Penalty-Reward Contrast Analysis of Airbnb's Properties in Tennessee; A Focus on Quality Ratings

Md Ashekur Rahman

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PENALTY-REWARD CONTRAST ANALYSIS OF AIRBNB’S PROPERTIES IN TENNESSEE; A FOCUS ON QUALITY RATINGS

by

Md Ashekur Rahman

A Thesis
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Science

Major: Sport and Hospitality Management

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Abstract

Shared Economy (SE) is a growing concept in modern times, and it is having a radical impact on the hospitality industry, especially the lodging industry. The primary purpose of this research was to perform an empirical analysis of the relative importance of the standard quality attributes used to evaluate service quality of Airbnb properties by its guests. This research paper uses Penalty-Reward Contrast Analysis to assess Airbnb’s six quality attribute scores with the guests’ overall quality scores. The research categorized the quality attributes into Basic, Performance and Excitement factors. This research found that the overall ratings for Airbnb properties for the six standard quality attributes in Tennessee were very high, ranging between 9.0 and 9.8 on a 10-point scale (1 = poor; 10 = excellent). However, significant differences existed between the six quality attribute ratings by property type leading to different profiles in terms of the factors being Basic, Performance or Excitement in status.
ACKNOWLEDGEMENT

To start with, I would like to thank Dr. Radesh Palakurthi, my honorable thesis supervisor, for his immense support, encouragement, supervision throughout my graduate study at the University of Memphis. I heartfully appreciate his effort and time for me to explain things and concepts related to my research. I am thankful to almighty for blessing me with such a good advisor who helped me to learn new things and has been a good philosopher and guide. I would also like to thank Dr. Carol Silkes and Dr. Donghee Kim for their support and consent to be in my thesis committee and providing me with their valuable suggestions and time to present my work in front of them.

Finally, my special thanks will go for my dear parents and my wife Rojoba Yasmin who have always motivated, supported, loved me, and thereby strengthened me up throughout my life.
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Shared Economy (SE) is a growing concept in modern times and it is changing the global economy over the last several years. Immense attention has been focused on this sector for both corporate and individual interests (Selloni, 2017). Broadly speaking, a Shared Economy implies the distribution of unused or surplus resources by individuals or corporations in order to generate additional revenue. This economical concept is not a modern phenomenon. In ancient times, people have exchanged their surplus products and goods with their neighbors in a system traditionally known as a barter system. Richardson (2013) mentions that the model of a Shared Economy is older than money markets. Before using coins or paper currency, people used to fulfill their daily needs by *Bartering and Sharing* which is essentially a Shared Economy concept. In early times, sharing activities were bounded within neighborhoods and it was based on mutual trust (Perna, 2017). On the contrary, modern Shared Economy has spread globally by overcoming the boundaries of nationalities. Moreover, a Shared Economy is more structured than the *Bartering and Sharing* system and continuously applies many rules and regulations to secure transactions. There is some difference between early times Shared Economy and modern Shared Economy. The former was accomplished within neighborhoods, whereas modern Shared Economy is global in scope and does business using an Internet-based platform (Belk, 2014).

The Shared Economy is commonly defined as an Internet-based platform that provides a getaway to people for purchasing or selling products and services through online means (Hamari et al., 2015, p. 1). This online platform encourages customers to complete business deals directly among buyers and sellers and is operated by a third party (Abrate & Viglia, 2017). This peer-to-peer (P2P) platform provides an opportunity to its users to consider themselves as *Microentrepreneurs*, by selling their surplus assets and services to other consumers.
(Sundararajan, 2016). Wosskow (2014) describes a Shared Economy as an Internet-based marketplace that is mainly responsible for supporting customers who sell their unused resources in exchange for money through a P2P market platform. Hooton (2017) mentions that this mode of an online marketplace is getting more popular among people every day. He also mentions that fifteen percent of adults in the U.S. are using ride-hailing apps and one of every ten Americans is using the common home-sharing apps, such as Airbnb, BRVO, HomeAway and others.

According to Price Waterhouse Coopers (2014), in 2013, the estimated market value of a shared economy was $13 Billion, and it is expected to grow to $335 Billion by 2025. Two renowned companies, Airbnb and Uber are the main drivers for the rapid growth of a shared economy.

**P2P Rental Segment**

The rapid growth of Shared Economy is directly related to the number of users and service providers interacting on the innovative platforms. Peer-to-Peer (P2P) renting means to rent products and physical assets such as houses, cars and buildings, through an online platform for temporary needs by consumers from the original owners. P2P sharing platform emphasizes two different types of customers; one is the property owner who is interested to provide his/her unused assets to earn extra money, and the other is customer who is the renter and is willing to pay an agreed to rent for a temporary use of the assets (Wilhelms, Merfeld, & Henkel, 2017).

The main objective of P2P markets is to facilitate buyers and sellers to find each other in an easy and convenient way and to enable financial transactions reliably (Einav Liran et al., 2016). Peer-to-Peer marketplaces can be categorized into three main segments based on the approaches taken; by items sold, by participants involved, and by the scope of the business approach taken (Beklemysheva, 2018). The items-focused segment includes: rental properties (Airbnb and HomeAway), consumer products (e-Bay and Amazon), services and skills (TaskRabbit, Amazon,
and Mechanical Turk), car and ride sharing (Uber and Lyft), financial (Kickstarter, Gofundme, and The Kiva), and educational services (Skillshare and Khan Academy). The second segment by participants includes, customer-to-customer (BlaBlaCar and GetAround), business-to-consumer (Wechat, Priceline, and Zappos), and business-to-business (Alibaba and NexDep) and are all focused on transactions. The last segment by scope of business approach includes, unmanaged marketplaces (Etsy and Fiverr), lightly managed marketplaces (Grubhub and Doordash), fully managed marketplaces (Opendoor and Luxe), and decentralized marketplaces (OpenBazaar and Lendoit) (Beklemysheva, 2018; Einav, Farronato, & Levin, 2016)

The prominent cause for the rapid growth in P2P marketplaces such as Airbnb and Uber are the technological innovations introduced by these popular Internet-based companies (Weber, 2016). Technological innovations such as the mutual rating model where - both the renter and owner rate each other on the platform after the services are rendered - has allowed to foster trust among users. Travelers now have a variety of options to rent accommodations other than the traditional lodging establishments which is also creating an immense business opportunity for Internet-based P2P rental markets such as Airbnb (Fu et al., 2017). Though users are getting these products/services at a reasonable price through the P2P rental marketplaces, there are still some challenges with understanding the importance of the property features that are critical in the decision-making process to rent by the consumers.

