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# Revenue Management Concept Training: Its Efficacy as an Intervention Methodology for Hotel Front Desk Employees and Hotel Managers

Warren Thomas Jahn Jr.  
*University of Tennessee - Knoxville*

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To the Graduate Council:

I am submitting herewith a dissertation written by Warren Thomas Jahn Jr. entitled "Revenue Management Concept Training: Its Efficacy as an Intervention Methodology for Hotel Front Desk Employees and Hotel Managers." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Resource Management.

Stephen C. Morse, Major Professor

We have read this dissertation and recommend its acceptance:

Rachel J.C. Chen, John M. Antun, John G. Orme

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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John G. Orme

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Accepted for the Council:

Carolyn R. Hodges, Vice Provost and  
Dean of the Graduate School

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(Original signatures are on file with official student records.)

REVENUE MANAGEMENT CONCEPT TRAINING: ITS EFFICACY AS  
AN INTERVENTION METHODOLOGY FOR HOTEL FRONT DESK  
EMPLOYEES AND HOTEL MANAGERS

A Dissertation  
Presented for the  
Doctor of Philosophy  
Degree  
The University of Tennessee, Knoxville

Warren Thomas Jahn, Jr.  
May 2008

## **DEDICATION**

This dissertation is dedicated to my parents, John and Ellen Ruja, my grandmother, Betty Mawhinney, my son, Bobby, my mentor, role model, and friend, Steve Morse, and my friends for always supporting and encouraging me.

In loving memory of Angela Michael.  
August 14, 1981 – August 7, 2001

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## **ABSTRACT**

The purpose of this study was determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals. The objectives of this study were (a) to evaluate the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program, and (b) to examine the training program's effectiveness in teaching basic RM concepts. A basic revenue management training program and examination was utilized in a pre- and post-test quasi-experimental design model with a treatment and control group to examine if learning had taken place. The study consisted of 49 participants from eight hotels. Hypotheses one, two, and four were supported by the results. Based on the findings, the basic RM concept training program did successfully teach front desk employees and hotel managers RM fundamentals. The researcher suggests that future RM training programs for both the front desk employees and hotel managers to continue to focus on basic RM concepts. The researcher further suggests the RM training programs include more advanced RM concepts for the hotel managers.

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## CHAPTER I – INTRODUCTION

According to the American Hotel and Lodging Association (2006) the United States in 2005, there were 47,590 hotel properties with 4.4 million guestrooms and \$122.7 billion in annual hotel revenues. Smith Travel Research (2007) states the US hotel industry occupancy in 2006 was 63.4% which is a 0.5% increase from 2005. Hotel industry professionals have suggested implementing Revenue Management (RM) techniques in hotels to assist in maximizing revenues (Kimes, 2003; Orkin, 1988). Kimes (1989) defines revenue or yield management as “the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield” (p. 15).

RM began in 1978 with the deregulation of the US airline industry, which allowed airline companies to set pricing structures, transportation routes, and flight schedules (Talluri & Van Ryzin, 2004). Since the induction of RM techniques in the airline industry, many other industries have introduced RM techniques to maximize revenues (Kimes, 2001). One of those service industries was the hotel industry, which in the late 1980s began to use RM systems to assist in maximizing revenues (Kimes, 2003).

Similar to the airline customers, hotel guests are classified typically into two general segments: business and leisure travelers (Relihan, 1989). Kimes (2003) explains that a hotel firm must have a mix of different types of hotel rooms and other products and services to accommodate the demand of the different market segments. Leisure travelers tend to be sensitive to price fluctuations leading to elastic demand, while business travelers are typically not sensitive to price fluctuations which leads to inelastic demand (Relihan, 1989). This concept of price sensitivity is called price elasticity of demand in

Economics. Hyman (1988) defines price elasticity of demand as “a measure of the percentage change in quantity demanded that would result from each 1% change in price along a given demand curve” (p. 148).

Orkin (1988) states that hotel RM is a complex technique that attempts to maximize potential revenues within a hotel firm by forecasting demand, implementing systems and procedures, formulating strategies and tactical planning, and utilizing feedback systems to evaluate positives and negatives within the RM system. Keeping this in mind, Kimes (1989) states “a yield management system will require extensive training of all employees” (p.19). Belobaba (2001) also suggests that an effective RM employee must have proper RM concept training in order to improve revenues.

Training is defined as “any activity which deliberately attempts to improve a person’s skill in a job” (Hamblin, 1974, p. 6). Clement and Aranda (1982) explain that to improve productivity and performance of employees is through training. Evaluating these programs makes them accountable for outcomes (Clement & Aranda, 1982). There exists no uniform training evaluation, however; most training professionals will agree that training evaluation is an important part of maintaining an effective training program (Brandenburg, 1982).

In 1959 and 1960, the classic four-level model of training evaluation was introduced called ‘Kirkpatrick approach to training evaluation (Abernathy, 1999; Bernthal, 1995; Boverie, Mulcahy, & Zondlo, 1995; Lawson, 2006; Mathieu & Martineau, 1997; Newstrom, 1978; Salas & Bowers, 2001). Newstrom (1978) explains that the model has four distinct levels: (1) reaction, (2) learning, (3) behavior, and (4) results. Kirkpatrick (1959a) defines reaction as “how well the participants liked a

particular training program” (p. 4). Learning is defined as “What principles, facts, and techniques were understood and absorbed by the conferees” (Kirkpatrick, 1959b, p. 21). Behavior is defined as the participants’ exhibited behavior which was altered by the administered training program (Kirkpatrick, 1979). Results are defined as the effect the training program had on cost reduction, employee turnover, increased morale, and increased production (Kirkpatrick, 1960b).

Some researchers have criticized the Kirkpatrick’s four level model (Abernathy, 1999; Alliger *et al.*, 1997; Bates, 2004; Bernthal, 1995; Hamblin, 1974; Holton, 1996; Patterson & Hogley, 2003). Holton (1996) suggests that Kirkpatrick’s four level model is acknowledged as the standard training evaluation model by many practitioners.

### ***Purpose***

The purpose of this study is determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals. For the scope of this study, the researcher utilized the first two levels of the Kirkpatrick model: (1) reaction and (2) learning. Data was collected to assess the training participant’s reaction to the RM training program, and learning will be assessed through a pre- and post-test quasi-experimental design model with a control group. Binary Logic Regression and Multiple Linear Regression were used to test statistically significant differences between pre- and post-test scores.

### *Objectives*

The objectives of this study are (a) to evaluate the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program, and (b) to examine the training program's effectiveness in teaching basic RM concepts. These data was collected from eight hotels. A reaction instrument was implemented to evaluate satisfaction of those participates that attended the training program within the training program. A basic revenue management training program and examination was utilized in a pre- and post-test quasi-experimental design model with a treatment and control group to examine if learning had taken place. Kirkpatrick (1979), and Zenger and Hargis (1982) suggest using a pre- and post-test quasi-experimental design in order to evaluate learning. The results of this research will assist RM professionals in assessing whether or not hotel front desk employees and managers can understand RM fundamentals.



## **CHAPTER II – LITERATURE REVIEW**

The purpose of this study is determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals. This chapter is organized in such a manner so as to provide the relevant literature for the following areas: (1) the definition of RM, (2) how RM has evolved, (3) RM in the hotel industry, (4) the economic theory of RM, (5) the importance of RM training, (6) definition of training, (7) training evaluation, (8) Kirkpatrick four-level training model, (9) criticism of Kirkpatrick's model, and (10) objectives and hypotheses of the research.

This chapter will explore the foundation of RM at it has evolved from the airline industry and expanded its uses into other service industries. Further, the researcher will highlight a need for basic RM training within the ever evolving hotel industry. The researcher will explore Kirkpatrick's training evaluation model, this exploration will assist in analyzing satisfaction of training participants and the measurement of learning through a pre- and post-test quasi-experimental design.

### ***History of Revenue Management***

Prior to 1978, the commercial airline industry was regulated by the Civil Aviation Board (CAB), a US government agency. CAB regulated what airlines could charge passengers traveling each route, which gates and routes an airline company could operate, and what schedule flight times an airline could utilize.

In 1978, the deregulation of the US airline industry allowed airline companies to set pricing structures, transportation routes, and flight schedules (Talluri & Van Ryzin,

2004). For airline companies to be able to compete with each other through pricing, a management system needed to be implemented to maximize the best return on each airline seat (Talluri & Van Ryzin, 2004). Yield is expressed as revenues realized divided by revenues potential (Orkin, 1988). The revenues realized are the actual revenues made from all of the inventory (Orkin, 1988). The revenues potential is the maximum amount of revenues all the inventory can actually achieve (Orkin, 1988). Equation 2.1 illustrates a typical yield calculation (Orkin, 1988).

Equation 2.1: Typical Yield Calculation (Orkin, 1988)

$$\text{Yield} = \frac{\text{Revenues Realized}}{\text{Revenues Potential}}$$

Orkin (1988) states maximizing yield is the responsibility of the management team. Because the calculation of yield relates directly with revenues, the term yield management is synonymous with revenue management. American Airlines was the first airline firm to implement a revenue management system, which was an advanced revenue optimization technique to maximize revenues (Gosavi, Bandla, & Das, 2002). The computerized reservation system, that American Airlines created to implement their revenue management system, was called semi-automated business research environment (SABRE). SABRE controlled airline seat inventory through automated revenue management models (Smith, Leimkuhler and Darrow, 1992). Airline companies began to develop better computerized reservation systems and global distribution systems (GDS)

to assist in increasing market share and profits (Talluri & Van Ryzin, 2004). In January 1985, American Airlines implemented Dynamic Inventory Allocation and Maintenance Optimizer (DINAMO) which assisted the firm in competing with other low fare carriers (Talluri & Van Ryzin, 2004). DINAMO solved many of the problems with capacity control, controlled the availability of discounted fares, and assisted in maintaining American profitability (Talluri & Van Ryzin, 2004). Since the introduction of revenue management many other industries have utilized this management system to assist their organizations in maximizing revenues (Kimes, 2001).

### ***Definition of Revenue Management***

There are many definitions of revenue management (RM) or yield management. Kimes (1989) defines revenue or yield management as “the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield” (p. 15). Smith, Leimkuhler, & Darrow (1992) define RM as assigning the right product, to the right customer, at the right location, at the right time utilizing computer systems and pricing strategies. Choi and Mattila (2003) define RM as “the business practice of selling a relatively fixed amount of perishable inventory to the most profitable mix of customers to maximize profits” (p. 303). Stutts and Wortman (2006) define RM as “a set of maximization strategies and techniques that may improve the profitability of the lodging business because it operates in a fixed-capacity environment, faces time-varied demand, the product has similarity, and the cost structure reflects a high proportion of fixed-to variable-cost items” (p. 236). While these definitions vary, the basic concept behind all of these definitions is the same; RM is a process or technique for

maximizing potential revenues. For the purposes of this research, the Kimes (1989) definition of revenue management “the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield” (p. 15) will be used.

### ***Hotel Revenue Management***

RM techniques have been applied to the hotel industry to assist firms in maximizing revenues or yield (Orkin, 1988). In the late 1980s many hotel firms began to use RM systems to assist in maximizing revenues (Kimes, 2003). Yield is defined as the revenues realized (those revenues that are actually retained by the hotel for its services and products) divided by potential revenues (the rack rate multiplied by the number of hotel rooms) (Orkin, 1988). This equation can be analyzed to examine what percentage of potential revenues is being obtained by the hotel firm.

The hotel industry uses other measurements to assess the success of a hotel unit. Average daily rate (ADR) is the average rate charged to occupied hotel rooms over one day in a given hotel unit (Stutts & Wortman, 2006). Equation 2.2 illustrates the calculation of ADR.

Equation 2.2: Calculation of ADR

$$\text{ADR} = \frac{\text{Sum of all hotel rates for a given day}}{\text{Number of occupied hotel rooms}}$$

Another measure used in the hotel industry is occupancy (OCC) percentage. OCC percentage is calculated by dividing the number of occupied hotel rooms by the total number of hotel rooms in the hotel unit (Stutts & Wortman, 2006). Equation 2.3 illustrates the calculation of OCC percentage.

Equation 2.3: Calculation of OCC percentage

$$\text{OCC \%} = \frac{\text{Number of occupied hotel rooms}}{\text{Total number of hotel rooms}}$$

A more robust measure for a hotel is revenue per available room (RevPAR). ADR analyzes the average daily rate for all rooms sold, but fails to identify the lost revenues in those rooms not sold. OCC percentage analyzes the percent of all rooms sold, but fails to identify the revenues generated from that percentage. However, RevPAR utilizes both ADR and OCC percentage in its calculation (Stutts & Wortman, 2006). By multiplying ADR by OCC percentage, the hotel can truly understand actual revenues per occupied hotel room. Equation 2.4 illustrates the calculation of RevPAR (Stutts & Wortman, 2006).

Equation 2.4: Calculation of RevPAR (Stutts & Wortman, 2006)

$$\text{RevPAR} = \text{ADR} * \text{OCC \%}$$

To understand how RM techniques can be utilized in a hotel, the following authors assess how the airline industry successfully utilized the RM practices. Smith, Leimkuhler and Darrow (1992) state there are three major functions of an airline revenue management system: (1) overbooking that counterbalances revenues lost to cancellations and no-show customers; (2) discount allocation that allows a certain number of discounted rates to provoke demand during slow demand periods and limiting discounted rates during high demand times; and (3) traffic management that controls inventory based not just on single-leg flights but on whether a multiple connection flight exists. Therefore, to maximize revenues one must take into consideration demand over multiple flight connections from origin to final destination for each passenger.

The three functions outlined by these authors utilize (1) capacity controls, (2) reduction of discounted inventory, and (3) calculate multiple-leg destinations. The airline revenue management systems implement these functions to maximize revenues for every airline seat. However to effectively increase yield within a hotel, Orkin (1988) states there are four critical areas to focus: (1) forecasting, (2) systems and procedures, (3) strategic and tactical plans, and (4) feedback systems.

Forecasting must look beyond just seasonal demand but also focus on daily forecasts (Orkin, 1988). Business, group, and leisure travelers have different demand for levels and advance time of booking. Therefore, hotels must make daily observations looking at upcoming days (Orkin, 1988). Computer forecasting methods have made forecasting demand easier, but may fail to see interaction between neighboring days causing full potential revenue maximization not be met (Orkin, 1988).

Systems and procedures, as well as, trained personnel must be in place within the hotel so the forecasted demand can be properly utilized to maximize revenues (Orkin, 1988). Without trained personal, the systems and procedures will not be properly utilized (Orkin, 1988).

Strategies and tactical planning is important to maximizing potential revenues (Orkin, 1988). Formulating a strategy and plan to pursue each market is a critical step in effective revenue management (Orkin, 1988). The front desk, reservation, and sales departments must all understand and implement the strategy. There must be a tactical plan within their department and across other departments (Orkin, 1988).

Feedback systems attempt to analyze the accuracy and effectiveness of forecasting, the effect of strategies and tactical planning. The performance of individuals and departments on the maximization of potential revenues or yield (Orkin, 1988). Feedback systems give the hotel the opportunity to continue to use forecasting procedures, and strategies and tactical planning that improve revenues or yield. They also allow the firm to modify or eliminate those systems that fail so as to improve revenues or yield.

Most traditional pricing practices are to charge one dollar for every thousand spent in construction, return on investment (ROI) and/or breakeven point, or based on competition pricing (Relihan, 1989). Computers have played an important role in assisting hoteliers to set hotel room prices (Relihan, 1989).

### ***Revenue Management Research***

Kimes (2003) states there are three main streams of RM research: (1) descriptive, (2) pricing control, and (3) inventory control. Descriptive RM research examines the conditions necessary for RM to be effective. Kimes (1989) states that seven conditions must exist for RM to be effective are: (1) *relatively fixed capacity* which is the number of hotel rooms is set after construction is completed; (2) *ability to segment markets* which is the ability to be able to divide customers into different groups so marketing and pricing structures vary for each customer type; (3) *perishable inventory* which is a hotel room which is not sold on a specific date than to can never be sold for that date once the date has passed; (4) *product sold in advance* which are hotel rooms sold for a specific date may be purchased years in advance or the day of consumption; (5) *fluctuations in demand* which are demand fluctuations varied based on seasons, day of week, prices, etc.; (6) *low marginal sales costs* which are a set number of rooms are sold and an additional room sold will not greatly affect costs; and (7) *high marginal production costs* which are the number of hotel rooms is set after construction is completed, therefore, building another room is very costly.

### ***Revenue Management Pricing Research***

Pricing control stream of research focuses on perceived fairness of RM practices by the customer and pricing strategies used in different industries (Kimes, 2003). Kimes (1994) discovered that customers were more understanding of demand-based pricing in the airline industry than the hotel industry due to the short duration of demand-based pricing in hotels. Demand-based pricing is defined as a pricing strategy that bases a price



for a product on the fluctuations of demand for that product. However, Kimes (2002) revealed that customers' perception of fairness of demand based pricing for both airline and hotel industries were the same. Customers have been better educated over time about the demand-based pricing and its role in both the airline and hotel industries (Kimes, 2002).

Kimes and Wirtz's (2002) study looked at perceived fairness of demand-based pricing in the restaurant industry and identified that customer's perceived demand-based pricing as fair except when price strategies changed based on table location within the restaurant. A similar study was conducted with golf courses and discovered that customers' perceived demand-based pricing as fair except when fluctuations in price changed on a constant basis (Kimes & Wirtz, 2003).

### ***Revenue Management Inventory Control Research***

Inventory or duration control research focuses on forecasting, supply mix of products, and customer duration (Kimes, 2003). Weatherford and Kimes (2002) examined three types of forecasting methods: (1) *historical models* consider arrivals only on a certain day (same day-last year model, moving average model, exponential smoothing model); (2) *advanced booking models* are a time series of analyses of reservations for a particular day; and (3) *combined models* utilizes regression, weighted mean of historical and advanced booking forecasts.

