty factor (CALF) in exhibiting a coefficient of determination The construct of the service-profit chain proposes people, technology, and facilities are key components of the service delivery system that provides external service value and influences customer attitudinal loyalty (Heskett et al., 1997, p. 9). Within the context of the hotel experience and in comparison to the external service value components of the service-profit chain, the literature cited facility related variables such as room quality, business services, facilitates, and amenities (Choi & Chu, 2001). Additionally, the literature review provided strong corroboration that the people component of service-profit chain in delivering external value is important because staff service delivery was cited across several sources as influencing the guest experience (Table 2). The literature review did not appear to cite technology as a key component of providing external service value, which is not unexpected because the hotel experience is service and product dominant. However, it is foreseeable that technology will emerge over time as an important factor in providing external service value as hotel

companies start to digitize the customer experience with services such as mobile check-in, product ordering, and service requests.

of 0.640, parameter estimate of 0.804, *p*-value of 0.037, and *t*-value of 15.303. These results corroborate the structural equation model tested by Wu and Liang (2009, p. 591) that indicated staff service interaction demonstrated a positive influence on customer satisfaction for restaurant patrons.

The literature review provided evidence that customer attitudinal loyalty metrics such as positive responses to a survey question regarding the customer's likeliness to return can predict growth in hotel occupancy (Banker et al., 2005). However, the results from confirmatory analysis of the structural equation statistics do not corroborate this literature citing and premise of the service-profit chain construct that suggests customer attitudinal loyalty positively is correlated with financial outcomes such as occupancy, average daily rate, and revenue per available room that was tested and reported in model six (Figure 12). Therefore, the fifth hypothesis (H_5) that suggests that customer attitudinal loyalty factor (CALF) is positively correlated with the financial factor (FF) is rejected because of the low 0.068 coefficient of determination of a standardized parameter estimate of 0.22 statistic.

Knutson et al. (2009) suggest that actual customer behavior might be influenced by factors that are external to the customer experience such as price, freedom of choice, and location loyalty programs. For example, the customer might have a strong preference for a particular hotel but choose an alternative hotel because of a corporate contract that precludes them from selecting the hotel of

preference or the burden of traveling to a location that exceeds the benefit of the external service value derived from the hotel. This scenario might explain the low correlation between the customer attitudinal loyalty and financial factors in that other variables are reported as influencing actual behavior. These variables are external to the service-profit chain construct and might transcend cognitive preference of the customer in terms of attitudinal loyalty. This might explain why higher levels of customer attitudinal loyalty do not convert into occupancy, average daily rate, or revenue per available room premiums.

In addition to external variables that influence actual behavior, the key financial variable of revenue per available room might not be realized in the same time and space of customer attitudinal loyalty results. For example, a customer with complete freedom of choice might not have a purpose to rebook at a hotel that demonstrated high levels of external service value that positively influenced attitudinal loyalty. In similar respect, hotel bookings influenced from word-of-mouth referral might not actualize until the person positively influenced by the referral has a purpose in traveling to the location of the hotel. Additionally, the key financial outcome variable of revenue per available room might be influenced by the hotel segment and demonstrate contrast results for luxury in comparison to economy hotels. For example, Kim and Canina (2011) provide evidence to suggest that luxury hotels yield higher revenue per available room premium than that of the contrasting economy budget segment. Given this assumption, the mid-scale full service segment represented by the data set might not exhibit elasticity in terms of revenue

per available room, thus reducing the sensitivity of this metric in the structural equation model and reported results.

The sixth hypothesis (H_6) that staff service delivery variables (SSDV) and customer attitudinal loyalty variables (CALV) predict financial variables (FV) is both dependent upon the acceptance of the hypothesis four (H_4) and five (H_5) to include the overall predictability of the model as reported by the critical fit statistics of the structural equation model test. Therefore, the sixth hypothesis (H_6) is rejected because the fifth (H_5) hypothesis is rejected and the model six (Figure 13) did not demonstrate a desirable fit and predictability RMSEA of 0.160 and normed chi-square of 6.00, and p-value of 0.05 statistic (Table 27). The overall model fit did not exhibit an acceptable degree predictability and the coefficient of determination did not demonstrate a correlation for the financial variables.

Although hypothesis six (H_6) as represented by the results and model six is rejected, the standardized parameter estimates for model six did illustrate a material effect size of the relationships with the scales removed for comparison of the parameters across the model. The discrepancy between unstandardized and standardized parameter estimates (Table 29) might be partially explained because the model is comprised of dissimilar metrics. For example, the staff service delivery variables (SSDV) were all measured with a 10-point scale, the customer attitudinal loyalty variables (CALV) were comprised of a mix of 5- and 10-point scales, whereas the financial variables (FV) were comprised of values that included currency and percentages. The low 0.5213 Cronbach's alpha for financial variables (Table 16)

might be an artifact of the dissimilar metric scales that dilutes the predictability of the model.

Conclusions and Implications

The findings from the study validated certain components of service-profit chain construct to include the translations of the external service value concept within the concept of the hotel experience. The statistical tests and results of this study corroborate the previous research that indicates that staff service delivery is an importance factor that influences the customer experience and perception of such experiences. Although hotel owners and operators might conceptually understand that staff service delivery is important to the customer, this study quantified that the service delivery factors explains over 64% of the variation for the customer attitudinal loyalty factor (CALF) as illustrated in Table 30. Understanding that the staff service delivery factor (SSDF) and associated variables explains the majority of variation in customer attitudinal loyalty, owners and operators are able to prioritize investments to improve customer attitudinal loyalty. Key investments that help enable staff service delivery include employee training and leadership support (Heskett et al., 2008).