**Airbnb**

Shared Economy is playing a vital role in the hospitality industry and Airbnb is considered as the leading model of the SE in the accommodations industry (Tussyadiah & Zach, 2015). Airbnb is an Internet-based mediator platform that links the property owners with guests by sharing their property through a short-time rental agreement (Ju, Back, Choi, & Lee, 2018).
Tourists always prefer to get comfortable accommodations at a reasonable price and Airbnb has emerged as a reliable alternative accommodation provider (Permalink, 2013). From a microeconomic prospective, Airbnb may hamper the revenue generation of the hotel sector, particularly in lower-priced hotels. On the other hand, Airbnb is attracting more tourists by providing lower cost accommodation services (Fang, Ye and Law, 2016). The unclear issue in the industry is the real or net impact of Airbnb services on the tourism sector.

Airbnb had started its journey in San Francisco, California in 2008 by its founders, Joe Gebbia and Brian Chesky (Guttentag & Smith, 2017; Lehr, 2015). Initially, the founders started the business in the living room of their apartment but now, Airbnb has expanded to 191 countries across the world (Lang, 2014; Airbnb 2018). Airbnb states that it provides 300 million guests accommodation through its five million listed properties such as, Apartments, Private Rooms, Tree Houses, Entire Homes, Castles, Boats, Igloos, Manors, Tipis, Condominiums, and Entire Private Islands (Lang, 2014; Airbnb 2018). Moreover, the company operates its business in over 81 thousand cities through their 31 local and international offices (Airbnb 2018). The company also claims that about 2 million guests are using Airbnb’s properties every night worldwide (Airbnb 2018). Within the next five-years, Airbnb will be able to provide half a billion room-nights per year and by 2025, the company will provide over one billion room-nights to prospective guests (Verhage, 2016; Cheng & Jin, 2019). By renting an Airbnb, guests are offered some advantages such as: cheaper accommodation than traditional hotels, space variation depending on budget and location, homely environment during sort-time stay, easy booking and cancelation policy, local experiences, and accessible hosts’ kitchen to prepare food and to save money (Holzhauer, 2018; Goodman, 2018; Folger, 2018). On the contrary, guests might face some challenges at Airbnb rental accommodation such as: lack of safety and security, racial
discrimination, inadequate or poor customer service, misrepresentation of accommodation compared to website description, and guests’ concerns about owners’ review rating of themselves as customers (Perna, 2017; Holzhauer, 2018; Goodman, 2018; Folger, 2018)

**Growth of Airbnb**

Airbnb is one of the fastest growing companies in the short rental accommodations industry (Anwar, 2018). In 2015, Airbnb was third in online accommodation sales, next only to Expedia and Priceline, respectively (Ju, Back, Choi, & Lee, 2018; Quinby, 2016). Consequently, the total market value of Airbnb in 2015 was thirty billion dollars, second only to Priceline (Ju, Back, Choi, & Lee, 2018). The number of people using Airbnb is increasing rapidly over the past few years. For example, in 2009 the number of guest arrivals was 21,000, but in 2018 the figure was 400 million (Airbnb, 2018; Molla, 2017; Leonardo, 2017).

![Number of Guests' Arrival](chart.png)

*Figure 1. Number of guests’ arrival at Airbnb’s property from 2009 to 2010*
In 2015, the total revenue of Airbnb was $900 million and but faced $150 Million in operating deficits (Mitra, 2016). However, by 2016, the revenue growth of Airbnb had increased by 80% and the company tasted its first profit from operations that year (Stone, and Zaleski, 2017). In 2016 and 2017, the profit of Airbnb was $0.01 billion and $0.93 billion respectively (Bort, 2018; Leonardo, 2017). It is projected that by 2020, the profit of Airbnb will grow to $3.5 billion, and the profit growth percentage will increase to 34,000% since inception (Gallaghe, 2017).

Figure 2. Profit & loss statement of Airbnb

Description of the Problem

Before 2010, the concept of Shared Economy was not highly emphasized by researchers. However, with the immense success of both Airbnb and Uber, researchers began to concentrate on topics that covered the companies (Martin, Upham, & Budd, 2015). The Shared Economy is a vast topic for research covering a gamut of topics from operations to marketing. This researcher will mainly focus on the quality aspects of
Airbnb for this research. Specifically, the researcher will analyze the six quality attributes (Accuracy, Cleanliness, Check-in, Communication, Location, and Value) that are used by the company in assessing the quality of its owners’ operations from the perspective of the renters. This research is also limited to the assessment of properties in the State of Tennessee only because of the availability of data.

Airbnb uses a scale from 1 to 100 for measuring the overall ratings of its owners’ rental experience from the perspective of the renter with 1 being poor and 100 being excellent. However, the scales for all individual attributes (Accuracy, Cleanliness, Check-in, Communication, Location, and Value) are measured on a 10-point Likert scale with 1 being poor and 10 being excellent.

As the rental accommodation sector is very new, people who have been operating this type of business have no clear understanding regarding the impact of the quality attributes on the renters’ decision to rent a facility. Moreover, from the customers’ perspective, the quality attributes’ importance to the industry is also not clear. Whereas, the hotel industry has a good understanding of the guests’ perceptions regarding the service quality attributes based on immense previous research, the online rental industry lags behind (Tussyadiah & Zach, 2015). One of the main discussion problems in this research is identifying the quality attributes that are critical success factors for an Airbnb operation. The assessment of the quality attributes will be conducted using a methodology known as Penalty-Reward Contrast Analysis (PRCA) which evaluates the attributes based on a benchmark. The differences between the penalty bestowed for underperformance and the reward for overperformance in each of the quality attributes lays the foundation for determining the status of the attributes being a Basic, Performance
or Excitement factors as defined in Penalty-Reward Contrast Analysis. During such an analysis, the current researcher will consider some important factors such as: Airbnb’s property type (e.g. shared room, single apartment, enter a home, condominium, etc.) to identify any significant differences in the status of the quality attributes by property type.

**Description of Quality**

In a highly competitive hotel and lodging market, companies strive to find alternative ways to distinguish themselves from their competitors. Invariably, high service quality is considered as an effective and convenient way to distinguish a company’s brand image from others (Rudie & Wansley 1985; Haywood, 1987). Usually, the first visit of a hotel guest is not fully at the will of the hotel’s management or its employees since the customer personally chooses to stay at the specific property. However, the revisit to the property can be highly correlated to the level of quality service and satisfaction provided by the hotel (Saleh & Ryan, 1991). In other words, the revisit decision is completely at the discretion of the guest. Winder (1993) describes service quality as a continuous process that is mainly responsible for building a viable relationship between the customers and the service providers through the process of evaluating, expecting and implementing customers’ demands. Service quality refers to the difference between the guests’ perceptions of service that they received from a specific provider and the customers’ expectations of such service to be delivered (Parasuraman et. al., 1988).