Kimes (2003) explains that a hotel firm must have a mix of different types of hotel rooms and other products and services to accommodate the demand of the different market segments. Kimes, Barrash, and Alexander (1999) explored techniques to reduce

customer duration in restaurants and increase restaurant revenues. However, the reduction in customer duration can lead to a decrease in the customer's satisfaction (Kimes, Wirtz & Noone, 2002).

***Revenue Management in Other Industries***

Since the induction of RM techniques in the airline industry, many other industries have introduced RM techniques to assist in maximizing revenues (Kimes, 2000). As Kimes (1989) stated there are seven conditions for revenue management to be effective. Figure 2.1 illustrates the typology of revenue management comparing capacity constrained industries that can utilize RM techniques based on duration, predictable or unpredictable, and price, fixed or variable.

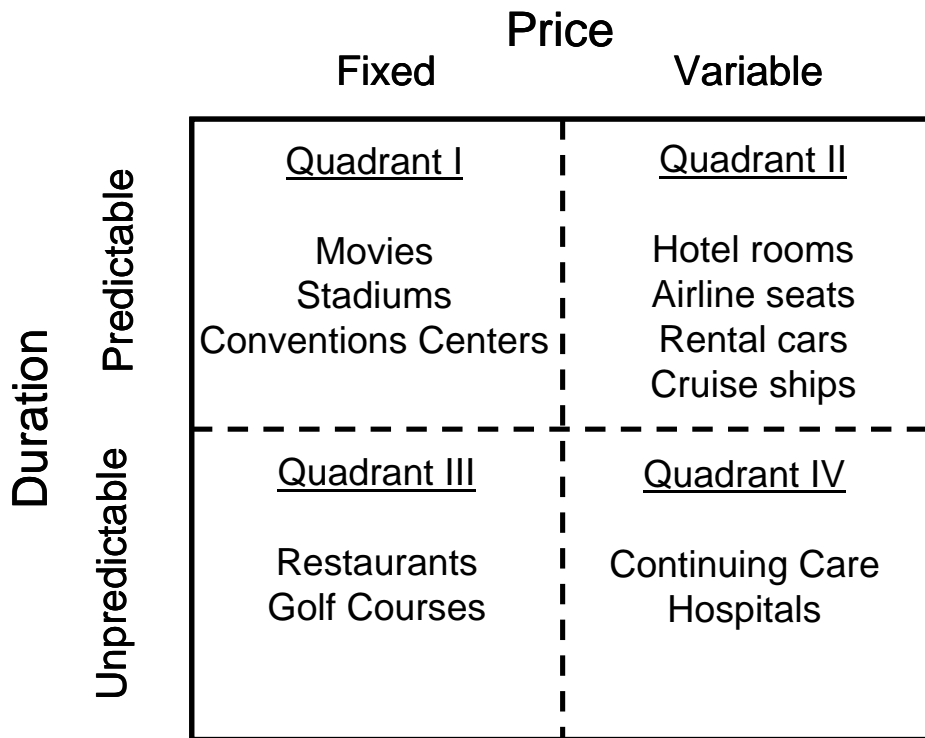


Figure 2.1: Typology of Revenue Management (Kimes, 2000)

Quadrant I. Capacity constrained industries located in Quadrant I have predictable duration and fixed prices. Barlow (2000) analyzed the use of revenue management techniques in football (soccer) ticket sales and arena capacity management. Barlow's (2000) research concluded two possible opportunities for revenue management techniques: (1) increase seat prices for high demand games such as rivalries or playoffs and lower seat prices for low demand games, and (2) use of advertising additional capacity not sold in advance in stand room areas for high demand times to increase revenues for that event.

Quadrant II. Capacity constrained industries located in Quadrant II have predictable duration and variable prices. For the scope of this research, the main focus will be on the hotel industry which is found inside this quadrant. Airline and hotel industries fit within this quadrant as well as other industries such as rental cars and cruise ships which also utilize RM techniques (Kimes, 2000).

Talluri and Van Ryzin (2004) state the rental car industry has similarities to the airline and hotel industry. Talluri and Van Ryzin (2004) state the nature of the capacity of rental cars inventory is flexible based on the following: (1) the inventory for one location can be intrapooled with locations in the same geographic location (downtown and airport in the same city), (2) the inventory for one location can be interpooled with locations in different geographic locations (city-to-city), (3) migratory inventory where products are picked up in one location and dropped off at a different location, and (4) rental car companies can handle overbooking (high demand) for a product by offering a free upgrade to another product. Similar to the airline and hotel industries, retail car

companies segment their customers based on product, and time and duration of product consumption (Kimes, 2000). Business travelers usually book higher end products, purchase gas and insurance, and return during the business week; while leisure travelers usually book small cars and vans, and rent longer the products for longer durations (Talluri & Van Ryzin, 2004).

Talluri and Van Ryzin (2004) state the cruise line industry is similar to hotel industry but have some characteristics that are different. These characteristics are: (1) the length of stays for all passengers is the same, (2) overbooking for the whole ship is rare because walking (moving a customer to another cruise ship) a customer to another cruise is difficult, (3) most cruises are coordinated with airline sales, hence; cruise lines must block and manage airline seats associated with cruise line bookings, and (4) some packages may be all-inclusive but cruise ships offer a variety of other products on board the ships to increase revenues such as shopping, casinos, and other revenue opportunities (Talluri & Van Ryzin, 2004).

Quadrant III. Capacity constrained industries located in Quadrant III have unpredictable duration and fixed prices. Unpredictable duration is when duration can vary based on different variables. Examples of these types of industries are restaurants and golf courses.

Kimes (1999) discussed implementing a revenue management in the restaurant industry. Kimes (1999) highlights five steps to establish a successful restaurant revenue management system: (1) *establish the baseline* – implement a system to collect all data necessary to revenue management system such as arrival and departure times, meal times,

revenue per available seat hour (RevPASH) patterns, and customer preferences, (2) *understand the drivers* – managers need to analyze all the factors affecting meal duration and RevPASH, (3) *make recommendations* – after discovering the factors affecting meal duration and RevPASH, managers setup a plan to fix these factors, (4) *implement the changes* – managers implement the plan, and (5) *monitor outcomes* – monitoring meal duration and RevPASH to analyze success of implement plan. Equation 2.6 illustrates the calculation of RevPASH for specified time period (Kimes, 1989). Note: a specified time period can be but not restricted to a 1 hour period of time, 2 hour period of time, 3 hour period of time, etc...

Equation 2.5: Calculation of RevPASH (Kimes, 1989)

$$\text{RevPASH} = \frac{\text{(Revenues for a specified time period / total number of restaurant seats)}}{\text{(Specified time period associated with Revenues)}}$$

Kimes (2000) discusses golf course revenue management and identifies that golf courses have two strategic levers that revenue management can be utilized: (1) time duration control and (2) pricing. She suggests for golf courses to measure revenue per available tee time (RevPATT) because this measure calculates both time and revenues (Kimes, 2000). Equation 2.6 illustrates the calculation of RevPATT for specified time period (Kimes, 2000).

Equation 2.6: Calculation of RevPATT (Kimes, 2000)

$$\text{RevPATT} = \frac{\text{(Revenues for a specified time period)}}{\text{(Number of tee times in a specified time period)}}$$

Quadrant IV. Capacity constrained industries located in Quadrant IV have unpredictable duration and variable prices. Hospitals are similar to hotels and airlines in that they all charge variable prices for the same products. In health-care industry, Kimes (2000) states variable prices are based on the payment type such as Medicare versus private pay, but the length of stay in the facilities vary from patient to patient.

***Economic Foundations of Revenue Management***

Understanding the concept of price elasticity of demand serves as a foundation in forecasting demand and in setting a pricing structure for upcoming dates, months before the arrival date. Hyman (1988) defines price elasticity of demand as “a measure of the percentage change in quantity demanded that would result from each 1% change in price along a given demand curve” (p. 148). Equation 2.7 illustrates the price elasticity of demand along a demand curve (Hyman, 1988).

Hotel guests and airline passengers are classified typically into two general segments: business and leisure travelers (Relihan, 1989). For the most part leisure travelers book their hotel room much earlier from the date of consumption than business travelers (Relihan, 1989). Leisure travelers tend to be very sensitive to price fluctuations

Equation 2.7: Price Elasticity of Demand along a demand curve (Hyman, 1988)

$$\text{Price Elasticity of Demand} = \frac{\text{Percentage change in Quantity demanded}}{\text{Percentage change in Price}}$$

leading to elastic demand, while business travelers are typically not very sensitive to price fluctuations leading to inelastic demand (Relihan, 1989). Inelastic demand can be defined as the percentage change in quantity demanded is less than the percentage change in price (Leftwich & Eckert, 1982). Elastic demand can be defined as the percentage change in quantity demanded is greater than the percentage change in price (Leftwich & Eckert, 1982). Figure 2.2 illustrates an inelastic demand curve where a small increase in price, P1 to P2, has a small decrease effect on quantity, Q1 to Q2 (Edgar, 2000). Business travelers are typically classified as inelastic demand because as price is increased there is little effect of quantity demanded.

Figure 2.3 illustrates an elastic demand curve where a small increase in price, P3 to P4, has a large decrease effect on quantity, Q3 to Q4 (Edgar, 2000). Leisure travelers are typically classified as elastic demand because as price is increased there is a large effect of quantity demanded.

In both Figures 2.2 and 2.3, the demand curve has different levels of steepness or shallowness based on whether the demand is inelastic or elastic. When demand is inelastic, the demand curve is steep so therefore; an increase in price will have a small change in quantity demanded and thus consumers are less sensitive to price changes (Relihan, 1989). When demand is elastic, the demand curve is shallow so therefore;

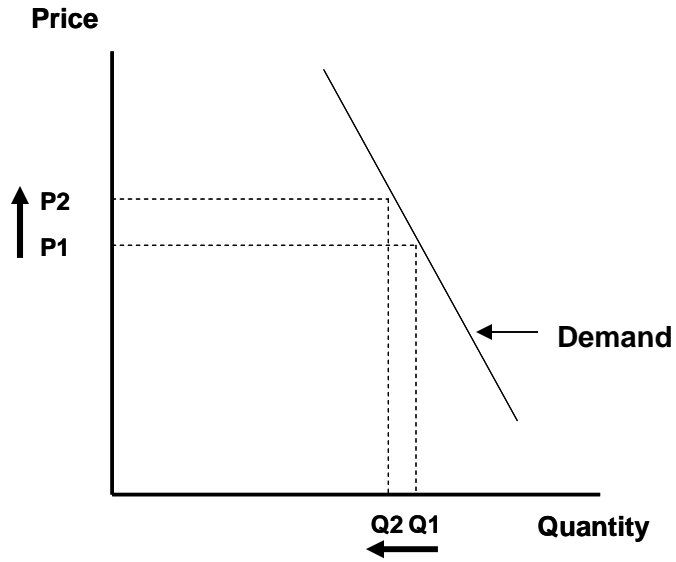


Figure 2.2: Inelastic Demand Curve (Edgar, 2000)

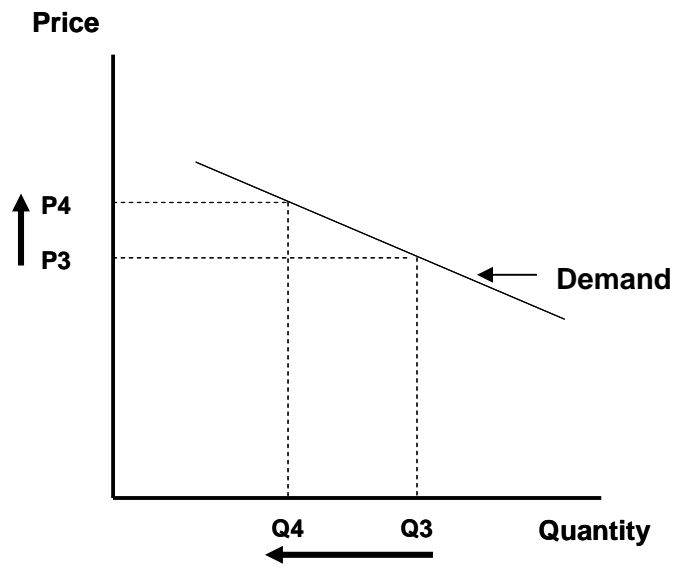


Figure 2.3: Elastic Demand Curve (Edgar, 2000)



an increase in price will have a large change in quantity demanded and thus consumers are more sensitive to price changes (Relihan, 1989).

Hyman (1988) states there are three determinants of price elasticity of demand: (a) the availability of substitutes, (b) the time period for adjustment to price changes, and (c) the proportion of consumer budgets allocated to the product. Based on these three determinants, the product being sold can be classified as either inelastic or elastic (Hyman, 1988).

The amount or availability of similar substitutes of a product determines the effect of a price increase on the demand for that product (Leftwich & Eckert, 1982). The greater amount of similar substitutes for a product, whose product has a price increase, the more elastic the demand (Leftwich & Eckert, 1982). Likewise, the lesser amount of similar substitutes for a product, whose product has a price increase, the more inelastic the demand (Leftwich & Eckert, 1982). If this determinant is applied to the hotel industry, the more available similar hotel rooms, which exist in a similar market, may have a large decrease effect on demand; when price for those rooms are increased. On the other hand, the less available similar hotel rooms, which exist in a similar market, may have a small decreasing effect on demand; when the price for those rooms are increased.

The time period for adjustment to price changes determines the effect on demand over both short and long-term periods of time (McConnell, 1981). Products purchased in the short-term tend to be inelastic and products purchased in the long-term tend to be elastic. McConnell (1981) states demand for a product becomes more elastic, when a person has more time to find substitutes for that product. If this determinant is applied to

the hotel industry, leisure travelers would be considered elastic, because they book their hotel rooms in the long-term or further in advance of business travelers. This gives leisure travelers the higher possibility of more available substitutes in hotel room products. On the other hand, business travelers would be considered inelastic, because they book their hotel rooms in the short-term or closer to the date of consumption.

The proportion of consumer budgets allocated to the product determines the amount of quantity demanded for that product (Hyman, 1988). If a large price increase on a product has a small effect on the proportion of the consumer's budget, there may be little or no effect on the demand for that product and may be considered a necessity (Hyman, 1988). If a large price increase on a product has a large effect on the proportion of the consumer's budget, there may be large effect on the demand for that product and may be considered a luxury (Hyman, 1988). If this determinant is applied to the hotel industry, leisure travelers would show a large decrease in demand for a hotel room as price increased, because the price increase would be a large proportion of their budget. On the other hand, business travelers would show a small or no decrease in demand for a hotel room as price increased, because the price increase would be a small proportion of their budget.

### ***Price Discrimination***

Leftwich and Eckert (1982) define price discrimination as 'when a given product is sold at more than one price and these price differences are not justified by cost differences' (p. 546). Mansfield (1982) state three conditions must exist for price discrimination: (1) seller must control the price of product or service, (2) seller must

separate customers into different classes, and (3) purchaser cannot resell the original product or service. Based on the Kimes (1989) definition of revenue management “the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield” (p. 15), the conditions of price discrimination are utilized in RM.

### ***Effects of Price Elasticity of Demand on Total Revenue***

Understanding the concept of price elasticity of demand assists in forecasting demand and setting a pricing structure (McConnell, 1981). The seller of a product wants to understand what a consumer will pay to purchase a product, so they can maximize revenues for that product (Hyman, 1988). Therefore, consumer expenditures for a product are equal to total revenues in the point of view of the seller (Hyman, 1988). Total revenues are equal to the price (P) for each unit multiplied by the quantity (Q) sold to consumers (Hyman, 1988). Equation 2.8 illustrates how consumer expenditures on a product translate into total revenues (TR) for the seller.

Equation 2.8: Calculating Total Revenues (TR)

$$\text{Total Consumer Expenditures} = \text{Total Revenues (TR)} = (P)(Q)$$

Price elasticity of demand effects TR, when changes in price have an effect on quantity sold (Leftwich & Eckert, 1982). For inelastic demand, a decrease in price will have a negative effect on TR and an increase in price will have a positive effect on TR (Hyman, 1988). For elastic demand, a decrease in price will have a positive effect on TR

and an increase in price will have a negative effect on TR (Hyman, 1988). Table 2.1 highlights price elasticity of demand and the effect on TR (Hyman, 1988).

Figure 2.4 illustrates the effect of price elasticity of demand has on TR (Hyman, 1988). For inelastic demand, a small increase in price, P1 to P2, has a decrease in quantity, Q1 to Q2; however there is a small increase in TR. For elastic demand, a small increase in price, P3 to P4, has a decrease in quantity, Q3 to Q4; however there is a small decrease in TR.

The application of price elasticity of demand in the hotel industry is useful in establishing a pricing structure for the hotel. For example, this research will analyze two different pricing structures within the same hotel and examine each associated TR with each pricing structure. Figure 2.5 illustrates a hotel without RM. The hotel charges \$50 for all 200 rooms and the TR for this hotel is \$10,000. Figure 2.6 illustrates a hotel with RM pricing structure. The hotel charges multiple prices for all 200 rooms, has different levels of quantities sold based each price, and the TR for this hotel is \$11,450.