Previous research also indicated that non-staff service delivery attributes such as product and facilities are important, however this study helps owners and operators better understand exceptional product or facilitates might not fully compensate for staff service delivery which do not meet the customer expectations. Therefore, hotel owners and operators should consider an evaluation of staff service

delivery as an initial step in improving the customer experience or before making capital investments in amenities and facilities. Without skilled and trained staff who are responsive in taking care of the customers, such investments might not yield increased customer attitudinal loyalty.

The study indicated that customer survey instrument contained eight variables related to staff service delivery to include staff service overall (SSDV_1), staff warm and hospitable (SSDV_2), staff responsive (SSDV_3), staff going the extra mile (SSDV_4), staff skilled and trained (SSDV_5), staff take care of issues (SSDV_6), staff genuinely caring (SSDV_7), and staff problem resolution (SSDV_8). Results from the structural equation analysis indicated a high degree of multicollinearity among these variables. The final SEM model six only required three of the eight staff service delivery variables in predicting the customer attitudinal loyalty factor that included staff service overall (SSDV_1), staff skilled and well trained (SSDV_5), and staff take care of business (SSDV_6). These findings suggest that the customer satisfaction survey questions can be significantly reduced without compromising the reliability and precision in measuring the outcome of customer attitudinal loyalty. Reducing the number of survey questions can both decrease customer cycle-time to complete the survey and reduce cost in fielding the survey instrument.

The findings from this study demonstrate that customer satisfaction is not an antecedent or precursor of customer loyalty as suggested by the service-profit chain. The principal component analysis of the customer attitudinal loyalty variables (Table 13) provides evidence that customer satisfaction is a component of customer

attitudinal loyalty. These findings suggest refinements to the service-profit chain construct in removing customer satisfaction as mediating variable and inclusion with the customer attitudinal loyalty construct.

The study did not validate the relationship between customer attitudinal loyalty and financial outcomes as proposed by Heskett et al. (2008). While previous research involving regression analysis methods have demonstrated a correlation between customer attitudinal loyalty and financial outcomes, the advanced methods employed by this study included structural equation modeling that measures all the interrelated variation within the service-profit chain construct.

Although the structural equation model is not capable of proving causality, the statistical method provides confirmatory results for the relationships and estimates of precision in predicting such outcomes. Therefore, this study provides a higher level of discrimination in testing the reliability and predictability of the service-profit chain construct. The high level of scientific rigor exhibited by this study provides a benchmark in the testing of theoretical concepts such as the service-profit chain. Although the entirety of the service-profit chain construct was not validated by this study, the research process identified opportunities to further explore the factors that influence financial growth and profit.

Limitations

In terms of generalization of the findings, the first set of study limitations involve the sample that was collected from full service hotels distributed across the North America. Although the findings might be generalizable for a full service hotel

in North America, it is not reasonable to conclude that they can be extrapolated to different segments or international markets. Economy and luxury segment customers might have different expectations than that of a full service hotel as represented by the study. Therefore, significant findings such as the key variables correlated to the staff service delivery factor might not be applicable to the economy, luxury and between tier segments. Similarly, the findings may not reflect the requirements for international markets that might have different expectations in the terms of external service value. Additionally, the sample did not delineate between business and leisure customers that have different levels of choice in selecting hotel irrespective of their degree of attitudinal loyalty.

The second set of limitations relates to accuracy and reliability of the structural equation model in predicting variables and factors of the service-profit chain construct. Although the data collected from the survey sample contained a weighting of 652,787 observations (Table 4), the financial data only contained yearly totals that resulted in 628 unique observations. A larger sample size for the financial variables might improve the fit and estimates of the model. Additionally, the data set is comprised of a two-year period of time that might be influenced by macro-economic cycles (Slattery, 2002), thus causing changes in revenue per available rooms variable (FV_5) that are not associated with customer attitudinal loyalty variables (CALV).

Recommendations for Future Research

This study identified key staff service delivery variables (SSDV) that predict customer attitudinal loyalty and potential construct gaps in the service-profit chain construct within the context of the hotel experience. Additionally, this study provides other researchers with a framework and case study for systematically testing and confirming complex relationships. The results and findings from this study can be further disseminated through peer-review publications and conferences.

Given this study examined full service hotels in North America, a continuation of this research will consider a broader sample of hotels to test the sensitivity of the customer attitudinal loyalty measures across different brands and segments. The inclusion of different brands will potentially make the model and results more generalizable across the hotel industry. Additionally, a set of dissimilar segments such as economy and luxury hotels will test the different levels of elasticity for the revenue per available room metric as cited by Kim and Canina (2011). If possible, customers should also be segmented to test the model with a sample that has a high degree of choice and better conceptual match to the service-profit chain construct. A continuation of this study will also consider including a longer horizon of time to measure the potential lagging impact of the financial outcome to include revenue per available room. This is important because the attitudinal loyalty created by external service value might actualize in a later point in time. A future study should also consider the normalization of dissimilar metrics to lower type II error in rejecting the hypothesis that might result from measurement error and scales.

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