Service quality has different dimensions (Lehtinen & Lehtinen, 1991). Current researchers mention the three dimensions of service quality to be, physical (Rooms and reception area), interactive service (Greeting), and corporate (company’s brand image). Parasuraman, Zeithaml, and Berry (1988) initially identified ten dimensions of service quality in there
SERVQUAL model which are reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles. In subsequent research, they reduced them to five dimensions of service quality which are: assurance, empathy, tangibles, reliability, and responsiveness (Teimouri, Samani, Emami, & Hamidipour, 2014).

Service quality is very important for achieving competitive advantage in the current market. It helps a company to create customer loyalty and ensures customer satisfaction. Quality of service is necessary to enhance a company's brand image since, satisfied guests always represent the company in a positive manner (Al Ababneh, 2017). The U.S. Government recognizes the importance of service quality and has awarded the “Malcolm Baldrige National Quality Award” in different sectors like education, business, service industry, healthcare and nonprofit organization every year. In the hospitality industry, The Ritz-Carlton Hotel Company was recognized for its excellent service and was awarded the coveted recognition twice during the last two decades (Kosko, 1999).

**Current Method of Quality Measurement**

Service quality is crucially important for the hotel and lodging industry and there is a solid positive correlation between service quality and guests’ satisfaction (Pascal, 2016). During the last decade, several companies have faced immense pressure in both the local and global markets which has led to the development of several new service quality measurement tools in the industry (Rodrigues, 2013). Every quality measuring model has some shortcomings and researchers are continuously analyzing those models to get a better and more accurate outcome.
Ju, Back, Choi and Lee (2018) have categorized the quality measuring models into two main segments: offline models and online models. Offline quality measuring models include: SERVQUAL (Parasuraman et. al., 1988), SERVPERF (Cronin & Taylor, 1992), SERVQUAL in the hospitality industry (Saleh & Ryan, 1991), and LQI (Getty & Getty 2003). On the other hand, the online models include: SITEQUAL (Yoo & Donthu, 2001), WebQual (Loiacono et al., 2002), E-S-QUAL (Parasuraman et al., 2005), and E-RecS-QUAL (Parasuraman et al., 2005).

For determining product/service quality attributes and overall customers satisfaction (OCS), majority of the researches assume that there is a symmetric or linear correlation between quality attributes and OCS. On the contrary, other schools of thought, such as Kano Model (Kano et al., 1984), Penalty Reward Contrast Analysis (PRCA) model by Brandt (1987), and Importance Grid (Vavra, 1997) identify the relationship in a different way. According to these models, the relationship between product/service quality attributes, Performance and OCS are asymmetric or non-linear (Albayrak & Caber, 2013). Kano Model or three-Factor theory has been commonly using in various service industries (banking, insurance, hotels, etc.) to determine which of the quality attributes of product/service are most influential for OCS (Busacca & Padula, 2005; Matzler & Sauerwein, 2002).

The Keno Model mentions three types of service attributes; Basic Factor, Performance Factor and Excitement Factor (Zhang & Cole, 2016). The Basic Factor refers to the essential requirements of guests’ needs and if the requirements are not fulfilled, it leads to the guests’ dissatisfaction, however, when fulfilled it does not necessarily lead to guests’ satisfaction (Zhang & Cole, 2016). For instance, in the hotel industry, room Cleanliness will work as Basic Factor. It is a very basic expectation by guests from hotels. If a hotel fails to ensure a clean and tidy room for guests, it will lead guests’ dissatisfaction. If the hotel does it perfectly, it will not create any
changes in a guests’ attitude for the good service quality. Whereas, if hotel failed to ensure the service then it will lead guests’ dissatisfaction. The Performance Factor is responsible for both guests’ satisfaction and dissatisfaction. If the guests’ need is fulfilled, it leads to satisfaction, whereas, if not fulfilled, it leads to dissatisfaction (Matzler & Sauerwein, 2002). As an example, foods serving quality attribute of a hotel can be responsible for both customers’ satisfaction and dissatisfaction. If the employees of a hotel serve foods to guests’ table in a prompt manner it will lead to guests’ satisfaction for the quick service quality. On the contrary, if the employees fail to serve foods on time as per guests order then it will create guests’ dissatisfaction for the unexpected delay service quality. The Excitement Factor is responsible for adding extra value to the guests’ experience. If it is fulfilled, it leads to much higher levels of satisfaction, however, if not fulfilled, it does not lead to guests’ dissatisfaction since they may not be expecting that attribute of service (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). As an example, when a guest arrives in a hotel and the front desk agents welcomes the guest by his/her name, then this level of service might enhance guest’s satisfaction. In addition, the hotel could also offer a complimentary fruit basket or a scented candle in his/her room as an add-on bonus to increase the surprise and unexpected element. These additional services can create a positive value in guest’s experience as the services was unexpected from the hotel. On the other hand, if hotel does not provide these services, it will not lead to guests’ dissatisfaction.

**Purpose of the Research**

Airbnb is so new that guests are still trying to understand the characteristics of its operations. There are many unresolved issues existing in this industry such as, taxation, security and racial discrimination (McCloskey, 2018; Kaplan & Nadler, 2015). One of the most unclear issues is quality attributes that influence guests’ decision for using a specific Airbnb’s property.
More importantly, it is unclear which of the attributes are more important to the people who want to stay at Airbnb. Furthermore, online ratings from customers are becoming more important in the purchase decision by online users of Airbnb (Lawani, Reed, Mark, & Zheng, 2018; Bridges & Vásquez, 2018). Customers like to peruse online reviews and ratings before purchasing any products or services (DeMers, 2015).

Typically, the company, which is fully dependent on online platform for its business, encourages consumers to provide reviews and ratings. The company then extends massive resources to deal with poor reviews in order to mitigate any brand or reputation distortion that might occur. This resource allocation can range from counteracting negative reviews with online explanations or by offering discounts for future use. However, such a strategy might imply investments in operations that may not be important to the guest.

The main purpose of this research is to:

- Perform an empirical analysis of the relative importance of the common quality attributes used to evaluate service quality of Airbnb properties by their guests. A detailed description of the common attributes used by the company is provided in the next chapter.
- Categorize the six standard service quality attributes used by Airbnb into the three Factor categories, Basic, Performance and Excitement, as identified by using the Penalty-Reward Contrast Analysis methodology.
- Provide a better understanding of the nuances of guest evaluations of six standard service quality attributes based on the type of properties offered by Airbnb.
- To establish a new methodology of Penalty-Reward Contrast Analysis for evaluating the service quality in the short-rental accommodation industry.
The overarching goal is to provide a better understanding of the service quality attributes of Airbnb so that operators can clearly evaluate the relative importance of each of the service quality attributes and how they differ by the type of property. Such an understudying will help operators allocate adequate and appropriate resources to quality attributes that are more critical to the guests.