Table 2.1 Price Elasticity of Demand and Total Revenues (Hyman, 1988)

Price Elasticity	Change in TR for Price Decrease	Change in TR for Price Increase
Inelastic Demand	-	+
Elastic Demand	+	-

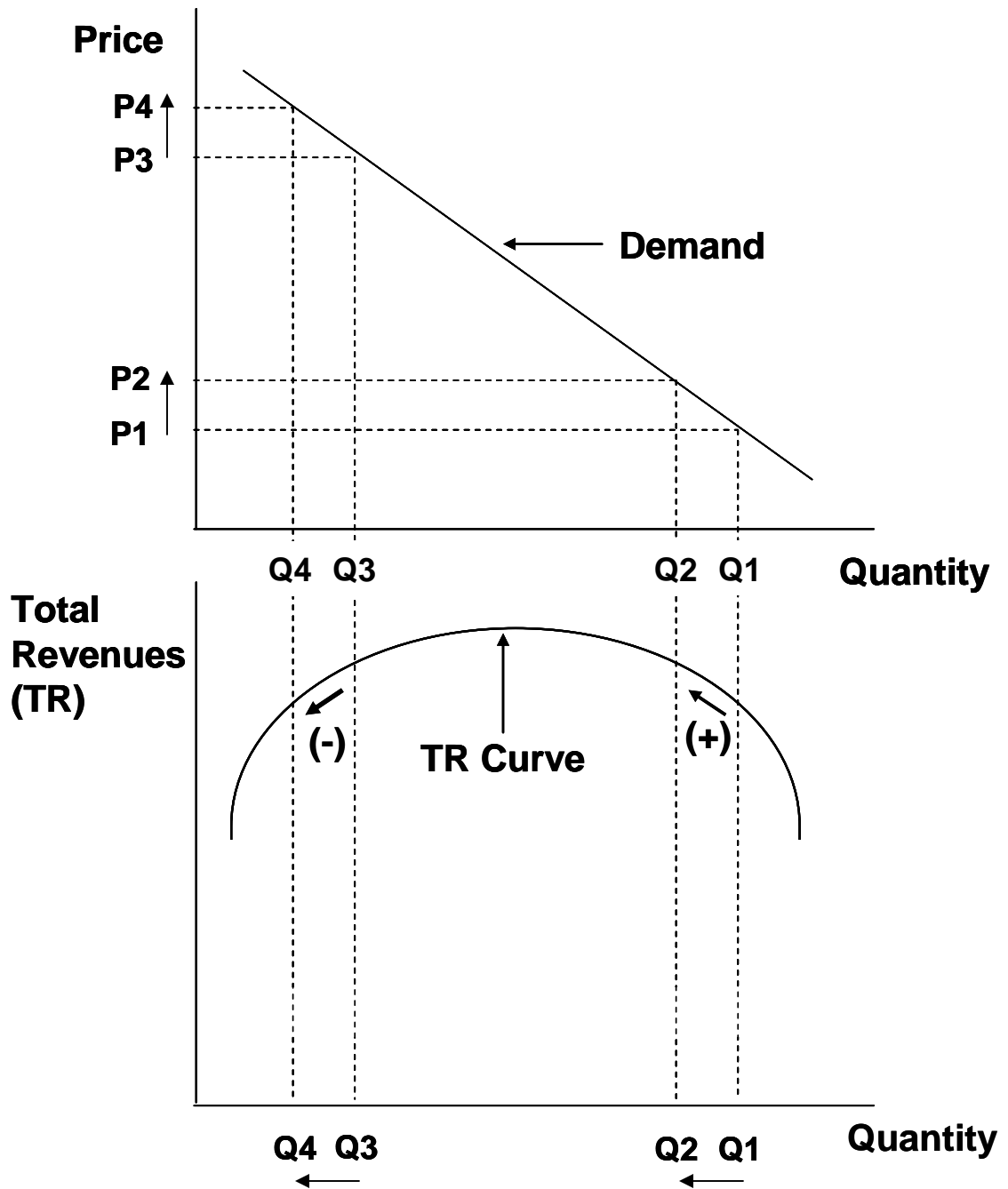


Figure 2.4: Price Elasticity of Demand and Total Revenues (Hyman, 1988)

Comparing the TR from Figure 2.5 and 2.6, the hotel with a RM pricing structure produced \$1,450 more in TR. Also based on this example, the possible increase in revenue for one year could reach \$529,250 ( $\$1450 \times 365$  days). Therefore, a hotel could increase revenues by utilizing a RM pricing structure.

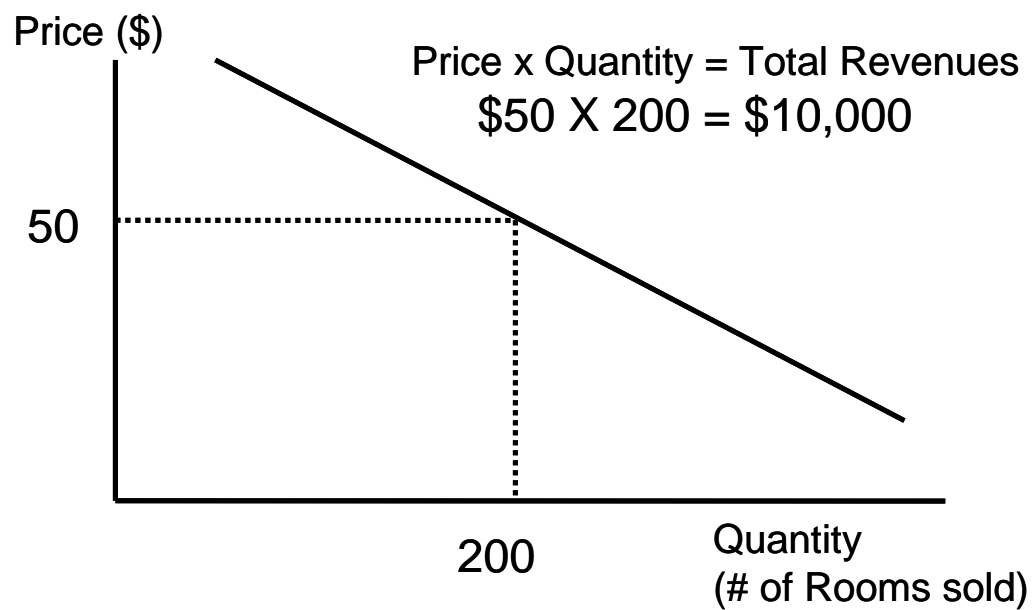


Figure 2.5: A hotel without RM pricing structure

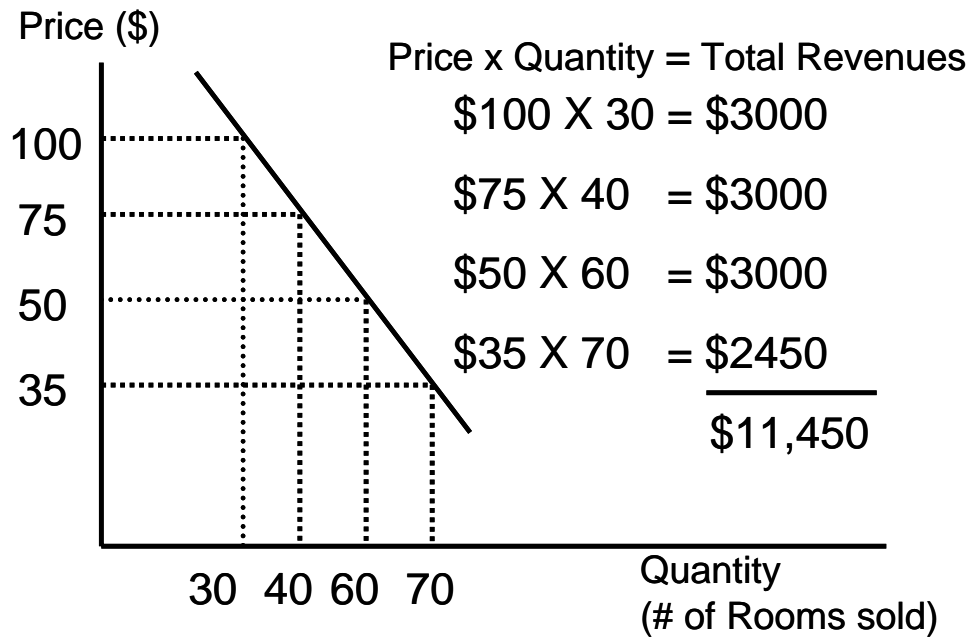


Figure 2.6: A hotel with RM pricing structure

### ***Revenue Management Training***

With evolving RM systems, many researchers suggest evolving and implementing RM training programs to familiarize RM staff with these systems. Skugge (2003) suggests three reasons why RM fails to reach its revenue maximization potential: (1) inaccurate forecasting models within the computerized RM systems, (2) uncoordinated efforts between departments and technology systems, and (3) unskilled RM staff.

Hotel RM is a complex technique which attempts to maximize potential revenues within a hotel firm by forecasting demand, implementing systems and procedures, formulating strategies, tactical planning, and utilizing feedback systems to evaluate positives and negatives within the RM system (Orkin, 1988). For RM to be effective,

every department involved in the system procedure must be RM trained (Orkin, 1988). Kimes (1989) states “a yield management system will require extensive training of all employees” (p.19).

An effective RM employee must have proper RM concept training in order to improve revenues from management to front line employees (Belobaba, 2001). Belobaba (2001) also finds that the problem with RM system is not necessarily the system but that the personnel utilizing the system do not understand the computer system and/or the forecasting model. Lieberman (2003) states RM success factors include knowledge of RM staff, the decisions these staff members are empowered to make regarding the RM system, and the role these staff members have within RM process. Hence, the RM staff must have some knowledge of the RM system and understand their role in the RM system so that it can be effective (Lieberman, 2003). Also, as computer systems and technology continue to advance employees’ knowledge of these systems must also progress involving all departments to participate in RM training sessions helps to build a basic understanding of RM fundamentals within the organization (Parker, 2003).

Front desk employees and managers must have effective RM skills and understanding of basic RM concepts to make more accurate decisions on pricing (Skugge, 2003). According to Skugge (2003), “a well-designed training and education programme can have a significant and measurable impact on revenue management performance” (p. 61). Thus, evaluating and updating these training programs is an important factor in successful training programs.



### ***Definition of Training***

There are many different definitions of training. Oatey (1970) defines training as “any activity which deliberately attempts to improve a person’s skill at a task” (p. 4). Hamblin (1974) defines training as “any activity which deliberately attempts to improve a person’s skill in a job” (p. 6). For the scope of this research, Hamblin (1974) definition of training as “any activity which deliberately attempts to improve a person’s skill in a job” (p. 6) will be used.

### ***Training Program Evaluation***

There exists no uniform training evaluation but most training program professionals will agree that evaluation is an important part of maintaining an effective training program (Brandenburg, 1982). Clement and Aranda (1982) explain that to improve productivity and performance of employees is through training, and making these training programs accountable for outcomes by evaluating the programs.

Newstrom (1978) states that there are eight reasons for evaluating training: (1) assess achievement of training objectives, (2) assess effectiveness of the trainer, (3) justify the expense of training through cost-benefit analysis, (4) improve the program content/structure, (5) decide whether other trainees should receive the program, (6) identify which trainees benefited the most/least, (7) reinforce major points for the trainees, and (8) create advance expectations in the minds of the trainees (through a pretest). Lawson (2006) states there are six main reasons for evaluating training: (1) to determine whether the training achieves its objectives, (2) to assess the value of training programs, (3) to identify areas of the program that need improvement, (4) to identify the

appropriate audience for future programs, (5) to review and reinforce key program parts for participants, and (6) to sell a program to management and participants.

In 1959 and 1960, the classic four-level model of training evaluation was introduced called ‘Kirkpatrick approach to training evaluation (Abernathy, 1999; Bernthal, 1995; Boverie, Mulcahy, & Zondlo, 1995; Lawson, 2006; Mathieu & Martineau, 1997; Newstrom, 1978; Salas & Bowers, 2001). Newstrom (1978) explains that model has four distinct levels: (1) Reaction, (2) Learning, (3) Behavior, and (4) Results. Clement (1982) suggests training professionals accept the Kirkpatrick four-level hierarchical model of training; where favorable outcomes at the lowest level of the model are necessary for favorable outcomes at the next level and so on. Alliger and Janak (1989) explain the assumption of the Kirkpatrick four-level sequential model of training assumes each level of the model is correlated with the previous level. Figure 2.7 illustrates the Kirkpatrick four-level hierarchical model of training (Alliger & Janak, 1989; Clement, 1982).

### ***Kirkpatrick’s Four-Level Training Model***

*Level 1 – Reaction.* Kirkpatrick (1959a) defines reaction as “how well the participants liked a particular training program” (p. 4). Reaction is the measure of how satisfied the trainees are with the training program (Kirkpatrick, 1978). Kirkpatrick (1994) highlights four reasons reaction level evaluation is necessary to training evaluation: (1) to measure how satisfied the training participants were with the training program, (2) to provide feedback for improving current and future training programs, (3) to relay to the training participants that the trainer is open to their feedback, and (4) to

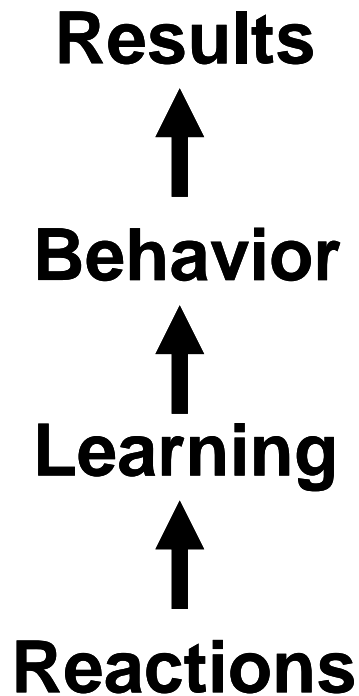


Figure 2.7: Kirkpatrick four-level sequential model of training (Alliger & Janak, 1989; Clement, 1982)

provide quantitative data that can be utilized by others. Kirkpatrick (1959a, 1978, 1979) outlines five guidelines for evaluating reaction: (1) determine what information the trainer wants to find out, (2) design a comment sheet the trainees can fill out to get the information the trainer wants to find out, (3) design the comment sheet so the answers can be tabulated and quantified, (4) do not have the trainees sign the comment sheets so the comment sheets can remain anonymous, and (5) encourage the trainees to write any additional comments that were not covered in the other questions on the comment sheet.

Warr and Bunce (1995) and Warr, Allan, and Birdi (1999) implemented the first three levels of Kirkpatrick's model in their research analyzing a training program's

effectiveness. They utilized a post-training survey that quantitatively measured reaction to the training program in 3 distinct areas: (1) enjoyment of the training program, (2) perceptions of the usefulness of the training program as it relates to their job requirements, and (3) perceived difficulty of the training program and material (Warr & Bunce, 1995; Warr, Allan, and Birdi, 1999). Alliger, Tannenbaum, Bennett, Traver, and Shotland (1997) cite previous research showing an average low correlation between reaction and learning when reaction is measured as a single indicator. However, Warr, Allan, and Birdi (1999) state when reaction is separated into multiple indicators, a stronger association with learning is found. For the scope of this research, Warr, Allan, and Birdi's (1999) three measure reaction design will be used.

*Level 2 – Learning.* Kirkpatrick (1959b) defines learning as “What principles, facts, and techniques were understood and absorbed by the conferees” (p. 21). Kirkpatrick (1979) suggests that evaluating learning is much more difficult than evaluation in terms of reaction because assessing learning is difficult to measure. Kirkpatrick (1959b, 1979) highlight five steps in establishing a measurement for learning: (1) learning should be able to be measured quantitatively, (2) pre- and post-test should be used so the amount of learning can be measured, (3) learning should be measured objectively, (4) a control group should be used to compare to the quasi-experimental group, and (5) evaluation results should be analyzed statistically. Kirkpatrick (1979) suggests two methods for evaluating learning: (1) a method to evaluate skills and (2) a method to evaluate principles and facts.

First, skills evaluation can be measured through classroom performance such as interviewing skills, effective speaking, job instruction training, and reading improvement (Kirkpatrick, 1959b). The trainer uses objective evaluations which are built into the program such as before and after situations to objectively assess the learning of the participants (Kirkpatrick, 1979).

Second, principles and facts evaluation can be measured through a 'paper-and-pencil test' that is standardized for the training program (Kirkpatrick, 1959b). However, to evaluate if learning had taken place because of to the training program Kirkpatrick (1979) suggests the following methods of implementation: (1) the standardized test should be given to all the participants prior to the training program, (2) a control group should also be given the test to compare later to the treatment group, those participants receiving the training program, (3) the pre-test scores for both the treatment and control groups should be analyzed two ways:

(a) the total score for each individual should be calculated, and

(b) frequencies of the right and wrong answers should be tabulated to evaluate certain knowledge of the participants before the training program, but also for the trainer identify most frequently misunderstood items

and (4) upon completion of the training program by the treatment group the same test should be administered to both control and treatment groups. A pre- and post-test comparison using statistics should be used to analyze if learning has taken place (Kirkpatrick, 1979). Kirkpatrick (1959b) notes the test must cover the material in the training program; otherwise the test will not be a valid measure of learning.

Zenger and Hargis (1982) suggest using a pre- and post-test quasi-experimental design utilizing both a treatment group who receives the training and a control group who receive no training. Endres and Kleiner (1990) also suggest that it is necessary to pre- and post- test in order to evaluate if learning had taken place due to the training program. They state without the pre-test benchmark scores the measurement of knowledge can not specifically be attributed to the training program (Endres and Kleiner, 1990). For the scope of this study, a pre- and post-test quasi-experimental design utilizing both a treatment group and a control group will be administered to the trainees.