**Research Questions**

Following the purpose of this research, the key questions that this research will answer include:

- How are the six standard quality attributes used by Airbnb perceived by the guests in terms of their relative importance? The six standard quality attributes are, Check-in, Accuracy, Communication, Value, Location, and Cleanliness.
- How are the quality attributes categorized in terms of their classification as a Basic Factor, Performance Factor and an Excitement Factor as defined by the Penalty-Reward Contrast Analysis?
- How does the categorization (Basic, Performance and Excitement factors) of the six standard quality attributes change with the type of property being evaluated?

The description of the three factors is provided below.

**Basic Factor.** The Basic Factor refers to the essential requirements of guests’ needs and if the requirements are not fulfilled, it leads to the guests’ dissatisfaction, however, when fulfilled it does not necessarily lead to guests’ satisfaction (Zhang & Cole, 2016). For instance, in the hotel industry, room cleanliness will work as Basic Factor. It is a very basic expectation by guests from hotels. If the hotel fails to ensure a clean and tidy room for guests, it will lead
guests’ dissatisfaction. If the hotel does it perfectly, it will not create any changes in a guests’
attitude for the good service quality. Whereas, if the hotel fails to ensure the service, it will lead
guests’ dissatisfaction.

**Performance Factor.** The Performance Factor is responsible for both guests’ satisfaction
and dissatisfaction. If the guests’ need is fulfilled, it leads to satisfaction, whereas, if not fulfilled,
it leads to dissatisfaction (Matzler & Sauerwein, 2002). As an example, foods serving quality
attribute of a hotel can be responsible for both customers’ satisfaction and dissatisfaction. If the
employees of a hotel serve foods to guests’ table in a prompt manner it will lead to guests’
satisfaction for the quick service quality. On the contrary, if the employees fail to serve foods on
time as per guests order then it will create guests’ dissatisfaction for the unexpected delay service
quality.

**Excitement Factor.** The Excitement Factor is responsible for adding extra value to the
guests’ experience. If it is fulfilled then, it leads to much higher levels of satisfaction, however, if
not fulfilled, it does not lead to guests’ dissatisfaction since they may not be expecting that
attribute of service (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). As an example, when a
guest arrives in a hotel and the front desk agents welcomes the guest by his/her name, then this
level of service might enhance guest’s satisfaction. In addition, the hotel could also offer a
complimentary fruit basket or a scented candle in his/her room as an add-on bonus to increase
the surprise and unexpected element. These additional services can create a positive value in
guest’s experience as the services was unexpected from the hotel. On the other hand, if hotel
does not provide these services, it will not lead to guests’ dissatisfaction.
Since secondary data will be used for this research, the key questions that will be answered depends on the availability of data for this research.

**Research Objective**

The main objective of this research is to apply existing theory in customer satisfaction to available quality rating data from Airbnb customers in Tennessee in order to categorize common quality attributes used by the company. The common attributes used by the company are Accuracy, Cleanliness, Check-in, Communication, Location, and Value. The three categories considered in this study are Basic, Performance and Excitement factors. The application of penalty-reward analysis for this research demands the categorization into the three factors.

The underlying objective of this research is also to add to the existing knowledge of quality attribute by extending the understanding of the interplay that exists among the quality attributes and the overall quality ratings of Airbnb customers. The objective is achieved by using the Penalty-Reward Contrast Analysis methodology that allows for a unique evaluation of the quality factors by categorizing them into three levels: Basic, Performance and Excitement.

**Scope of Research**

The scope of this research is limited by the secondary data available for analysis and the budget constraints of the researcher. This research is limited in scope in the following ways:

- The data is limited to only the Airbnb property listings in the State of Tennessee in contrast to all short-term rental properties in Tennessee.
- The time-period for this dataset is limited to May 2014 to May 2018.
• Although the intent for the research was to paint a picture for the short-term rental industry, the analysis is only conducted for data available for Airbnb since it is a very large segment of the entire industry.

• Although customer satisfaction can be evaluated in more holistic ways by considering several factors, this research only considers six attributes for which data is available: Accuracy, Cleanliness, Check-in, Communication, Location, and Value.

• Although Airbnb has over 25 different property types to consider, many categories were collapsed since they had very few listings to have any valid results through analysis.

Research Assumption

The research makes some broad assumptions that may have an influence on the results. For example, the collapsing of different property types into once category for analysis may have recalibrated the quality ratings to reflect a property that is an average of all that are collapsed. The assumption is that given the few listings in the categories, the recalibration of the average values is insignificant.

The use of the six quality attribute ratings available assumes that they are an accurate reflection of the true quality ratings of the customers of Airbnb. In a more holistic model, a wider array of quality attributes could be used.

Airbnb uses a two-sided approach to evaluating customer satisfaction- the customers evaluate the property/owners and the owners also evaluate the renters. This model introduces bias within the customers’ quality ratings as they “worry” about been poorly rated by the owners if they themselves give a poor score to the property/owner thereby, locking them out of the
Airbnb platform for further use. This process may tend to inflate the quality ratings of the renters as they unwittingly give higher scores than they intended in order not to be poorly rated by the owners. This research assumes that such factors can be controlled by using a standardization methodology to eliminate such biases.

**Methodology of Current Research**

Researchers have considered the Kano Model as the most important tool for measuring service quality attributes (Mikulić & Prebežac, 2011). However, some researchers have complained about the model for its complex data collection structure. The most common critique of the model is that it requires that the researchers consider both positive and negative ratings of the customers; the Likert scale may vary from a negative score through zero to a positive score. Because of this, the number of items in the questionnaire will be larger and more tedious to answer for survey respondents. Consequently, the model is not preferred for analyzing standard guest satisfaction data (Busacca & Padula, 2005). On the contrary, Penalty-Reward Contrast Analysis model uses regression analysis to identify the influence of high and low attribute Performance by OCS by analyzing two sets of the dummy variables for each quality attribute (Mikulić & Prebežac, 2011).

This research paper uses Penalty-Reward Contrast Analysis to measure Airbnb’s guest quality ratings by considering six quality attributes (Accuracy, Cleanliness, Check-in, Communication, Location, and Value) on which the company collects data. The research categorizes the quality attributes into the Basic, Performance and Excitement Factor using overall guest satisfaction ratings. By implementing the model, this research will identify which
of the quality attributes is highly influential in the guests’ decision-making for choosing an Airbnb property in Tennessee.

The current research will analyze four years of data from May 2014 to May 2018 of online customer review data from Airbnb’s listed properties in Tennessee. The data is purchased from a data syndicated company, AirDNA that aggregates customer review data for all Airbnb properties across the globe. The total numbers of data points analyzed for this research is approximately Thirty-one thousand seven hundred, covering all Airbnb properties in Tennessee. The study only focuses on Airbnb review data rather than other short-term rental accommodations, such as BRVO and HomeAway and other such listings in Tennessee.