Level 3 – Behavior. Behavior is defined as the participants' behavior was altered by the administered training program (Kirkpatrick, 1979). The behavior level is commonly referred to as the transfer of training (Alliger *et al.*, 1997; Kirkpatrick, 1996). Kirkpatrick (1979) suggests that evaluating behavior is more difficult evaluation in terms of reaction and learning. Kirkpatrick (1979) also states evaluating behavior compared to reaction and learning must consider more factors affecting behavior. However, Alliger, Tannenbaum, and Bennett (1995) state a training program is successful when learning is successfully applied to the job. Kirkpatrick (1960a, 1979) suggests five steps that should be followed to evaluate if a training program caused behavior changes for the participants: (1) a systematic assessment of job performance before and after the training program, (2) assessment should be made for the following groups: (a) the participants who will receive and have received the training, (b) the superior(s) of the participants who will receive and have received the training, (c) the subordinates(s) of the participants who will receive and have received the training and/or (d) The peer(s) or other people

who interact with the participants or who are familiar with the participants' performance, (3) an assessment instrument should be used to quantify the before and after evaluation of behavior to statistically analyze if the training program caused behavioral changes, (4) Post-training assessment should take place three or more months after the training program to give the trainees time to put into practice the skills they have learned, and (5) a control group should be used to compare to the treatment group to assist in the appraisal of behavioral changes.

Endres and Kleiner (1990) warn that measuring behavior changes can be subject bias based on the superiors and their personal assessment of behavior changes. To help minimize this bias, Endres and Kleiner (1990) suggest using at least three forms of feedback such as peer, trainer, and a participant's self-evaluation. For the scope of this study, reaction and learning will be evaluated as they pertain to revenue management training of hotel front desk employees and managers. As stated by Kirkpatrick (1979) evaluating behavior is more difficult evaluation in terms of reaction and learning and more factors must be considered. Therefore due to the complexities of measuring individual trainee behavior by the researcher and controlling managerial bias in evaluating behavior, behavior or transfer of training will not be evaluated as a part of this research.

Level 4 – Results. Results are defined as the effect the training program had on cost reduction, employee turnover, increased morale, and increased production (Kirkpatrick, 1960b). Kirkpatrick (1979) explains that results of a training program are measured specifically to the objectives that the training program are set to accomplish.

Thus, if the training programs objective was to reduce on-the-job accidents, then the results would be measured by analyzing a before and after time series analysis of the number on-the-job accidents, to determine whether the training assisted in reducing those accidents (Kirkpatrick, 1960b). Kirkpatrick (1979) warns that not all improvements found within an organization may be the direct cause of a training program, which makes it difficult to measure results. Other variables besides training may have played a role in the improvements within the organization (Kirkpatrick, 1979).

Warr, Allan, and Birdi (1999) state that Kirkpatrick's approach becomes more difficult as one progresses through each level, especially, at level four. Identifying that a training program affected certain organizational objectives can be very difficult to prove (Warr, Allan, & Birdi, 1999). Alliger *et al.* (1997) state "most training efforts are incapable of directly affecting results level criteria" (p. 346). They discovered only three past studies that had correlations based on level 4 results (Alliger *et al.*, 1997). For the scope of this research, reaction and learning will be evaluated as they pertain to revenue management training of hotel front desk employees and managers. As stated by Kirkpatrick (1979) that not all improvements found within an organization may be the direct cause of a training program, which makes it difficult to measure results. Therefore due to the complexities of isolating direct results based on the revenue management training program in the study, results to the organization such as cost reduction, employee turnover, increased morale, and increased production will not be measured.



### ***Criticism of Kirkpatrick Four-Level Model***

In 1959 and 1960, the classic four-level model of training evaluation was introduced called 'Kirkpatrick approach to training evaluation' (Abernathy, 1999; Bernthal, 1995; Boverie, Mulcahy, & Zondlo, 1995; Lawson, 2006; Mathieu & Martineau, 1997; Newstrom, 1978; Salas & Bowers, 2001). However, some researchers have criticized the Kirkpatrick's four level model (Abernathy, 1999; Alliger *et al.*, 1997; Bates, 2004; Bernthal, 1995; Hamblin, 1974; Holton, 1996; Patterson & Hobley, 2003). Alliger and Janak (1989) note that Kirkpatrick's four level model implies a casual relationship between each level (see Figure 2.15). However, they discovered very few research studies that showed this casual relationship (Alliger & Janak, 1989). Holton (1996) suggests Kirkpatrick's four level model is a taxonomy classifying training evaluation outcomes rather than a model with casual linkage.

Patterson and Hobley (2003) state many organizations collect and analyze data collected from reaction and learning levels but few organizations measure behavior and result levels of the Kirkpatrick model. Bernthal (1995) states that often trainers utilize the Kirkpatrick model regarding it as a universal model. To successfully measure behavior and results levels other variables, such as lack of management support for training program, must not weaken the training programs effectiveness (Bernthal, 1995).

Bates (2004) lists three limitations to the Kirkpatrick four level model: (1) incompleteness of the model, (2) the assumption of causality, and (3) the assumption of increasing information as the levels increase. First, Bates (2004) states the model is incomplete because it fails to address characteristics of individuals and work environment as factors. Second, Alliger and Janak (1989) and Alliger *et al.* (1997) found little

research studies to support that Kirkpatrick's four level model meets the assumption of causality between the levels. Finally, Bates (2004) states, that because of the lack of causality between outcome levels in the model, the assumption that increasing information as the levels increase may not be met.

### ***Purpose***

The purpose of this study is determine if a basic RM concept training program can successfully teach hotel front desk employees and managers RM fundamentals.

According to Skugge (2003), "a well-designed training and education programme can have a significant and measurable impact on revenue management performance" (p. 61).

Also Belobaba (2001) states an effective RM employee must have proper RM concept training in order to improve revenues from management to front line employees.

The classic four-level model of training evaluation was introduced called 'Kirkpatrick approach to training evaluation' (Abernathy, 1999; Bernthal, 1995; Boverie, Mulcahy, & Zondlo, 1995; Lawson, 2006; Mathieu & Martineau, 1997; Newstrom, 1978; Salas & Bowers, 2001). Many researchers have criticized the Kirkpatrick's four level model (Abernathy, 1999; Alliger *et al.*, 1997; Bates, 2004; Bernthal, 1995; Hamblin, 1974; Holton, 1996; Patterson & Hobley, 2003). However, Holton (1996) states the Kirkpatrick's four level model is acknowledged as the standard training evaluation model by many practitioners.

As stated by Kirkpatrick (1979) evaluating behavior is more difficult evaluation in terms of reaction and learning because more factors must be considered. Likewise, Kirkpatrick (1979) states not all improvements found within an organization may be the

direct cause of a training program, which makes it difficult to measure results. For the scope of this study, the researcher will utilize the reaction and learning levels of the Kirkpatrick model. Although reaction and learning have not been found to always correlate in all research studies, Holton (1996) states ‘trainees who are more successful during learning are expected to have more positive reactions to the learning experience’ (p. 11).

### ***Objectives and Hypotheses***

The objectives of this study are (a) to evaluate the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program and (b) to examine the training program’s effectiveness in teaching basic RM concepts. As stated earlier, Kirkpatrick (1979), and Zenger and Hargis (1982) suggest using a pre- and post-test quasi-experimental design in order to evaluate learning. Utilizing this method, the research tested these hypotheses to analyze the RM training program:

H1: The probability of being in the control and treatment groups will not be related to pre-test scores of participants.

H2: The post-test scores for the control group will exhibit a significant difference from the post-test scores for the treatment group when controlling for pre-test scores.

H3: The post-test scores for the front desk employees will exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

H4: The post-test scores for the interaction effect between Group and Type will exhibit a significant difference when controlling for pre-test scores.

### **CHAPTER III – METHODOLOGY**

The purpose of this study is determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals. The chapter examines the methodology of the study. This study utilized two research models that are designed to achieve the following objectives: (a) to evaluate the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program, and (b) to examine the training program's effectiveness in teaching basic RM concepts. A reaction instrument was implemented to evaluate satisfaction of those participates that attended the training program within the training program. A basic revenue management examination was utilized in a pre- and post-test quasi-experimental design model with a treatment and control group to examine if learning had taken place. This data was collected from 8 randomly selected hotels. The data was analyzed using statistical software to compare differences between groups. The hypotheses for this study are:

H1: The probability of being in the control and treatment groups will not be related to pre-test scores of participants.

H2: The post-test scores for the control group will exhibit a significant difference from the post-test scores for the treatment group when controlling for pre-test scores.

H3: The post-test scores for the front desk employees will exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

H4: The post-test scores for the interaction effect between Group and Type will exhibit a significant difference when controlling for pre-test scores.

### ***Research Model***

As discussed in chapter 2, this research study employed the first two levels of the Kirkpatrick model: (1) reaction and (2) learning. Reaction is the measure of how satisfied the trainees are with the training program (Kirkpatrick, 1978). Reaction is evaluated after the participants have been through the training program. Warr and Bruce (1995) and Warr, Allan, and Birdi (1999) utilized a post-training survey that quantitatively measured reaction to the training program in 3 distinct areas: (1) enjoyment of the training program, (2) perceptions of the usefulness of the training program as it relates to their job requirements, and (3) perceived difficulty of the training program and material. Warr and Bunce (1995) and Warr, Allan, and Birdi (1999) reaction model that was employed for reaction is shown in Figure 3.1.

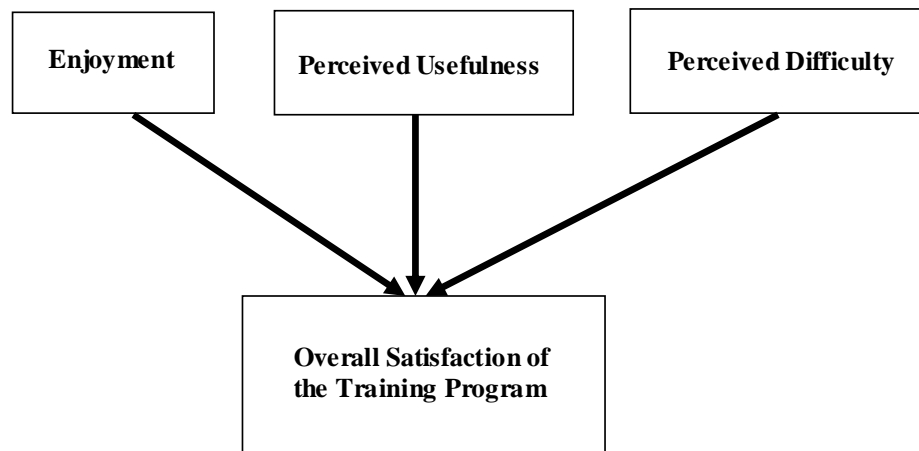


Figure 3.1: Reaction level measured in three distinct areas (Warr, Allan, & Birdi, 1999; Warr & Bunce, 1995)

Learning is defined as principles and techniques acquired by the training participants (Kirkpatrick, 1979). Kirkpatrick (1979) suggests two methods for measuring if participants in a training program have learned the material: (1) skills evaluation measured through classroom performance and (2) principles and facts evaluation measured through a ‘paper-and-pencil test’ that is standardized for the training program. Zenger and Hargis (1982) suggest using a pre- and post-test quasi-experimental design utilizing both a treatment group who receives the training and a control group who receive no training. The pre- and post-test quasi-experimental design model with a control group was used in this study to evaluate if learning has taken place. The quasi-experimental design model that was employed for learning level is shown in Figure 3.2 and 3.3.

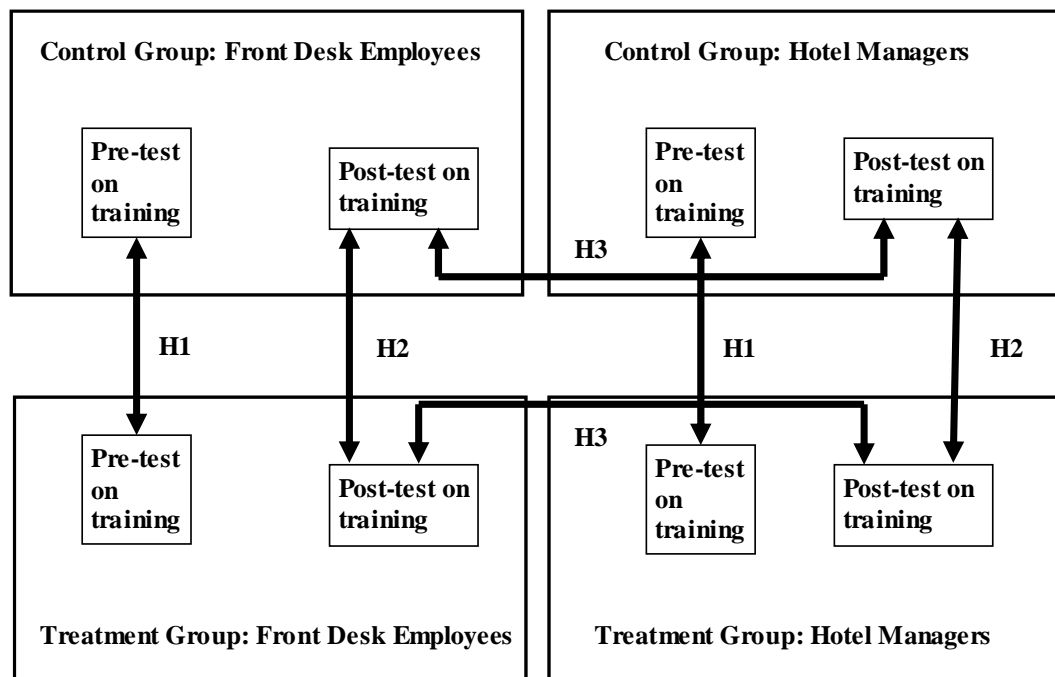


Figure 3.2: Pre- and post-test quasi-experimental design model with a control group (H1 – H3)

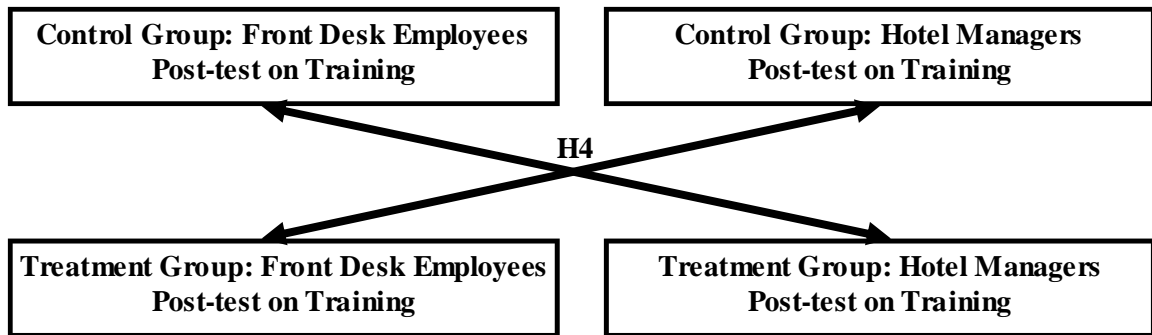


Figure 3.3: Pre- and post-test quasi-experimental design model with a control group (H4)

***Instrument 1: Reaction Survey***

The objective of the reaction survey was to evaluate the reaction of participants with the training program. Specifically, the reaction survey was designed to evaluate the satisfaction level of hotel front desk employees and hotel managers in reference to the RM training program. The reaction survey instrument for this research was designed after the Warr, Allan, and Birdi’s (1999) study that used post-training survey to measure reaction to the training program. Warr, Allan, and Birdi’s (1999) instrument had three distinct areas: (1) enjoyment, (2) perceived usefulness, and (3) perceived difficulty. This research utilized these three variables to measure overall satisfaction of the training program.

The survey instrument was divided into three sections with seven items in each section. Each section of the survey has a satisfaction score out of 35 points. The overall satisfaction score is the summation of the three section satisfaction scores which is out of a total of 105 points. The first section explored enjoyment of the training program and



requested participants to rate their satisfaction on a 5-point Likert scale from 1 (Strongly Dissatisfied) to 5 (Strongly Satisfied). The enjoyment section consists of seven items, Sat1 to Sat7. The second and third sections of the instrument will explore perceived usefulness and perceived difficulty and will request participants to rate how they feel about each statement on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The perceived usefulness section consists of seven items, Sat8 to Sat14, and the perceived difficulty section consists of seven items, Sat15 to Sat21. Directions for how to complete each section of the survey are clearly outlined at the beginning of each section. The survey instrument is shown in Appendix A.

The satisfaction survey was only administered to the participants in the treatment group immediately after the training program. In an attempt to control bias in this study, the survey was only administered by the researcher. The mean scores for each section, and overall mean scores were calculated for each group of participants.

### ***RM Training Program and Instrument 2: RM Test Instrument***

An initial survey was conducted on RM professionals at the 3<sup>rd</sup> Annual Hospitality Sales and Marketing Association International (HSMIAI) Revenue Management Strategy Conference in Minneapolis, Minnesota on June 19, 2006. The initial RM professional survey is shown in Appendix B. Of the approximately 250 RM professionals attending the conference, 54 participants completed the survey (Approximately 22% of the attendees completed the survey). The survey requested the RM professionals to indicate the level of importance for certain hotel positions to have a basic understanding of RM fundamentals. Each question was measured on a 5-point

Likert scale from 1 (Not Very Important) to 5 (Very Important). Table 3.1 illustrates the results of the level of importance for certain hotel positions to have a basic understanding of RM fundamentals.

The survey also requested the RM professionals to rank RM topics in level of importance when constructing a RM basic concept training program. Table 3.2 illustrates the results of ranking of importance of RM topics when constructing a RM basic concept training program. The lower the mean score indicates a higher level of importance. Based on the mean scores of the rankings, the researcher utilized the top seven topic areas when constructing the RM training program for the study. This table also assisted in preliminarily validating the RM training program.