Chapter Summary

Airbnb has achieved lots of attention recently from researchers for its rapid growth and notable business success in the accommodations industry (Guttentag, 2015). Airbnb is a new topic for research compared to other common accommodation sectors such as hotels, resorts, and motel facilities. In a recent seminal study, Blal, Singal and Templin (2018) explained how Airbnb could impact a hotel’s total sales. Findings stated that though there is no direct relation between hotel revenue-per-available-room (RevPAR) and Airbnb accommodation supply, at some point the hotel’s sales can be affected by Airbnb customer reviews. Another important research was conducted by Zhang and Cole, (2016) on mobility challenges people who often face various problems in rental accommodation, such as hotels, resorts, and Airbnb which highly affects the company’s overall customer satisfaction as reflected in their reviews. Besides this, a huge amount of resources (both financial and non-financial) will be needed to modify the existing establishments as per mobility challenge guests’ requirements. The researchers analyzed
543 web travel reviews by implementing the Penalty-Reward Contrast Analysis model to identify the important attributes that are related to overall customer satisfaction (Zhang & Cole, 2016)

**Significance of the Research**

Airbnb is comparatively newer than other established companies in the lodging industry, but the current growth trend of the company is overwhelming. There are many unclear issues in Airbnb operations and researchers are trying to evaluate them from various perspectives. One of the most important issues in Airbnb operations is the relationship between service quality delivered by the hosts and the guests’ perceptions of it. It is a well-established theory that a company’s revenue earning potential and its service quality rating is strongly correlated (Priporas, Stylos, Vedanthachari, & Santiwatana, 2017; Shah, Jan, & Baloch, 2018). The hotel industry has often engaged in numerous research projects to enhance their understanding of their markets and their customers. Consequently, over the decades, the lodging industry has built a great body of knowledge about their operations. On the other hand, Airbnb, being a new business segment has had less opportunity for research. One of the main differences between the hotel industry and Airbnb is that the hotel industry places a huge emphasize on employees training to ensure quality customer service. The hotel industry also has performed rigorous research to identify which quality attributes are most important for guests’ satisfaction and revenue generation (Priporas, et al., 2017; Shah, Jan, & Baloch, 2018). The industry also has a nuanced understanding of the impact of operations on customer service by evaluating other factors such as: customer demographic and geographic factors. In comparison, Airbnb does not provide any substantial training to its hosts to ensure service quality. Airbnb has instead focused its efforts on rapid global expansion. There is little research on Airbnb’s service quality and even that
research has mainly focused on properties limited to major cities such as: New York, Miami, Houston, and San Francisco (Ju, Back, Choi, & Lee, 2018).

The current study did not find any research articles that specifically focused on the various qualities attributes of Airbnb listed properties in Tennessee. In recent years, the exponential growth of Airbnb in Tennessee has easily eclipsed the growth rates of other short-term rentals, such as VRBO and HomeAway in Tennessee. In 2017, Airbnb properties in Memphis and Chattanooga provided 68,000 and 53,000 guests’ accommodations and earned $7 million and $5.2 million in rental revenues, respectively (Gaines, 2018). To provide better quality service and overall customer satisfaction, Airbnb needs to focus on the attributes that highly influence customers’ decision for choosing a specific Airbnb property in Tennessee. This research is an effort in that direction and identifies the critical attributes that Airbnb customers consider while choosing a specific type of rental property in Tennessee.

**Definition of Key Terms**

In this research, several terms are used that are very specific to the industry and the type of research being conducted. It behooves the reader to have a clear understating of the terms before reviewing the results. In this section, a definition of key terms is provided.

**Shared Economy.** This term implies the sharing of unused or surplus resources by individuals or corporations in order to generate additional revenue. Shared Economy, usually known as Sharing Economy, is commonly defined as the Internet-based platform that provides a getaway to people for purchasing or selling products and services through online means (Hamari et al., 2015, p.1). A good example of some companies that operate in this space are Lyft, Uber, and Airbnb.
**Peer-to-Peer (P2P).** Peer-to-peer means to rent products and physical assets such as houses, cars and buildings, through an online platform for temporary needs by consumers directly from the original owners. For example, if one rents an apartment for temporary use directly from an owner using the homeaway.com website, he/she would be participating in the P2P economy.

**Airbnb.** An Internet-based mediator platform that links the property owner with guests by sharing his/her property through a short-time rental agreement (Ju, Back, Choi, & Lee, 2018). “Airbnb connects people with places to stay and things to do around the world. The community is powered by hosts, who provide their guests with the unique opportunity to travel like a local” (Airbnb.com).

**AirDNA.** A syndicate data provider founded in 2014 by Scott Shatford and Will Shatford. The company analyze short-term rental (such as Airbnb) data for researchers, practitioners, and individuals’ users. AirDNA is one of the renowned short-term rental companies’ data providers in the globe and the company tracking daily Performance of ten million listing of short-term rental accommodation such as Airbnb, HomeAway, and more (AirDNA website).

**Basic Factor.** Basic Factor refers to the essential requirements of guests’ needs and if the requirements are not fulfilled, it leads to the guests’ dissatisfaction, however, when fulfilled it does not necessarily lead to guests’ satisfaction (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example might be the Check-in process at a hotel. If the process is done well, the customer may not even notice it since it is expected. However, a flawed Check-in process will be seen negatively by the guest.
**Performance Factor.** The Performance Factor is responsible for both guests’ satisfaction and dissatisfaction. If the guests’ need is fulfilled, it leads to satisfaction, whereas, if not fulfilled, it leads to dissatisfaction (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example is restaurant service during a hotel stay. The guest’s perception of the service will influence the satisfaction ratings. If the service is great, the guest’s satisfaction is enhanced or vice versa.

**Excitement Factor.** The Excitement Factor is responsible for adding extra value to the guests’ experience. If it is fulfilled then, it leads to much higher levels of satisfaction, however, if not fulfilled, it does not lead to guests’ dissatisfaction since they may not be expecting that attribute of service (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example would be leaving a bottle of champagne in a guest’s room when they are not expecting it.

**Quality Factor: Accuracy.** Accuracy refers to the process of getting the key elements of the rental experience correctly. Areas of evaluation may include such items as Accuracy of the billing process and the information provided.

**Quality Factor: Cleanliness.** Cleanliness evaluates the cleanliness of the facility including the inside and outside of the premises rented. Common evaluation criteria may include cleanliness of bedroom, kitchen, bathroom and the front or backyard.