Table 3.1: Importance of basic understanding of RM fundamentals by hotel position

Hotel Position	Mean Score	Standard Deviation
Revenue Manager	5.00	0.00
Director of Sales	4.91	0.29
General Manager	4.89	0.31
Assistant General Manager	4.63	0.49
Front Office Manager	4.63	0.52
Sales Manager	4.40	0.53
Assistant Front Office Manager	4.24	0.64
Front Desk Employee	4.07	0.64
Controller	4.02	0.87
Director of F&B	3.98	0.86
Director of Housekeeping	3.13	0.92
Director of Human Resources	3.13	0.92
Chief Engineer	2.96	1.00

Table 3.2: Ranking of importance of RM topics

Rank	Topic	Mean Score	Standard Deviation
1	RevPAR	4.35	2.47
2	Demand Forecasting	4.53	2.78
3	Room Availability Control	4.63	2.96
4	Customer Segmentation	5.00	2.34
5	Examples of RM	5.08	2.85
6	Definition of RM	5.73	2.93
7	Conditions for RM	5.75	2.46
8	Definition of Price Discrimination	6.00	2.64
9	Elasticity of Demand	6.05	2.43
10	RM History	8.03	3.26

Pre- and post-test instrument was designed to test basic RM concepts in the hotel industry. The objective of this pre- and post-test was to examine training program's effectiveness in increasing test scores on basic RM concepts comprehension. The control group was vital in this quasi-experimental design so the researcher can attempt to verify if the training program was successful in increasing test scores by comparing the treatment group's scores against the control group's scores. A demographics survey was given to each participant before the RM test instrument was administered. The demographic data provided background information about the participants of the study. The background information provided by the participants was gender, age, ethnicity, level of education, hotel position, length in current position, and length in current organization. The demographics survey is shown in Appendix C.

In May 2007, the training program and test instrument was sent to HSMIAI Revenue Management Certification sub-committee members to examine the training program and examination instrument. The sub-committee consisted of RM executives in

the hospitality industry. The sub-committee did not suggest any subject or content changes; however, they did point out some minor grammatical errors and also had questions regarding consumer demand forecasting, which was later clarified by the researcher. The changes and suggestions made by these professionals was addressed by the researcher and a modified training program and examination instrument was be generated.

The training program was only administered to the participants in the treatment group by the researcher. Visual presentation, oral lecture, and handouts of the material were the format of the training program.

The instrument consisted of twenty questions that tested the knowledge of the basic RM concepts. All of the questions were a four-option multiple choice question. The participants were asked to circle one of the four choices that they felt correctly answers each question. The researcher did not give any advice or assistance to any participants during the examination period. Each participant was given thirty minutes to complete the test. The sample test instrument is shown in Appendix D.

### ***Sampling***

Before the study, the researcher requested participation from 28 hotel firms with over 100 rooms. The contacted hotels were located in Knoxville, TN, Chattanooga, TN, Asheville, NC, and Columbia, SC. The researcher asked the participating hotel firm to allow the researcher to conduct this study utilizing meeting space within their hotels. The objective was to collect between 100 to 120 total participants from 12 full service hotel properties. The anticipated number of participants in the front desk employees group was

50 to 60 and in the hotel managers group was 50 to 60. Due to time constraints, limited payroll budgets, lack of interest, and internal RM training programs, only 8 properties out of 28 properties contacted participated in the study. Of the 28 hotels contacted for participation, 19 were full service units with over 100 rooms. The final data collection yielded 49 total participants from 8 hotel properties. A mean of approximately 6 participants per properties was slightly below the projected mean of 8 to 10 participants per property.

Due to the many constraints regarding participation, random assignment to groups was not possible. Therefore, the researcher assigned each hotel to the treatment and control groups based on each hotel's time allotment. If the hotel could allot time for the training program, they were placed in the treatment group and if not they were placed in the control group. Two groups were: (1) a treatment group consisting of four hotel units and (2) a control group consisting of four hotel units. Each hotel in the control group was assigned a "0" and each hotel in the treatment group was assigned a "1".

Within each of the 8 hotels, an alphabetic letter (either "A" or "B") was assigned to front desk employees and hotel managers. An "A" was assigned to all front desk employees and a "B" was assigned to all of the hotel managers. In addition to the assigned alphabetic letter, an individual numeric number was assigned to each employee and manager. Each front desk employee within each hotel unit was randomly assigned a different number and each hotel manager within each hotel unit was randomly assigned a different number.

### ***Data Collection***

The study utilized a pre- and post-test quasi-experimental design model with a control group. In order to control bias in data collection, the researcher followed strict instrument schedules for each hotel unit. The data collection process for each hotel consisted of two stages. For both the control and treatment groups, the implementation of RM pre-test was stage one. Approximately one month later, the RM post-test was administered during stage two. For the treatment group only, stage one was also when the training module and reaction survey were administered. Data collection began May 24<sup>th</sup> 2007 and was completed on September 6<sup>th</sup>, 2007.

### ***Control Group***

In stage one of the data collection, the front desk employees and hotel managers in the control group received the RM pre-test instrument proctored by the researcher. The researcher visited each hotel individually. The RM pre-test scores were calculated and tabulated into an electronic spreadsheet specific to the test instrument. Each participant was organized in this spreadsheet by hotel unit, control group, employment position, and individual number.

In stage two, approximately one month after stage one, the researcher returned to the hotel and re-administered the same RM test. The post-test scores were calculated and tabulated into an electronic spreadsheet, and matched with the original individual observations from the pre-test. The data collection procedure for the control group is shown in Figure 3.4. Table 3.3 shows the actual data collection dates for the control group.

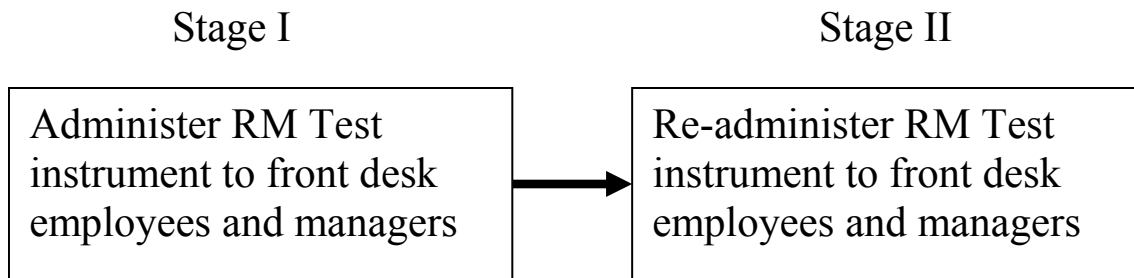


Figure 3.4: The data collection procedure for the control group

Table 3.3: Data collection dates for the control group

Hotel	Stage I	Stage II
3	Friday, July 20, 2007	Friday, August 17, 2007
4	Tuesday, July 31, 2007	Thursday, September 06, 2007
5	Tuesday, July 31, 2007	Thursday, September 06, 2007
7	Tuesday, August 14, 2007	Wednesday, September 05, 2007

### ***Treatment Group***

In stage one of the data collection, the front desk employees and hotel managers in the treatment group received the RM pre-test instrument proctored by the researcher. The researcher visited each hotel individually. The RM pre-test scores were calculated and tabulated into an electronic spreadsheet specific to the test instrument. Each participant was organized in this spreadsheet by hotel unit, control group, employment position, and individual number.

Also during stage one, the treatment group participated in the training program immediately following the pre-test. This program was exactly the same for each hotel unit in the treatment group and the same whether the participants were front desk employees or hotel managers. Immediately after the completion of the training program, each participant received the reaction survey. The survey scores were calculated and tabulated into an electronic spreadsheet specific to the satisfaction survey instrument.

In stage two, approximately one month after stage one, the researcher returned to the hotel and re-administered the same RM test. The post-test scores were calculated and tabulated into an electronic spreadsheet, and matched with the original individual observations from the pre-test. The data collection procedure for the treatment group is shown in Figure 3.5. Table 3.4 shows the actual data collection dates for the treatment group.

### ***Data Analysis***

The data for this study was analyzed to test the quasi-experimental research model in Figure 3.2 and 3.3. Hypothesis testing was analyzed using SPSS 12.0 and the level of



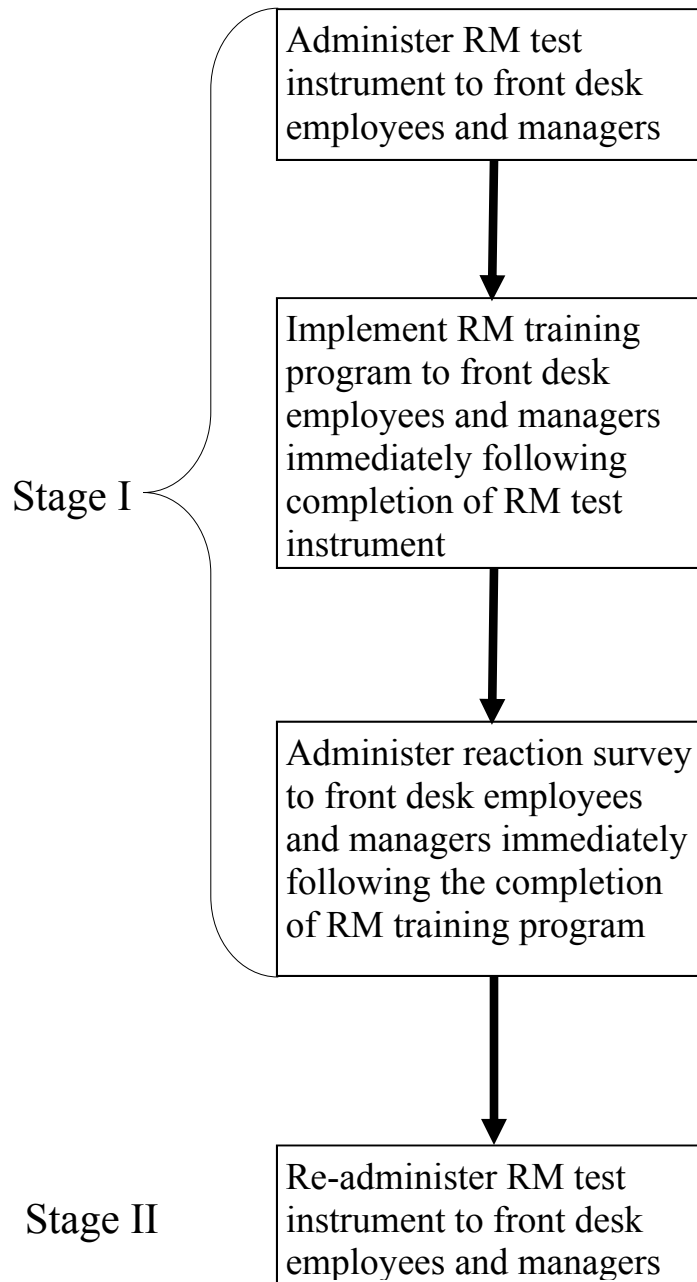


Figure 3.5: Data collection procedure for the treatment group

Table 3.4: Data collection dates for the treatment group

Hotel	Stage I	Stage II
1	Thursday, May 24, 2007	Thursday, July 12, 2007
2	Tuesday, June 19, 2007	Thursday, July 19, 2007
6	Tuesday, July 31, 2007	Thursday, September 06, 2007
8	Tuesday, August 14, 2007	Friday, September 04, 2007

significance that all statistical tests utilized was an alpha = .05 for every hypothesis. Binary Logistic Regression and Multiple Regression were implemented to measure association between reaction and learning levels. Kossek, Roberts, Fisher, and Demarr (1998) suggest utilizing linear regression analysis for quasi-experimental designs to test for differences between the dependent variable and independent variables when including control variables. Descriptive statistic analysis was used to analyze frequencies, percentages, and central tendencies for the reaction and demographic surveys.

For H1, the group membership (0 = control group, 1 = treatment group) and pre-test scores were compared. The researcher used binary logistic regression to determine if the probability of being in the control and treatment groups is not related to pre-test scores of participants.

For H2, the post-test scores and group membership (0 = control group, 1 = treatment group) were compared when controlling for pre-test scores. The researcher used multiple regression to determine if the post-test scores for the front desk employees will exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

For H3, the post-test scores and employment type (0 = front desk employee, 1 = hotel managers) were compared when controlling for pre-test scores. The researcher

used multiple regression to determine if the post-test scores for the front desk employees will exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

For H4, the post-test scores and the interaction variable, group membership by employment type, were compared when controlling for pre-test scores. The researcher used multiple regression to determine if the post-test scores for the interaction effect between Group and Type will exhibit a significant difference when controlling for pre-test scores.

## CHAPTER IV – RESULTS

The purpose of this study is determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals. This chapter presents the results of the methodology outlined in the methodology chapter. The objective was to collect between 100 to 120 total participants from 12 full service hotel properties. The anticipated number of participants in the front desk employees group was 50 to 60 and in the hotel managers group was 50 to 60. Due to time constraints, limited payroll budgets, lack of interest, and internal RM training programs, only 8 properties out of 28 properties contacted participated in the study. Of the 28 hotels contacted for participation, 19 were full service units with 100 hotel rooms or more. The final data collection yielded 49 total participants from 8 hotel properties. A mean of approximately 6 participants per properties was slightly below the projected mean of 8 to 10 participants per property. During the pre-test stage of the study, 55 participants completed the survey instruments. However, after the post-test stage was completed; only 49 of the 55 participants completed both stages. Therefore, the final sample size for the study was  $N = 49$ .

First, this chapter will discuss the descriptive statistics of sample. Second, the internal reliability of the test and satisfaction instruments will be assessed. Third, the results of logistic regression and multiple regression will be discussed. Finally, the reaction survey will be summarized.

### ***Descriptive Statistics of the Sample***

During the pre-test stage of the study, the participants were asked to complete a short demographics survey (Appendix C). The frequencies and percentages for the participants gender, ethnicity, level of education, and hotel position of the entire sample (N=49) are presented in Table 4.1. Measures of central tendency for the participant's age in years, length in current position in months, and length in current organization in months of the entire sample (N=49) are presented in Table 4.2.

The frequencies and percentages for the participants gender, ethnicity, and level of education of the front desk employees group (N=14) are presented in Table 4.3. Measures of central tendency for the participant's age in years, length in current position in months, and length in current organization in months of the front desk employees group (N=14) are presented in Table 4.4.

The frequencies and percentages for the participants gender, ethnicity, and level of education of the hotel managers group (N=35) are presented in Table 4.5. Measures of central tendency for the participant's age in years, length in current position in months, and length in current organization in months of the hotel managers group (N=35) are presented in Table 4.6.

The frequencies and percentages for the participants gender, ethnicity, and level of education of the control group (N=32) are presented in Table 4.7. Measures of central tendency for the participant's age in years, length in current position in months, and length in current organization in months of the control group (N=32) are presented in Table 4.8.

The frequencies and percentages for the participants gender, ethnicity, and level of education of the treatment group (N=17) are presented in Table 4.9. Measures of central tendency for the participant's age in years, length in current position in months, and length in current organization in months of the treatment group (N=17) are presented in Table 4.10.

The mean scores for the pre- and post-tests are presented in Table 4.11. The mean scores were calculated by multiplying the individual's score out of 20 points by 5 points. This created a score out of 100 points.

Table 4.1: Frequencies and Percentages of Participant Demographics (N = 49)

Demographic	n	Percentage
Gender		
Female	31	63.3
Male	18	36.7
Ethnicity		
White/Caucasian	44	89.8
Black/African-American	4	8.2
Asian	1	2.0
Level of Education		
Bachelor's degree	17	34.7
Some college	17	34.7
High school or equivalent	8	16.3
Graduate Degree	4	8.2
Associate's degree	3	6.1
Hotel Position		
Sales Manager	16	32.7
Front Desk Employee	14	28.6
Director of Sales	5	10.2
F&B Manager	4	8.2
Front Desk Manager	3	6.1
General Manager	3	6.1
Controller	1	2.0
Director of Housekeeping	1	2.0
Reservation Manager	1	2.0
Revenue Manager	1	2.0

Table 4.2: Central Tendencies of Participant Demographics (N = 49)

Demographic	Mean	Standard Deviation
Age (years)	35.8	11.1
Length in current position (years)	3.0	4.4
Length in current organization (years)	4.6	6.0

Table 4.3: Frequencies and Percentages of Front Desk Employee Demographics (N = 14)

Demographic	n	Percentage
Gender		
Female	8	16.3
Male	6	12.2
Ethnicity		
White/Caucasian	11	22.4
Black/African-American	3	6.1
Level of Education		
Some college	6	12.2
High school or equivalent	5	10.2
Bachelor's degree	2	4.1
Graduate Degree	1	2.0

Table 4.4: Central Tendencies of Front Desk Employees Demographics (N = 14)

Demographic	Mean	Standard Deviation
Age (years)	27.0	8.2
Length in current position (years)	0.9	1.1
Length in current organization (years)	1.3	1.7

Table 4.5: Frequencies and Percentages of Hotel Managers Demographics (N = 35)

Demographic	n	Percentage
Gender		
Female	23	46.9
Male	12	24.5
Ethnicity		
White/Caucasian	33	67.3
Black/African-American	1	2.0
Asian	1	2.0
Level of Education		
Bachelor's degree	15	30.6
Some college	11	22.4
High school or equivalent	3	6.1
Graduate Degree	3	6.1
Associate's degree	3	6.1

Table 4.6: Central Tendencies of Hotel Managers Demographics (N = 35)

Demographic	Mean	Standard Deviation
Age (years)	39.4	10.2
Length in current position (years)	3.8	4.9
Length in current organization (years)	5.9	6.6

Table 4.7: Frequencies and Percentages of Control Group Demographics (N = 32)

Demographic	n	Percentage
Gender		
Female	23	46.9
Male	9	18.4
Ethnicity		
White/Caucasian	30	61.2
Black/African-American	1	2.0
Asian	1	2.0
Level of Education		
Bachelor's degree	13	26.5
Some college	11	22.4
High school or equivalent	4	8.2
Graduate Degree	2	4.1
Associate's degree	2	4.1



Table 4.8: Central Tendencies of Control Group Demographics (N = 32)

Demographic	Mean	Standard Deviation
Age (years)	36.4	10.6
Length in current position (years)	3.0	3.1
Length in current organization (years)	4.6	4.2

Table 4.9: Frequencies and Percentages of Treatment Group Demographics (N = 17)

Demographic	n	Percentage
Gender		
Male	9	18.4
Female	8	16.3
Ethnicity		
White/Caucasian	14	28.6
Black/African-American	3	6.1
Level of Education		
Some college	6	12.2
Bachelor's degree	4	8.2
High school or equivalent	4	8.2
Graduate Degree	2	4.1
Associate's degree	1	2.0

Table 4.10: Central Tendencies of Treatment Group Demographics (N = 17)

Demographic	Mean	Standard Deviation
Age (years)	34.6	12.5
Length in current position (years)	2.9	6.3
Length in current organization (years)	4.6	8.6

Table 4.11 Mean scores for the pre- and post-tests

Group	n	Mean	S.D.	Mean	S.D.
		Pre-Test Scores	Pre-Test Scores	Post-Test Scores	Post-Test Scores
Enitre Sample	49	65.10	15.49	71.84	15.43
Control Group	32	67.03	14.13	68.59	14.21
Treatment Group	17	61.47	17.66	77.94	16.21
Front Desk Employee	14	52.14	16.14	67.14	16.02
Hotel Manager	35	70.29	11.94	73.71	15.02

S.D. = Standard Deviation

### ***Internal Reliability***

A Cronbach’s alpha test was utilized on the pre-test scores to measure the internal reliability of the test instrument. Nunnally (1978) suggested that a Cronbach’s alpha of .7 or higher indicates acceptable reliability. The Cronbach’s alpha for the test instrument was .683; which is approximately .7. Therefore, the internal reliability of the test instrument is acceptable.

A Cronbach’s alpha test was also utilized on the satisfaction scores to measure the internal reliability of the satisfaction instrument. The Cronbach’s alphas for the satisfaction survey were .935 for the enjoyment items (Sat1-Sat7), .914 for the perceived usefulness items (Sat8-Sat14), and .862 for the perceived difficulty items (Sat15-Sat21). Therefore, the internal reliability of the satisfaction instrument is acceptable.

### ***Binary Logistic Regression***

Binary Logistic Regression was run to assess if group membership could be determined based on the pre-test scores. It was hypothesized in H1 that the pre-test scores for both the control and treatment groups will exhibit no significant difference.

Table 4.12: Binary Logistic Regression Statistics

Variable	B	S.E.	Wald Statistic ( $t^2$ )	P-Value
(Constant)	0.876	1.293	0.459	0.498
Pre-Test Scores	-0.023	0.020	1.414	0.234

The independent variable in the model will be pre-test scores and the dependent variable will be group membership (0 = control group, 1 = treatment group). Binary Logistic Regression statistics are shown in Table 4.12. The level of significance associated with this research is .05.

The hypothesis test of  $\beta$  for non-directional test for the pre-test score variable is  $H_0: \beta = 0, H_1: \beta \neq 0$ . The Wald statistic ( $t^2$ ) for the pre-test score variable is 1.414. The p-value associated with the Wald statistics is .234 which is greater than alpha = .05. Therefore, the researcher failed to reject the null that the slope is equal to zero. As hypothesized in  $H_1$ , the probability of being in the control and treatment groups was not be related to pre-test scores of participants.

### ***Multiple Regression***

Multiple Regression was run to evaluate H2 through H4. The multiple regression models were utilized in explaining the main and interaction variable effects on the dependent variable.

*Hypothesis 2.* The dependent variable in the model was post-test scores. The control variable in the model was pre-test scores. The explanatory variable was group

membership (0 = control group, 1 = treatment group). The General Linear Model for H2 is shown in Equation 4.1.

Equation 4.1: The General Linear Model for H2

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

Y = Post-test Scores

a = Intercept

X<sub>1</sub> = Pre-Test Scores

X<sub>2</sub> = Group (0 = control group, 1 = treatment group)

e = Error.

Multiple Regression statistics for H2 are shown in Table 4.13 and Overall Model Fit for H2 are shown in Table 4.14. The level of significance associated with this research is .05. The results of the multiple regression analysis are as follows:

- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the pre-test score variable is  $H_0: \beta_{\text{pre-test}} = 0$ ,  $H_1: \beta_{\text{pre-test}} \neq 0$ . The t statistic for the pre-test score variable is 6.999. The p-value associated with the t statistics is 0.003 which is less than alpha = .05. Therefore, the researcher rejects the null that the slope is equal to zero.
- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the group variable is  $H_0: \beta_{\text{group}} = 0$ ,  $H_1: \beta_{\text{group}} \neq 0$ . The t statistic for the group variable is

Table 4.13: Multiple Regression Statistics for H2

Variable	B	S.E.	t Statistic	P-Value	VIF
(Constant)	22.025	6.908	3.188	0.003	
Pre-Test Score	0.695	0.099	6.999	0.000	1.031
Group	13.211	3.198	4.131	0.000	1.031

Table 4.14: Overall Model Fit for H2

R	R <sup>2</sup>	R <sup>2</sup> Change	F Statistic	P-Value
0.746	0.557	0.557	28.893	0.000

4.131. The p-value associated with the t statistics is  $< 0.000$  which is less than  $\alpha = .05$ . Therefore, the researcher rejects the null that the slope is equal to zero. As hypothesized in H2, the post-test scores for the control group exhibited a significant difference from the post-test scores for the treatment group when controlling for pre-test scores.

- The variance inflation factors (VIF), which are a measure of multicollinearity within the independent variables in the model, for pre-test score and group variables were 1.031 for both variables. These low VIFs indicates correlation between the variables is low. Therefore based on the low VIFs, multicollinearity is not a problem in this model.
- Cook's Distance statistic is used to identify influential outliers. The Cook's Distance statistics ranged from 0.000 to 0.294. Based on these Cook's Distance statistic values being less than 1, no influential outliers are in the model.

- The F statistic is used for testing the overall fit of the model. The hypothesis test of Overall Model Fit (F statistic) is  $H_0: \beta_{\text{pre-test}} = \beta_{\text{group}} 0$ ,  $H_1: \beta_{\text{pre-test}} \neq \beta_{\text{group}} \neq 0$ . The F statistic of Overall Model Fit is 28.893. The p-value associated with the F statistics is  $< 0.000$  which is less than  $\alpha = .05$ . The Overall Model Fit is statistically significant.
- The  $R^2$  Change of the model is the percentage of the variance in the dependent variable explained by the independent variables. The  $R^2$  Change of the model is .557. Therefore, 55.7% of the variance in the dependent variable is explained by the independent variables.

Based on the Beta ( $\beta$ ) Coefficients in Table 4.13 and the General Linear Model in Equation 4.1, the overall model for this analysis is:

Equation 4.1: The General Linear Model for H2

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

$$a = 22.025$$

$$\beta_1 = 0.695$$

$$\beta_2 = 13.211$$

Hypothesis 3. The dependent variable in the model was post-test scores. The control variable in the model was pre-test scores. The explanatory variable was employment type (0 = front desk employee, 1 = hotel manager). The General Linear Model for H3 is shown in Equation 4.2.

Equation 4.2: The General Linear Model for H3

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

Y = Post-test Scores

a = Intercept

X<sub>1</sub> = Pre-Test Scores

X<sub>2</sub> = Type (0 = front desk employee, 1 = hotel manager)

e = Error.

Multiple Regression statistics for H3 are shown in Table 4.15 and Overall Model Fit for H3 are shown in Table 4.16. The level of significance associated with this research is .05. The results of the multiple regression analysis are as follows:

- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the pre-test score variable is  $H_0: \beta_{\text{pre-test}} = 0$ ,  $H_1: \beta_{\text{pre-test}} \neq 0$ . The t statistic for the pre-test score variable is 5.506. The p-value associated with the t statistics is  $< 0.000$  which is less than  $\alpha = .05$ . Therefore, the researcher rejects the null that the slope is equal to zero.
- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the type variable is  $H_0: \beta_{\text{type}} = 0$ ,  $H_1: \beta_{\text{type}} \neq 0$ . The t statistic for the type variable is -1.480. The p-value associated with the t statistics is 0.146 which is greater

Table 4.15: Multiple Regression Statistics for H3

Variable	B	S.E.	t Statistic	P-Value	VIF
(Constant)	29.151	7.610	3.831	0.000	
Pre-Test Score	0.729	0.132	5.506	0.000	1.400
Type	-6.648	4.492	-1.480	0.146	1.400

Table 4.16: Overall Model Fit for H3

R	R <sup>2</sup>	R <sup>2</sup> Change	F Statistic	P-Value
0.648	0.420	0.420	16.655	0.000

than  $\alpha = .05$ . Therefore, the researcher fails to reject the null that the slope is equal to zero. The hypothesis, H3, was incorrect. The post-test scores for the front desk employees did not exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

- The variance inflation factors (VIF), which are a measure of multicollinearity within the independent variables in the model, for pre-test score and group variables were 1.400 for both variables. These low VIFs indicates correlation between the variables is low. Therefore based on the low VIFs, multicollinearity is not a problem in this model.
- Cook's Distance statistic is used to identify influential outliers. The Cook's Distance statistics ranged from 0.000 to 0.250. Based on these Cook's Distance statistic values being less than 1, no influential outliers are in the model.



- The F statistic is used for testing the overall fit of the model. The hypothesis test of Overall Model Fit (F statistic) is  $H_0: \beta_{\text{pre-test}} = \beta_{\text{type}} 0$ ,  $H_1: \beta_{\text{pre-test}} \neq \beta_{\text{type}} \neq 0$ . The F statistic of Overall Model Fit is 16.665. The p-value associated with the F statistics is  $< 0.000$  which is less than  $\alpha = .05$ . The Overall Model Fit is statistically significant.
- The  $R^2$  Change of the model is the percentage of the variance in the dependent variable explained by the independent variables. The  $R^2$  Change of the model is .420. Therefore, 42.0% of the variance in the dependent variable is explained by the independent variables.

Based on the Beta ( $\beta$ ) Coefficients in Table 4.15 and the General Linear Model in Equation 4.2, the overall model for this analysis is:

Equation 4.2: The General Linear Model for H3

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

$$a = 29.151$$

$$\beta_1 = 0.729$$

$$\beta_2 = -6.648$$

Hypothesis 4. The dependent variable in the model was post-test scores. The control variable in the model was pre-test scores. The explanatory variables were group membership (0 = control group, 1 = treatment group), type (0 = front desk employee, 1 =

hotel manager), and the interaction variable, group\*type. The General Linear Model for H4 is shown in Equation 4.3.

Equation 4.3: The General Linear Model for H4

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where:

Y = Post-test Scores

a = Intercept

X<sub>1</sub> = Pre-Test Scores

X<sub>2</sub> = Group (0 = control group, 1 = treatment group)

X<sub>3</sub> = Type (0 = front desk employee, 1 = hotel manager)

X<sub>4</sub> = Group\*Type (Interaction Variable)

e = Error.

Multiple Regression statistics for H3 are shown in Table 4.17 and Overall Model Fit for H3 are shown in Table 4.18. The level of significance associated with this research is .05. The results of the multiple regression analysis are as follows:

- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the pre-test score variable is  $H_0: \beta_{\text{pre-test}} = 0$ ,  $H_1: \beta_{\text{pre-test}} \neq 0$ . The t statistic for the pre-test score variable is 6.429. The p-value associated with the t statistics is  $< 0.000$  which is less than  $\alpha = .05$ . Therefore, the researcher rejects the null that the slope is equal to zero

Table 4.17: Multiple Regression Statistics for H4

Variable	B	S.E.	t Statistic	P-Value	VIF
(Constant)	16.443	6.805	2.416	0.020	
Pre-Test Score	0.704	0.110	6.429	0.000	1.416
Group	24.442	5.355	4.565	0.000	3.257
Type	6.066	5.032	1.206	0.234	2.591
Group*Type	-17.868	6.604	-2.706	0.010	3.278

Table 4.18: Overall Model Fit for H4

R	R <sup>2</sup>	R <sup>2</sup> Change	F Statistic	P-Value
0.790	0.624	0.624	18.252	0.000

- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the type variable is  $H_0: \beta_{\text{type}} = 0$ ,  $H_1: \beta_{\text{type}} \neq 0$ . The t statistic for the type variable is 1.206. The p-value associated with the t statistics is 0.234 which is greater than  $\alpha = .05$ . Therefore, the researcher fails to reject the null that the slope is equal to zero. Though, the type variable (0 = front desk employee, 1 = hotel manager) was not statistically significant in the model, it must remain in the model because of the interaction variable between group\*type.
- The hypothesis test of  $\beta$  for non-directional test (t statistic) for the group variable is  $H_0: \beta_{\text{group}} = 0$ ,  $H_1: \beta_{\text{group}} \neq 0$ . The t statistic for the group variable is 4.565. The p-value associated with the t statistics is  $< 0.000$  which is less than  $\alpha = .05$ . Therefore, the researcher rejects the null that the slope is equal to zero.

- The hypothesis test of  $\beta$  for non-directional test of cross product interaction effect (t statistic) for the group\*type variable is  $H_0: \beta_{\text{group*type}} = 0$ ,  $H_1: \beta_{\text{group*type}} \neq 0$ . The t statistic of cross product interaction effect for the group\*type variable is -2.706. The p-value associated with the t statistics is 0.010 which is less than  $\alpha = .05$ . Therefore, the researcher rejects the null that the slope is equal to zero. As hypothesized in H4, the post-test scores for the interaction effect between group and type exhibited a significant difference when controlling for pre-test scores. The interaction effect between group and type on post-test scores is illustrated in Figure 4.1. The post-test scores for the front desk employees and hotel managers in the control and treatment group are shown in Table 4.19.
- The variance inflation factors (VIF), which are a measure of multicollinearity within the independent variables in the model, for pre-test score, type, group, and group\*type variables range between 1.416 to 3.278. These low VIFs indicates correlation between the variables is low. Therefore based on the low VIFs, multicollinearity is not a problem in this model.
- Cook's Distance statistic is used to identify influential outliers. The Cook's Distance statistics ranged from 0.000 to 0.341. Based on these Cook's Distance statistic values being less than 1, no influential outliers are in the model.

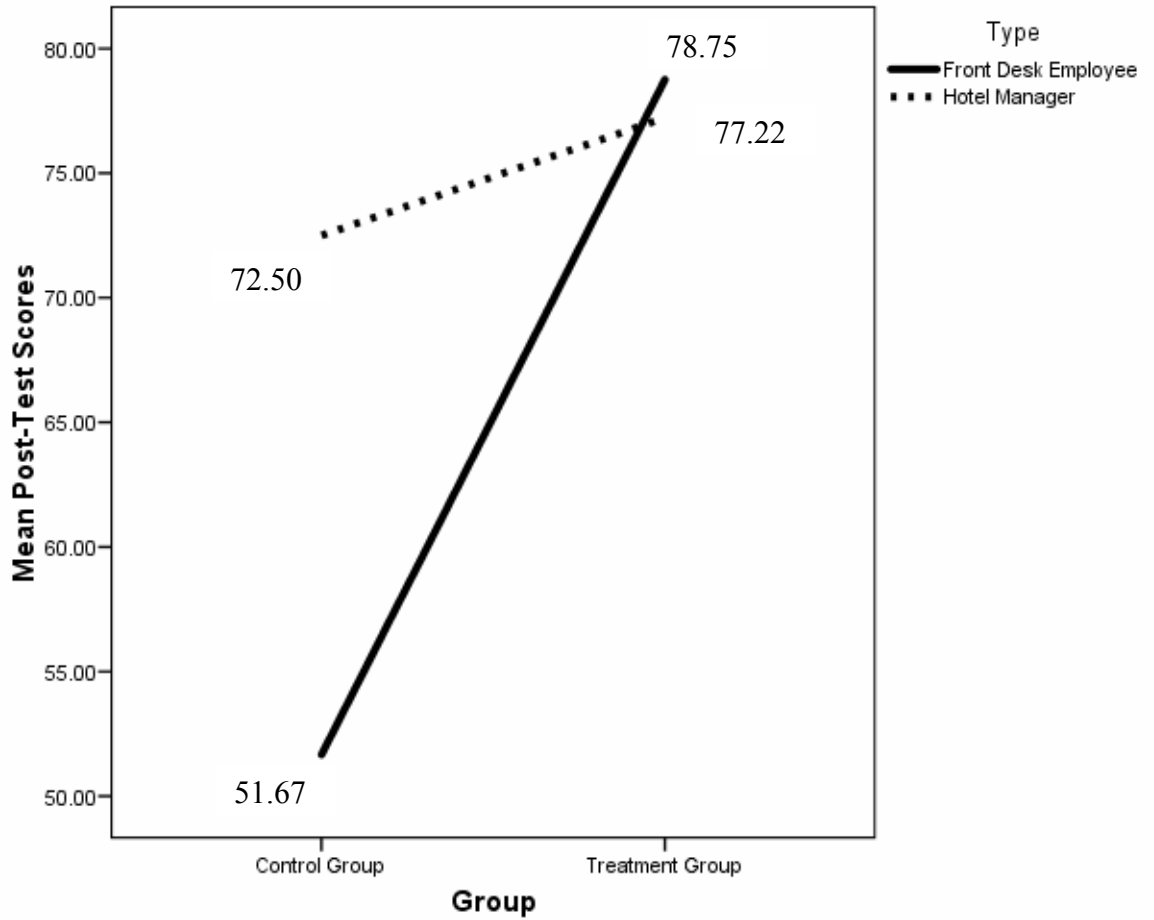


Figure 4.1: Interaction between Group and Type Variables on Mean Post-test Scores

Table 4.19: The post-test scores for front desk employees and hotel managers by Group

Type	Control Group	Treatment Group
Front Desk Employees	51.67	78.75
Hotel Managers	72.50	77.22

- The F statistic is used for testing the overall fit of the model. The hypothesis test of Overall Model Fit (F statistic) is  $H_0: \beta_{\text{pre-test}} = \beta_{\text{group}} = \beta_{\text{type}} = \beta_{\text{group*type}} = 0$ ,  $H_1: \beta_{\text{pre-test}} \neq \beta_{\text{group}} \neq \beta_{\text{type}} \neq \beta_{\text{group*type}} \neq 0$ . The F statistic of Overall Model Fit is 18.252. The p-value associated with the F statistics is  $< 0.000$  which is less than  $\alpha = .05$ . The Overall Model Fit is statistically significant.
- The  $R^2$  Change of the model is the percentage of the variance in the dependent variable explained by the independent variables. The  $R^2$  Change of the model is .624. Therefore, 62.4% of the variance in the dependent variable is explained by the independent variables.