**Quality Factor: Check-In.** Check-In evaluates the Accuracy of the Check-in process with regard to obtaining the key for the rental property and completing the associated paperwork.

**Quality Factor: Communication.** Communication includes several considerations such as: communicating with host during pre-booking, getting information on the property, post-
booking Communication, information about getting the keys / check-in process, getting answers to questions during the stay, and the information about the checkout process.

**Quality Factor: Location.** This Factor evaluates the Location of the facility based on the availability of resources such as public transportation, restaurants, entertainment, etc. and the proximity to historic landmarks or downtown/commercial districts. It could include aspects such as safety, local aesthetics and commerce.

**Quality Factor: Value.** Value evaluates the price-value relationship in terms of the amenities available at the facility, the value-added services provided by the host such as local information, guided tours, and in-house services.

**Overall Satisfaction.** Overall Satisfaction evaluates the composite perceptions of the renters by considering all aspects of their experience across the six quality factors evaluated. The renter provides an overall score independent of their respective scores for the other six quality factors. The overall quality score is measured on a 100-point scale.

**Service Quality.** Service Quality is described as a continuous process that is mainly responsible for building a viable relationship between the customers and the service providers through the process of evaluating, expecting and implementing customers’ demands (Winder, 1993). Service quality refers to the difference between the guests’ perceptions of service that they received from a specific provider and the customers’ expectations of the service to be delivered (Parasuraman et. al., 1988).

**Penalty-Reward Contrast Analysis (PRCA).** For determining product/service quality attributes and overall customer satisfaction (OCS), majority of the models such as SERVQUAL,
SERVPERF, and WebQual assume that there is a symmetric or linear correlation between quality attributes and OCS. On the contrary, Penalty-Reward Contrast Analysis identifies the relationship in a different way. According to this model, the relationship between product/service quality attributes, Performance and OCS are asymmetric or non-linear (Albayrak & Caber, 2013). In essence the analysis distinguishes the service quality attributes into three categories – Basic, Performance and Excitement factors - for decision-making purposes. The strategies for dealing with improvements in service quality is decidedly different based on this classification.

**Literature Review**

**The Airbnb Influence**

Airbnb is a booming industry in the short rental accommodation sectors, and the number of users and listed properties have rapidly been increasing during the last several years (Guttentag & Smith, 2017). Thousands of travelers across the globe are using Airbnb’s accommodation rather than traditional establishments, such as hotels, resorts, and guesthouses (Guttentag, 2015). Kaplan & Nadler (2015) stated that Airbnb has a great financial impact on the local community. In their research, they focused on how Airbnb impacted local residences in the New York City. From 2012 to 2013 about 400,000 Airbnb’s guests spent $632 million and supported over 4,500 jobs in New York City (Kaplan & Nadler, 2015). Airbnb provides its guests with various types of accommodation at a cheaper rate than an average hotel rental cost, which encourages guests to stay for longer periods. Moreover, the guests can spend the surplus money in the other sectors, such as restaurants and sightseeing rather than on accommodations. Kaplan and Nadler (2015) countered the common assessment from real estate business
companies that Airbnb has increased the housing price in large cities such as San Francisco and New York. The researchers argued that in fact Airbnb provides affordable housing for city residences. Many Airbnb hosts are medium household income groups; by renting the property, hosts can earn extra money and it helps the hosts to live in an affordable house. The last part of the research focused on the regulation and taxation challenges of Airbnb. The company ensures that its users are very much aware of local rules and regulation before using the platform (Kaplan & Nadler, 2015).

Airbnb has emerged in business as an alternative of traditional room providers, such as hotels, guesthouses and resorts (Zervas, Proserpio, & Byers, 2017). Airbnb is considered as one of the major segments in the Sharing Economy (Sthapit & Jiménez-Barreto, 2018). Not surprisingly, the recent exponential growth of Airbnb has affected the hotel industry; especially in sales growth (Xie & Kwok, 2017; Zervas, Proserpio, & Byers, 2017; Blal, Singal, & Templin, 2018; Farronato, & Fradkin, 2018; Roach, 2018). Zervas et, al., (2017) conducted research on how Airbnb has impacted the hotel industry in Austin, Texas. The research found that the Airbnb’s presence in Austin resulted in an 8% to 10% loss in revenue for the lodging industry. Furthermore, the revenue earning of lower-scale hotels and the hotels that do not offer service to business travelers can be affected even more than other types of hotels depending on geographical location and booking season. The research also found that a ten percent property growth of Airbnb can decrease hotel room revenue by 0.39% in Texas. Airbnb is a viable alternative accommodation provider in the lodging industry, but the company is not ideal for closer competitors, such as traditional lower-scale hotel and lodging industry (Zervas, et. al., 2017). Similar research from Forronato and Fradkin (2018) showed that hotel profits can be affected by Airbnb. In 2014, hotels profits in the U.S. were reduced to 3.7% because of Airbnb
and hotels revenue could be 1.5% higher without existence of Airbnb in hospitality market in many areas.

**Airbnb’s Quality Ratings**

More and more people are using Airbnb’s online platform to meet their lodging needs. A good number of online platform users frequently consider the customers’ reviews and ratings before deciding to purchase specific products or services. Consequently, the companies that are fully dependent on peer-to-peer (P2P) marketplaces are very much concerned with positive reviews and good ratings from the product or service users. Cheng and Jin (2019) in their research showed that some key attributes of Airbnb, such as location, amenities, and hosts are highly influential for Airbnb guests' positive experience. The researchers examined 181,263 online reviews of Airbnb property users in Sydney, Australia. One of the important findings of the research was that most of the reviews are positively biased with the average review scores being extraordinarily higher than ratings for service entities in other industries such as banking, hotels, etc. For Airbnb, as a policy, hosts and guests must write comments for each other, and positive reviews are equally essential for both in order to perform any business transaction in the future. The fact that Airbnb follows a mutual rating system has an influence on the quality ratings of the guests and is a Factor for consideration in this research.

Despite the positive bias, research exists that throws light on the quality attributes that are important for Airbnb guests. Sthapit and Jiménez-Barreto (2018) conducted a study about what makes an Airbnb experience memorable. The researchers conducted interviews with 20 participants who had recently used Airbnb. All the interviewees gave positive feedback about Airbnb’s rental accommodations. These positive guest experiences were related to hosts’ close
interaction with guests, property location, and the type of accommodation sought. Sthapit and Jiménez-Barreto (2018) described some recommendations in their research for improving guests’ positive experience, such as the hosts’ providing intense communication with guests; maintaining a friendly relation with guests during the stay and providing related information to guests regarding local area and tourist attraction. Another study conducted by Wang and Jeong (2018) found that people are patronizing Airbnb services at a higher rate because of its user-friendly website and secure financial transactions. By applying the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT), the researchers examined the guests’ psychological behavior for using Airbnb’s properties. The initial results showed that Airbnb’s properties’ features; the strong relationship between guests and hosts; the secure transactions and innovative user-friendly website, enhanced guests’ interest to using Airbnb.