Based on the Beta ( $\beta$ ) Coefficients in Table 4.17 and the General Linear Model for H4 in Equation 4.3, the overall model for this analysis is:

Equation 4.3: The General Linear Model for H4

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where:

$$a = 16.443$$

$$\beta_1 = 0.704$$

$$\beta_2 = 24.442$$

$$\beta_3 = 6.066$$

$$\beta_4 = -17.868.$$

Based on the Multiple Regression analysis, H1, H2, and H4 were supported by the results and H4 was incorrect. The results of each hypothesis are shown in Table 4.20.

Table 4.20: The results of each hypothesis

Hypothesis	P-Value	Correct or Incorrect
H1	> 0.000*	Correct
H2	> 0.000*	Correct
H3	0.146	Incorrect
H4	> 0.000*	Correct

\* Statistically significant at the .05 level.

### ***Reaction Survey Analysis***

The objective of the reaction survey was to evaluate the reaction of participants with the training program. The reaction survey instrument for this research was designed after the Warr, Allan, and Birdi's (1999) study that used post-training survey to measure reaction to the training program. Warr, Allan, and Birdi's (1999) instrument had three distinct areas: (1) enjoyment, (2) perceived usefulness, and (3) perceived difficulty. The results of the reaction survey are shown in Table 4.21.

The survey instrument was divided into three sections with seven items in each section. Each section of the survey has a satisfaction score out of 35 points. The overall satisfaction score is the summation of the three section satisfaction scores which is out of a total of 105 points. The first section explored enjoyment of the training program and requested participants to rate their satisfaction on a 5-point Likert scale from 1 (Strongly Dissatisfied) to 5 (Strongly Satisfied). The enjoyment section consists of seven items, Sat1 to Sat7. The second and third sections of the instrument will explore perceived usefulness and perceived difficulty and will request participants to rate how they feel about each statement on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The perceived usefulness section consists of seven items, Sat8 to Sat14, and the

perceived difficulty section consists of seven items, Sat15 to Sat21. Table 4.22 illustrates the correlation matrix between post-test scores of the treatment group and the four satisfaction scores of the treat group.

Table 4.21: Central Tendencies of the Reaction Survey (N = 17)

Satisfaction Item and Score	Mean	Standard Deviation
Sat1	4.29	0.77
Sat2	4.47	0.62
Sat3	4.35	0.61
Sat4	4.53	0.62
Sat5	4.35	0.70
Sat6	4.59	0.62
Sat7	4.41	0.71
Satisfaction Score Enjoyment	31.00	3.97
Sat8	4.59	0.62
Sat9	4.53	0.72
Sat10	4.35	0.86
Sat11	4.41	0.80
Sat12	4.29	0.77
Sat13	4.18	0.73
Sat14	4.47	0.72
Satisfaction Score Percieved Usefulness	30.82	4.25
Sat15	4.88	0.33
Sat16	4.71	0.59
Sat17	4.71	0.59
Sat18	4.71	0.59
Sat19	4.76	0.56
Sat20	4.76	0.56
Sat21	4.69	0.70
Satisfaction Score Percieved Difficulty	32.94	3.01
Satisfaction Score Total	94.76	9.40

- 5-point Likert scale from 1 (Strongly Dissatisfied) to 5 (Strongly Satisfied) for Sat1-Sat7
- 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree) for Sat8-Sat21



Table 4.22: Correlation Matrix between Post-test Scores and Four Satisfaction Scores  
(N = 17)

	Post-Test Scores	Total Satisfaction	Enjoyment	Perceived Usefulness	Perceived Difficulty
Post-Test Scores	1.000				
Total Satisfaction	0.118	1.000			
Enjoyment	0.015	0.860*	1.000		
Perceived Usefulness	0.199	0.915*	0.716*	1.000	
Perceived Difficulty	0.068	0.698*	0.356	0.503*	1.000

- Correlation is statistically significant at the .05 level.

Note: List values are the Pearson's Correlation Coefficient which can range from -1 to 1.

## CHAPTER V – DISCUSSION

The purpose of this study was to determine if a basic RM concept training program could successfully teach hotel front desk employees and managers RM fundamentals. The objectives of this study were (a) to evaluate the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program, and (b) to examine training program's effectiveness in teaching basic RM concepts. Several research instruments (Appendices A, C, & D) were utilized to measure these objectives. This study utilized a basic RM training module based on a preliminary research instrument (Appendix B) completed by RM professionals. The data was collected by the researcher over approximately 5 ½ months from 8 hotels. The results of the analysis are described in Chapter 4.

This study was the first research study to utilize the first two levels of Kirkpatrick's (1960) four-level model of evaluating training within the revenue management discipline. The results of the study will contribute to the field of revenue management training.

In order for the researcher to examine training program's effectiveness in teaching basic RM concepts, the researchers formulated four hypotheses based on the group membership (control or treatment group) and type of employment (front desk employee or hotel manager). The researcher also evaluated the reaction or satisfaction level of hotel front desk employees and managers in reference to the training program. A discussion of the four hypotheses' outcomes, an evaluation of the participant's satisfaction with the training program, and limitations of the study are discussed in this chapter.

### ***Hypothesis One***

Hypothesis one (H1) suggested that the probability of being in the control and treatment groups was not be related to pre-test scores of participants. Based on the results of the logistic regression analysis, the hypothesis was correct in assuming that group membership was not related to pre-test scores. One important suggestion by Kirkpatrick (1979) was that a control group should also be given the test instrument to compare later to the treatment group. Bakken and Bernstein (1982) also suggested using a control and treatment group, but stressed the importance that the participants of the two groups be similar. The researcher utilized participants for the study with similar employment characteristics distributed in both the control and treatment groups.

For this research study to address the research objectives, the probability of being in the control and treatment groups can not be related to the pre-test scores. The fact that group membership is not related to pre-test scores suggested the two groups had similar RM knowledge before the training module was implemented. If the probability of being in the control and treatment groups was related to the pre-test scores then later analysis of the pre-test and post-test scores would have possibly been inaccurate. Therefore, the support of H1 was important to assessing the other hypotheses in the study.

### ***Hypothesis Two***

Hypothesis two (H2) suggested the post-test scores for the control group will exhibit a significant difference from the post-test scores for the treatment group when controlling for pre-test scores. Based on the results of the multiple regression analysis, the hypothesis was correct. The post-test scores for the control group exhibited a

significant difference from the post-test scores for the treatment group when controlling for pre-test scores.

As suggested by Kirkpatrick (1979) a control group should also be given the test instrument to compare later to the treatment group. This important suggestion made it possible in this study to analyze whether post-test scores based on group membership when controlling for pre-test scores exhibited a statistically significant difference.

For the control group, the mean pre-test score was 67.03 and the mean post-test score was 68.59 as illustrated in Table 4.11. This represents an increase of 2.33% from pre-test scores to post-test scores.

For the treatment group, the mean pre-test score was 61.47 and the mean post-test score was 77.94 as illustrated in Table 4.11. This represents an increase of 26.79% from pre-test scores to post-test scores.

When controlling for the pre-test scores, the post-test scores for the control group exhibited a statistically significant difference from the post-test scores for the treatment group. Therefore based on these findings, the basic RM training module utilized in this study successfully increased the post-test scores of the participants in the treatment group.

### ***Hypothesis Three***

Hypothesis three (H3) suggested the post-test scores for the front desk employees will exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores. Based on the results of the multiple regression analysis, the hypothesis was incorrect. The post-test scores for the front desk employees did not

exhibit a significant difference from the post-test scores for the hotel managers when controlling for pre-test scores.

For the front desk employees, the mean pre-test score was 52.14 and the mean post-test score was 67.14 as illustrated in Table 4.11. This represents an increase of 28.77% from pre-test scores to post-test scores.

For the treatment group, the mean pre-test score was 70.29 and the mean post-test score was 73.71 as illustrated in Table 4.11. This represents an increase of 4.87% from pre-test scores to post-test scores.

When controlling for the pre-test scores, the post-test scores for the front desk employees did not exhibit a statistically significant difference from the post-test scores for the hotel managers. Although both groups exhibited an increase in scores, it was not a statistically significant increase. The failure to identify a statistically significant difference may be due to the small sample size. Therefore based on these findings, the employment type (front desk employee or hotel manager) is not a statistically significant variable by itself.

#### ***Hypothesis Four***

Hypothesis four (H4) suggested the post-test scores for the interaction effect between group membership and employment type will exhibit a significant difference when controlling for pre-test scores. Based on the results of the multiple regression analysis, the hypothesis was correct. The post-test scores for the interaction effect between group membership and employment type exhibited a significant difference when controlling for pre-test scores.

For the front desk employees in the control group, the mean pre-test score was 51.67 as illustrated in Table 4.19 For the front desk employees in the treatment group, the mean post-test score was 78.75 as illustrated in Table 4.19 This represents an increase of 52.41% from pre-test scores to post-test scores.

For the hotel managers in the control group, the mean pre-test score was 72.50 as illustrated in Table 4.19 For the hotel managers in the treatment group, the mean post-test score was 77.22 as illustrated in Table 4.19 This represents an increase of 6.51% from pre-test scores to post-test scores.

When controlling for the pre-test scores, the post-test scores for the interaction effect between group membership and employment type exhibited a significant difference. The employment type was not a statistically significant variable by itself, but it was statistically significant with group membership as an interaction effect. Therefore based on these findings, the basic RM training module was successful training front desk employees in the treatment group and hotel managers in the treatment group. Also based on this hypothesis, the study was successfully effective in teaching front desk employee and hotel manager basic RM concepts.

### ***Satisfaction of the Training Participants***

Reaction is the measure of how satisfied the trainees are with the training program (Kirkpatrick, 1978). As illustrated in Table 4.21 the training participants were very satisfied with the training module. The lowest mean score of any of the 21 items was 4.18 out of 5.00. For each of the three subdivisions of satisfaction (Warr, Allan, & Birdi, 1999), the enjoyment average score was 31.00 out of 35.00, the perceived usefulness

average score was 30.82 out of 35, and the perceived difficulty average score was 32.94 out of 35. The overall average satisfaction score was 94.76 out of 105. The high satisfaction scores indicate the researcher was successful in implementing a training module with a variety of visual material, interactive demonstration, and lecture that the trainees enjoyed, perceived useful to their job, and perceived easy to understand.

As illustrated in Table 4.22 there were weak correlations between the post-test scores and satisfaction scores. The Pearson's correlation coefficients were close to zero indicating little to no correlation. These results are consistent with other studies that discovered little to no correlation between the reaction and learning levels (Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997; Mathieu, Tannenbaum, & Salas, 1992). Due to the consistently high satisfaction scores by the participants, the researcher believes this is the reason why the satisfaction scores do not have strong correlations with the post-test scores. Although there were not strong correlations between the reaction and learning levels, the study did successfully improve the post-test of the treatment group, and the satisfaction scores of the training program were high.

### ***Limitations of the Study***

The researcher had difficulty in getting hotel firms to participate in the study due to time constraints, limited payroll budgets, lack of interest, and internal RM training programs. Therefore, the sample size for the study was only 49 participants. Only 14 front desk employees completed the study compared to 35 hotel managers.

Another limitation to the study was the limited number of cities used in the study. The study only utilized hotels in Knoxville, TN and Columbia, SC. The limited area of analysis was due to travel convenience for the researcher.

Another limitation of the study was that many different hotel brands were utilized in the study. Different hotel brands have different training practices and RM systems. This limited the researcher from incorporating computer systems into the training module, because each hotel may have utilized different computer systems. Also training programs and training frequency for each hotel brand may be different.

Though these limitations did exist in the study, the basic RM concept training program did successfully teach front desk employees and hotel managers RM fundamentals. Therefore, the findings in the study will contribute to the RM training field.



## CHAPTER VI – IMPLICATIONS

The purpose of this study was to determine if a basic RM concept training program could successfully teach hotel front desk employees and managers RM fundamentals. Based on the results, the basic RM concept training program did successfully teach front desk employees and hotel managers RM fundamentals. The results of this study have implications on the hotel industry. This chapter will discuss the implications of the study and future research.

### *Implications of the Study*

Many research studies suggested training staff in the fundamentals of RM (Orkin, 1988; Kimes, 1989; Belobaba, 2001; Parker, 2003; Skugge, 2003). Based on the findings of this study, the front desk employees and hotel managers can successfully learn the basic RM fundamentals. Front desk employees and managers must have effective RM skills and understanding of basic RM concepts to make more accurate decisions on pricing (Skugge, 2003). It is important for all employees that are involved in the RM process to have a basic understanding of RM concepts. This study proved that basic RM concepts can be taught to different levels of employees within the hotel. Also the training methods and materials utilized by the researcher were successful in teaching basic RM concepts as well as having high satisfaction scores with the training module.

When comparing the front desk employees' scores based on group membership, an increase of 52.41% from pre-test scores to post-test scores was shown. The front desk employees also had lower pre-test scores than the hotel managers (52.14 for front desk employees compared to 70.29 for managers). The front desk employees increased their

post-test scores by 52.41% after receiving the training module, and they began the study with less basic RM knowledge than the hotel managers. Based on these findings, the research suggests that future RM training programs for front desk employees to continue to focus on basic RM concepts.

When comparing the hotel managers' scores based on group membership, an increase of 6.51% from pre-test scores to post-test scores was shown. The hotel managers increased their post-test scores by 6.51% after receiving the training module, and they also had higher pre-test scores than the front desk employee (52.14 for front desk employees compared to 70.29 for managers). This suggests that hotel managers have more knowledge of basic RM concepts than the front desk employees before training. These higher pre-test scores could be due to the higher average number of years the hotel manager has in their current position than the front desk employee. The hotel managers in this study have been in their current position for a mean of 3.8 years; while the front desk employees in this study have been in their current position for a mean of 0.9 years. Based on these findings, the researcher suggests that future RM training programs for hotel managers to focus on basic RM concepts, but also involve more advanced RM concepts. Though the RM training module did successfully increase post-test scores, hotel managers already had a good understanding of basic RM concepts before the study. Therefore, including more advanced RM concepts would enhance the training program for hotel managers.

The satisfaction scores for the training module were high in all three subdivisions: enjoyment, perceived usefulness, and perceived difficulty. The researcher utilized a variety of visual material, interactive demonstration, and lecture when implementing the

training module. Based on the satisfaction enjoyment scores, the training material and presentation was well liked by the participants. The researcher suggests that RM trainers utilize a variety of training material such as overhead outlines, interactive demonstration, question and answer format, and handouts to better enhance the training experience. Based on the satisfaction perceived usefulness and difficulty scores, the training material was perceived to be very useful to the job duties and easy to understand for both the front desk employees and hotel managers. As suggested earlier, the RM training module should continue to focus on the basic RM fundamentals as well as adding more advanced RM concepts for the hotel managers. These advanced RM concepts are more important to the hotel managers, because they have more responsibility in the RM process.

Based on the results of this study, the basic RM concept training program did successfully teach front desk employees and hotel managers RM fundamentals. Skugge (2003) stated front desk employees and managers must have effective RM skills and understanding of basic RM concepts to make more accurate decisions on pricing. Therefore, this research study will contribute to RM literature by creating a foundation for RM training evaluation research. Future research studies can utilize the findings of this research study to build on this area of research.

### ***Future Research***

Future research studies could focus on implementing more advanced RM concept training programs for the hotel managers. These advanced training programs could include specific RM strategies, consumer forecasting models, competitive set analysis, and training techniques for training other personnel. The reason for including more

advanced RM concept training is based on the pre-test scores and years of experience in the hotel industry of the hotel managers. The front desk employees had lower pre-test scores than the hotel managers (52.14 for front desk employees compared to 70.29 for managers), and the hotel managers have spent more years working in the hotel industry (a mean of 3.8 years for hotel managers compared to a mean of 0.9 years for front desk managers). Based on these two variables and the additional RM responsibilities of the hotel managers, more advanced RM concepts should be implemented for the hotel managers.

This study only utilized the first two levels of Kirkpatrick's four-level evaluation model; therefore, future studies could assess the other two levels of the Kirkpatrick model. Future studies would analyze the training program's effect on behavior and result outcomes such as revenues and employee turnover.

Another suggestion for future analysis would be to include computer systems in the training program. Incorporating computer systems into the analysis would be an important step in assessing behavior because successful RM relies on integrating software into the RM system. Behavior assessment would analyze how successful the RM training was in teaching the participants how to properly utilize the RM software.

Future studies also may need to focus on increasing the sample size of the study. Due to time constraints, limited payroll budgets, lack of interest, and internal RM training programs, the researcher had difficulty in getting hotel firms to participate.

In summary, the basic RM concept training program did successfully teach front desk employees and hotel managers RM fundamentals. Based on the findings, the researcher suggests that future RM training programs for both the front desk employees

and hotel managers to continue to focus on basic RM concepts. The researcher further suggests the RM training programs include more advanced RM concepts for the hotel managers.

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## **APPENDICES**

## Appendix A – Satisfaction Survey Instrument

Hotel \_\_\_\_\_ Type \_\_\_\_\_

### Revenue Management Training Satisfaction Survey

Please indicate your level of satisfaction with the following items in regards to the training program by circling the appropriate response:	Strongly Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Strongly Satisfied
With the visual presentation of the materials	1	2	3	4	5
With the instructor's presentation of the material	1	2	3	4	5
With how interesting the material was	1	2	3	4	5
With how informative the material was	1	2	3	4	5
With the handout	1	2	3	4	5
With the length of the presentation	1	2	3	4	5
Overall satisfaction of the training program	1	2	3	4	5

Please indicate how you feel about the following items in regards to the training program by circling the appropriate response:	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
Training is closely related to your job duties	1	2	3	4	5
Training will help you with your job duties	1	2	3	4	5
Training will help you better understand your job duties	1	2	3	4	5
More training on RM topic will be useful to you	1	2	3	4	5
Training will help you increase your job performance	1	2	3	4	5
Training will help you increase your job satisfaction	1	2	3	4	5
Overall the training program will be useful to you	1	2	3	4	5

Please indicate how you feel about the following items in regards to the training program by circling the appropriate response:	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
Instructor was easy to understand and follow	1	2	3	4	5
Visual material was easy to understand and follow	1	2	3	4	5
Handout material was easy to understand and follow	1	2	3	4	5
RM topic was easy to understand and follow	1	2	3	4	5
Interactive RM example was easy to understand and follow (Example)	1	2	3	4	5
Interactive RM example was easy to understand and follow (Example)	1	2	3	4	5
Overall the training program was easy to understand and follow	1	2	3	4	5

Appendix B – Initial RM Professionals Survey

**Survey**

**Directions:** In your opinion, how important is a basic understating of revenue management fundamentals for the following employees/managers? Please circle one response for each employee/manager.

**Level of Importance:** 1=Not very important, 2=Not important, 3=Neutral, 4=Important, 5=Very important

	Not Very Important	Not Important	Neutral	Important	Very Important
General Managers	1	2	3	4	5
Assistant General Managers (Operations Managers)	1	2	3	4	5
Front Office Managers	1	2	3	4	5
Assistant Front Office Managers	1	2	3	4	5
Front Office Employees	1	2	3	4	5
Revenue Managers	1	2	3	4	5
Directors of Sales	1	2	3	4	5
Sales Managers	1	2	3	4	5
Controllers	1	2	3	4	5
Directors of Food & Beverage	1	2	3	4	5
Chief Engineers	1	2	3	4	5
Directors of Housekeeping	1	2	3	4	5
Directors of Human Resources	1	2	3	4	5
Other: _____	1	2	3	4	5
Other: _____	1	2	3	4	5

**Directions:** Please circle yes or no to the following question and provide additional comments.

- Does your firm or an outside firm currently implement any Revenue Management training programs/modules for your front office employees (excluding front office management)?

Yes    or     No

If yes...what type of Revenue Management training (i.e. RM software, RM principles, etc.)

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*Please continue to next page...*

**Directions:** If you were to develop a basic Revenue Management training program for front office employees, how would you rank the following Revenue Management topics in level of importance? Be sure to carefully read all listed topics and add any additional topics you feel are important.

**Level of Ranking:** 1=most important topic ... 10=least important topic

	Rank
<b>History of Revenue Management</b>	
<b>Definitions of Revenue Management</b>	
<b>Examples of a Hotel with and without a Revenue Management pricing structure</b>	
<b>Definition of Price discrimination</b>	
<b>Price elasticity of demand</b>	
<b>Customer segmentation</b>	
<b>Conditions conducive to Revenue Management Practices</b>	
<b>RevPAR</b>	
<b>Demand forecasting</b>	
<b>Room availability control</b>	
<b>Other:_____</b>	
<b>Other:_____</b>	

**Directions:** Please circle yes or no to the following question and provide additional comments.

- Do you favor a policy that rewards compensation for increasing average daily rate (ADR), occupancy percentage, and/or revenue per available room (RevPAR) for front office employees (excluding front office management)?

Yes    or     No

- If yes...what types of compensation?

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*Please continue to next page...*

**Directions:** Please place a check mark (✓) next to all the hotel/resort departments/areas that currently utilize Revenue Management within your organization.

	<b>Check all that apply</b>
<b>Front Office (Rooms)</b>	
<b>Sales Department</b>	
<b>Meeting and convention sales</b>	
<b>Catering</b>	
<b>Food &amp; Beverage Department</b>	
<b>Lounge</b>	
<b>Restaurant</b>	
<b>Golf Course(s)</b>	
<b>Other Recreation (skiing, boating, etc...)</b>	
<b>Gaming</b>	
<b>Entertainment (theater seats, movies, etc...)</b>	
<b>Parking facilities</b>	
<b>Retail Outlet(s)</b>	
<b>Other:</b> _____	
<b>Other:</b> _____	

**Directions:** Please indicate your answers to the following questions:

- What is your current title at your organization and how many long have you been in this position?  
Title: \_\_\_\_\_ How long: \_\_\_\_\_
- How long have you been a member of HSMIAI? How long: \_\_\_\_\_
- Gender: \_\_\_Female      \_\_\_Male
- What year were you born: \_\_\_\_\_
- What is your highest level of education:  
 \_\_\_High School  
 \_\_\_Some College  
 \_\_\_Associates degree  
 \_\_\_Bachelors degree (BS, BA, etc...)  
 \_\_\_Graduate degree (MS, MA, MBA, Ph.D., MD, etc...)
- What is your five digit zip code (place of residence): \_\_\_\_\_

*Thank you very much for your time and participation!*



## Appendix C – Demographics

Hotel \_\_\_\_\_ Type \_\_\_\_\_

### Demographic Information

Please indicate your response to the following questions by either circling the appropriate response or filling in the blank with the appropriate response.

What is your current age? \_\_\_\_\_ years old

What is your gender?

Female	Male
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What is your ethnicity?

American Indian/Alaskan Native	Asian
Black/African American	White
Hispanic	Pacific Islander/Native Hawaiian

What is your highest education level?

Grade School or less	High School or equivalent
Some College	Associates Degree
Bachelors Degree	Graduate Degree

What is your current position within the organization? \_\_\_\_\_

How long have you worked in your current position? \_\_\_\_\_

How long have you been employed with this current organization? \_\_\_\_\_

## Appendix D – RM Pre- and Post-test Instrument

Hotel \_\_\_\_\_ Type \_\_\_\_\_


### Revenue Management Concept Examination

Please indicate the answer to the following questions by circling the correct response.

1. One definition of Revenue management is:
  - a) a concept that provides the right service, to the right customer, at the right time, for the right price
  - b) managing costs through future demand forecasting
  - c) controlling labor costs to decrease overall revenues
  - d) managing non-perishable products to maximize profits
2. What are revenues?
  - a) costs associated with running an organization
  - b) income minus costs
  - c) income which comes to an organization from any source
  - d) investments made by the organization
3. Revenue management originated in the 1970s with the deregulation of:
  - a) cruise-line industry
  - b) car rental industry
  - c) hotel industry
  - d) airline industry
4. The term, Revenue management, is also interchangeable with:
  - a) perishable management
  - b) yield management
  - c) cost management
  - d) fixed capacity management
5. Hoteliers would prefer \_\_\_\_\_ because they can charge more for a room with a small decrease in demand change.
  - a) elastic demand
  - b) inelastic demand
  - c) round demand
  - d) flat demand
6. A room night is favorable to revenue management because of the following except:
  - a) it is perishable
  - b) it typically has a fixed capacity
  - c) it carries high fixed costs and low variable costs
  - d) it is non-perishable
7. The following are part of the fundamentals of Revenue Management except:
  - a) market segmentation
  - b) division of labor
  - c) demand and booking patterns
  - d) fixed capacity
8. The following are individuals who would normally be involved in the Revenue Management process except:
  - a) assistant front desk manager
  - b) sales and marketing personnel
  - c) front desk employees
  - d) food and beverage personnel
9. When there is a large decrease in demand if the price for a room is increased, this type of demand is called:
  - a) elastic demand
  - b) inelastic demand
  - c) round demand
  - d) flat demand
10. What is price discrimination?
  - a) discriminating against customers based on race and gender
  - b) an illegal price strategy used by the hotel industry
  - c) selling a product or service at two more prices and price difference not justified by different production costs
  - d) selling a product or service at increased prices because of a nature disaster

11. Three conditions for price discrimination are as follows except:
- seller must have ability to control output and price
  - seller must separate consumers into separate classes, where each class has a different "willingness to pay"
  - original purchaser must consume product with decrease costs
  - original purchaser can not resell the product at a higher price
12. Business travelers are typically:
- very price sensitive
  - not very price sensitive
  - spend a large portion of their income on lodging
  - none of the above
13. Leisure travelers are typically:
- very price sensitive
  - not very price sensitive
  - book a hotel room a few days before consumption
  - none of the above
14. Price elasticity of demand is:
- a measure of price compared with profit margin
  - a measure of costs compared with profit margin
  - a measure of how responsive consumers are to changes in price
  - a measure of consumers satisfaction compared to price
15. Three factors affecting price elasticity of demand are follows except:
- the distribution channel used to book the product
  - availability of product substitutes
  - if the product is a necessity or a luxury item
  - the percent of the consumers income a product takes to purchase
16. In a full service hotel, a relatively fixed capacity product includes the following:
- number hotel rooms
  - total banquet/meeting space
  - maximum restaurant seating capacity
  - all of the above
17. One condition that is not necessary for effective RM is:
- capacity is relatively fixed
  - product is sold after consumption
  - original purchaser can not resell the product at a higher price
  - seller must have ability to control output and price
18. One condition that is not necessary for effective RM is:
- inventory is not perishable
  - seller must have ability to control output and price
  - product is sold before consumption
  - original purchaser can not resell the product at a higher price
20. One condition that is not necessary for price discrimination is:
- seller must have the ability to control output and price.
  - capacity is relatively fixed
  - product is sold before consumption
  - original purchaser can not resell the product at a higher price

## Appendix E – RM Training Module




### Revenue Management: The Basics

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Presented by  
Warren T. Jahn, Jr.  
Hotel, Restaurant, and Tourism  
University of Tennessee

1



### Purpose of the Study

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- The purpose of this study is determine if a basic Revenue Management (RM) concept training program can successfully teach hotel front desk employees and managers RM fundamentals.

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UNIVERSITY OF TENNESSEE

2



## Overview of the Study

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- The training program should take approximately one hour to complete
- This module is only a basic understanding of Revenue Management
- No specific strategies will be discussed



## Overview of the Study

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- Please fill out the index card as instructed:
  - "A" = front desk employee
  - "B" = manager
- No individual names will be included in the study



## Pre-test

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- You will have approximately 30 minutes to complete the pre-test portion of the study.
- Upon completion, the training program will begin.
- Please no cheating



## What is Revenue Management?

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- Revenue Management (RM) is synonymous with Yield Management
- RM is defined as “the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield.”

(Kimes, 1989)



## What is Revenue Management?

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- RM is simply selling a product or service based on a customer's "willingness to pay."
- What is revenue?
  - Income which comes to an organization from any source



## Brief History - RM

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- After US airline deregulation in 1978, the airline industry began using RM.
  - No more pricing restrictions existed
- In the late 1980s, the hotel industry began using revenue management techniques.



## 7 Conditions for RM

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1. Perishable
2. Fixed Capacity
3. Market Segment
4. Products sold in Advance
5. Demand Fluctuations
6. Low Marginal Sales Costs
7. High Marginal Production Costs



## Perishable Inventory

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- If the hotel room is not sold today, it can never be sold again for this specific date.
- Retail vs. Hotel Industries Example





## Fixed Capacity

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- In a hotel fixed capacities are:
  - Total # of Hotel Rooms
  - Total Meeting Space
  - Maximum Restaurant Seating Capacity
- Retail vs. Hotel Industries Example



## Hotel Performance Measures

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- Average Daily Rate (ADR)
- Occupancy Percentage (OCC %)
- Most robust measure:
  - Revenue Per Available Room (RevPAR)



## Hotel Performance Measures

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- Revenue Per Available Room (RevPAR)

$$\text{RevPAR} = \text{ADR} * \text{OCC \%}$$



## Market Segmentation

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- Market segmentation is a technique of separating customers into different groups based on similar characteristics
- Why is this important?

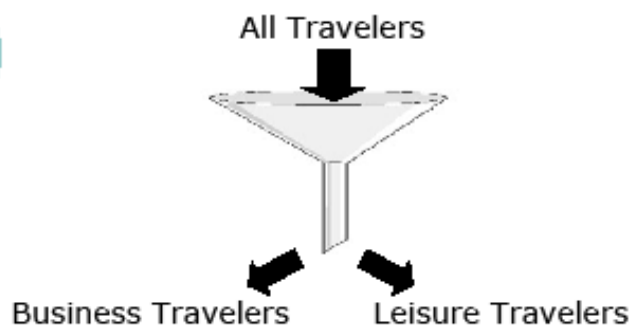
## Market Segmentation

---

- Business vs. Leisure Travelers
  - Business travelers are typically not very sensitive to price changes, a higher "willingness to pay"
  - Leisure travelers tend to be very sensitive to price changes, a lower "willingness to pay"

## Market Segmentation

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## Demand Fluctuations

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- For RM techniques to be successful, demand fluctuations must exist:
  - Day of the Week
  - Monthly
  - Seasonally



## Demand Fluctuations

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- Demand forecasting is essential is understanding the demand trends for your hotel.
- Demand forecasting utilizes historic and current demand trends to forecast more accurately.



## Capacity Controls

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- Capacity control establish the amount of capacity available to sell and at what prices to sell the capacity.
  - Overselling/Overbooking
  - Stay Controls



## Capacity Controls

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- Overselling is when more reservations are sold than the actual number of rooms that are available.
- Why overselling?
  - No Shows - historic
  - Cancellations - historic

## Capacity Controls

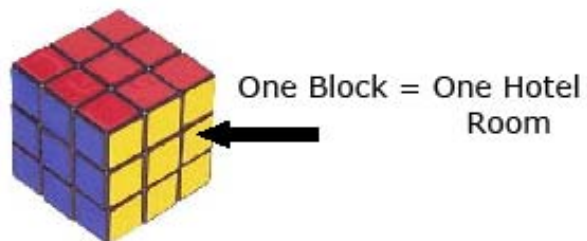
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- Stay control is a technique which attempts to shift demand from high demand days to increase demand on low demand days.
- Why use stay controls?

## Capacity Controls

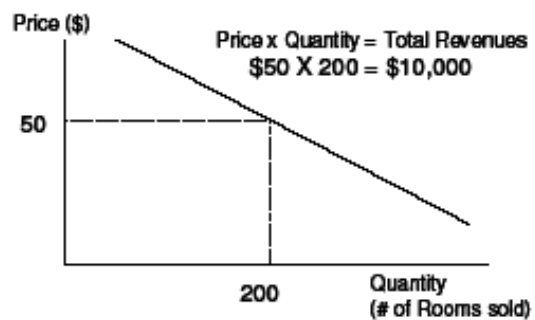
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- Rubik's Cube Example



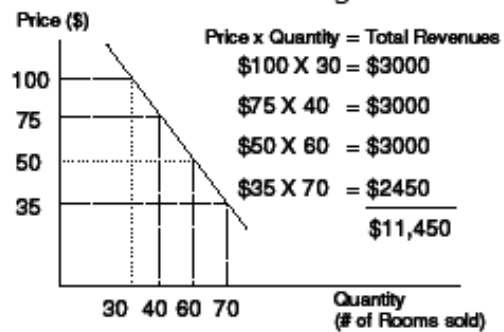
## RM Examples

- o Hotel without RM Pricing Structure



## RM Examples

- o Hotel with RM Pricing Structure



## Price vs. Duration

		Price	
		Fixed	Variable
Duration	Predictable	<u>Quadrant I</u> Movies Stadiums Conventions Centers	<u>Quadrant II</u> Hotel rooms Airline seats Rental cars Cruise ships
	Unpredictable	<u>Quadrant III</u> Restaurants Golf Courses	<u>Quadrant IV</u> Continuing Care Hospitals

## Thank you

- Questions and Comments





## Satisfaction Survey

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- You will have approximately 10 minutes to complete the satisfaction survey
- In approximately one month from today, you will be retested on the Revenue Management training module

## VITA

Warren T. Jahn, Jr. was born and raised in Wheaton, Ill., on September 13, 1980. He went to grade school and junior high at St. Michael Parish School in Wheaton, Ill. He attended Highlands Ranch High School from 1995 to 1996. He graduated from Herndon High School in 1998. He attended to the University of South Carolina in Columbia, S.C., where he received a Bachelor's degree in Hotel, Restaurant, and Tourism Management in 2003 and a Master's degree in Hotel, Restaurant, and Tourism Management in 2004.

Warren received the Doctor of Philosophy degree in Human Ecology from the University of Tennessee in Knoxville, Tenn.