There are several factors influencing guests’ decision to use Airbnb’s service. Guttentag, Smith, Potwarka, and Havitz (2017) conducted an online survey among 800 guests who used Airbnb’s services within last twelve months. The core purpose of their research was to identify the guests’ motivations for using Airbnb’s property in various metropolitan cities in Canada. The researchers found five components (Novelty, home benefits, interaction, sharing the economy spirit, and local authenticity) that motivate guests to use Airbnb. Moreover, the researchers classified the survey respondents into five groups: money savers, home seekers, collaborative consumers, pragmatic novelty seekers, and interactive novelty seekers. Money savers, mainly constituting of younger people, used Airbnb for finding cheap accommodation. Home seekers are mostly older than money savers and well-educated. They mainly use Airbnb for a larger space, homey feeling, and for finding household features that they are used to. Collaborative consumers are motivated by the Shared Economy concept and are less financially sound. They
usually have extensive experience with Airbnb and are using it mostly for gaining a local experience through native interactions. Pragmatic novelty seekers are relatively young and use Airbnb both for novelty and home benefits. Moreover, this segment has limited experience with Airbnb. Interactive novelty seekers are closely like collaborative consumers and they prefer to stay in shared spaces for their short tours (Gutten-tag, et al., 2017). A similar type of research was conducted by Lutz and Newlands, (2018), and they argue that customer segmentation is an important Factor for using Airbnb’s properties. The “shared room” user guests are totally different from “entire home” users and factors such as: gender, income, education, and tour types are responsible for the differences. After analyzing survey data and Airbnb listed properties, the researchers found that demographic and behavioral criteria are mainly responsible for customer segmentation for using Airbnb’s property. Moreover, Airbnb’s hosts sometimes select the guests based on their own personal biases (Lutz & Newlands, 2018). Edelman and Luca (2014) conducted research on racial discrimination against the black hosts of Airbnb in New York City. The research revealed that the non-black hosts in New York City are gaining more financial benefit than back hosts. The research also mentioned that a non-black host charge about 12% more price than a back host in a similar type of property.

Service Quality

With immense competition, the hospitality and lodging industry strives to ensure the delivery of products/services in a timely manner without compromising quality (Oh & Parks, 1996). To enhance guests’ satisfaction as well as customer retention, high service quality is very crucial for the hospitality and lodging industry. Moreover, in customer-centric service industries there is a positive correlation between delivery of high service quality and a company’s business profitability (Kirwin, 1992; Knutson, 1988; Buchanan & Gillies, 1990; Walker, 1988; Oh &
The first chapter discussed different dimensions of service quality and its importance to various service industries. Consequently, the current chapter focuses on service quality and its relationship with customer satisfaction in various service industries such as tourism, hospitality, retail banking, and healthcare services.

Service quality is essential for tourist satisfaction and high-quality service can enhance tourist interest to revisit the specific destination (Al-Ababneh, 2013). Al-Ababneh (2013) conducted a survey among 180 tourists at Petra historic site in Jordan to examine the service quality and guest satisfaction of visitors. The researcher distributed a total of 250 questionnaires to the participants. The questionnaires were split into two parts; related to satisfaction and service quality, respectively. The researcher implemented a multiple regression model to identify the relationship among tourists’ satisfaction and their service quality assessments. The results verified that service quality and tourists’ satisfaction are strongly correlated. Furthermore, the research also supported the hypothesis that the tourist satisfaction level can be increased by improving the service quality level.

Campdesuñer, Vidal, Rodríguez, and Vivar, (2017) found similar results in their study about tourists’ service quality assessment. They focused on the service quality that was delivered at a tourist destination and its effect on overall guest satisfaction levels. They sampled 2,726 tourists from Holguín in Cuba during a high tourist season between, November and May in 2011. The research revealed that service quality played an essential role in overall tourist satisfaction and helped to enhance the tourists’ loyalty towards the destination (Campdesuñer, et al., 2017). Hospitality industries are facing massive competition in recent years. Researchers and hospitality experts conducted numerous studies on the issue and concluding that the service quality is one of the crucial factors for achieving a sustainable competitive advantage in the
industry (Al Ababneh, 2017). A company can achieve numerous advantages by implementing high quality service efforts in the organization such as, customer satisfaction, guest loyalty, and enhancement of the company’s brand image (Al Ababneh, 2017).

Service quality has a positive influence on guest satisfaction and customer retention (Allan, 2016). Allan argues that the hotel industry faces huge pressure for delivering quality service to guests, more so than other service industry such as banks and insurance. Most of the clients in banking sectors are local area residents, but in upscale hotels, employees must work with a more diverse clientele and must ensure quality service as per guests’ needs. For measuring service quality’s positive impact on customers satisfaction, Allan randomly selected four upscale hotels in Accra, Ghana. The researcher sent structured questionnaires to 486 guest participants. The main purpose of the study was to evaluate the relationship of service quality and guests’ satisfaction in the hotel industry. After applying linear regression analysis on the data collected, the researcher showed that high service quality had a substantial positive effect on guests’ satisfaction and retention (Allan, 2016).

A similar study conducted by Bozdaglar and Kilili (2015) regarding the service quality in hospitality industry asserted that one of the core roles of service quality is to distinguish one hotel from another. In a competitive market, hotels are vying for guest retention and satisfaction in order to enable a company’s profitability; factors that are directly or indirectly related to the service quality and that is provided by hotels (Bozdaglar & Kilili, 2015). Quality in hotels usually is related to two important components: product and service. Product quality usually refers to the strategy and policy of a hotel organization and is related to the enhancement of the delivery of service quality. On the other hand, service quality is highly related to the hotel employees’ motivational factors such as job security, salary, working environment, and equal
opportunity for career development. In the results, the research disclosed that to increase service quality the hotels focused on products, design, furnishings, furniture and outdoor amenities, but little emphasis was being placed on the employees’ motivational factors (Bozdaglar & Kilili, 2015).

Service quality is not only highly emphasized in the hospitality industries but also in others, such as banks, insurance, and healthcare. In the banking sector, service quality is very crucial for customer satisfaction and retention. Extreme competition in the banking sector and changes in the business models has forced it to build a customer-based strategy aimed at differentiating one bank from other for the purpose of achieving a competitive advantage and improving company Performance (Ngo & Nguyen, 2016). This strategy has increased other related factors, such as customer satisfaction, customer loyalty, and customers’ expected service quality that is delivered by the bank. Ngo and Nguyen (2016) conducted research on customer satisfaction and service quality in the Vietnamese retail banking sector. They conducted a survey of retail banking customers by sending emails to 850 active customers of eleven banks in Vietnam. A total of 273 surveys were returned however, only 261 usable and valid respondent data was used for the research. The research showed that service quality and customer satisfaction are interconnected and essential for enhancing customers’ loyalty towards the brand. Furthermore, the relationship between service quality and guests’ satisfaction varied depending on the inter-cultural differences and customers’ needs (Ngo & Nguyen, 2016).

Service quality is also very important for healthcare providers and various studies were conducted in this sector. Ismail and Yunan (2016) conducted a study at the army hospital in West Malaysia to identify the correlation between service quality delivery and patients’ satisfaction. The researchers sent four hundred questionnaires to the hospital’s patients who had recently
experienced a service at the hospital. A total of 128 patients responded to the survey conducted. The questionnaires were divided into three segments; the first section was on service quality attributes, the second section was on service quality dimensions, and the last section was on the patients’ loyalty towards the hospital. After analyzing the data, the research revealed that five dimensions of service quality (empathy, reliability, responsiveness, assurance and tangible) were very interrelated with customers’ satisfaction and customers’ loyalty. The research suggested that the competence of healthcare provider for implementing the five dimensions of service quality might boost the patients’ satisfaction and loyalty towards the healthcare setup (Ismail & Yunan, 2016).

Kalepu (2014) conducted research to differentiate the service quality among three types of healthcare providers (Government hospitals, Private hospitals, and Missionary hospitals) in Andhra Pradesh, in India. The researcher collected 400 responses from ten selected hospitals through face-to-face interview from 2008 to 2009. After analyzing the data using ANOVA, the study showed that 70.07% of the respondents were satisfied with missionary hospitals’ service quality whereas, 69.70% and 64.15% were satisfied with private and government hospital’s service quality, respectively (Kalepu, 2014). The study also revealed that the demographic factors such as age, gender, and social status of the patients, can play an important role in the patients’ satisfaction, especially in developing countries such as India. For example, low-income patients’ expectation towards the service quality is low and so they are satisfied by getting limited service from healthcare providers; whereas, high-income patients expect higher service quality and therefore are more likely to be dissatisfied with the same service. The research suggested that though both private and state-owned hospitals strives to improve service quality to satisfy the patients, public healthcare providers are lacking (Kalepu, 2014).
Various SQ Measuring Models

Depending on the topic, researchers have used different models for evaluating service quality and customer satisfaction. Service quality has a crucial influence on customer satisfaction, company’s business performance, profitability, and on retaining customers’ loyalty; as a result, researchers and practitioners consider service quality as an important topic in the research field during the last few years (Gurău, 2003; Sureshchander et al., 2002; Newman, 2001; Silvestro & Cross, 2000; Lasser et al., 2000; Hallowell, 1996; Cronin & Taylor, 1992). Depending on the needs, implications and service type, researchers have developed various service quality measurement models and theories. In their seminal paper, Seth, Deshmukh, and Vrat (2005) discussed nineteen service quality measuring models. All the mentioned models were developed between 1984 to 2003 by various researchers. A full listing of the nineteen models includes: technical and functional quality model (Gronroos, 1984); GAP model (Parasuraman et al., 1985); Attribute service quality model (Haywood-Farmer, 1988); Synthesized model of service quality (Brogowicz et al., 1990); Performance model (Cronin & Taylor, 1992); Ideal value service quality model (Mattsson, 1992); Evaluated Performance and normed quality model (Teas, 1993); IT alignment model (Berkley & Gupta, 1994); Attribute and overall affect model (Dabholkar, 1996); Model of perceived service quality and satisfaction (Spreng & Mackoy, 1996); PCP attribute model (Philip & Hazlett, 1997); Retail service quality and perceived value model (Sweeney et al., 1997); Service quality, customer value and customer satisfaction model (Oh, 1999); Antecedents and mediator model (Dabholkar et al., 2000); Internal service quality model (Frost & Kumar, 2000); Internal service quality DEA model (Soteriou & Stavrinides, 2000); Internet banking model (Broderick & Vachirapornpuk, 2002); IT-based model (Zhu et al., 2002); and, Model of e-service quality (Santos, 2003). All these
models show that the measurement of service quality and its results are highly related to the types of service delivered by companies, needs, time and situation, and so on. Moreover, the researchers revealed some linkage between the above various service quality models for measuring the service quality in numerous service industry such as hotels, banks, healthcare, and IT sectors (Seth, Deshmukh, & Vrat 2005).

Other approaches have been used by researchers in the customer service area. Ju, Back, Choi, & Lee (2018) categorize the service quality measuring models into two main segments: online and offline. The online models include SEQUAL (Yoo & Donthu, 2001), WebQual (Loiacono et al., 2002), E-S-QUAL (Parasuraman et al., 2005), and E-RecS-QUAL (Parasuraman et al., 2005). Offline models that used a similar approach include SERVQUAL (Parasuraman et al., 1988), SERVPERF (Cronin & Taylor, 1992), SERVQUAL in the hospitality industry (Saleh & Ryan, 1991), and LQI (Getty & Getty 2003).

In the SERVQUAL model, Parasuraman et. al., (1988) revealed five dimensions of service quality: assurance, empathy tangibles, reliability, and responsiveness. In the SERVPERF model Cronin and Taylor (1992) identified three dimensions of service quality: interaction quality, physical service environment quality, and outcome quality. Cronin and Taylor (1992) also revealed that Performance Factor is essential for measuring service quality and argue that SERVPERF provides more accurate results than SERVQUAL for measuring service quality. Another offline service quality measuring model geared toward (LQI) measures five dimensions of service quality (reliability, communication, tangibility, confidence, and responsiveness). Considering the dimensions of service quality, there are some differences between online and offline models- online models are responsible to measure service quality that is related to online platforms users (Ju et al., 2018). The online E-S-QUAL model was designed by Parasuraman,
Zeithaml, and Malhotra (2005) to measure service quality delivered by online platform user companies. The researchers identified four dimensions of service quality: efficiency, fulfillment, system availability, and privacy.

Al Ababneh (2017) discussed numerous quality measuring models such as HOLSERV, LODGSERV, CASERV, and DINESERV which are mainly used to measure service quality in the tourism industry. Al Ababneh (2017) stated that whereas HOLSERV and LODGSERV are frequently used for measuring service quality in the accommodation or lodging industries, CASERV and DINESERV are very suitable for measuring service quality in the casino and restaurant industries. Evidence suggests that SERVQUAL has been gaining more popularity among researchers for its easy application in various service sectors such as hospitality, tourism, healthcare, banking and marketing (Al Ababneh, 2017).

**Penalty-Reward Contrast Analysis (PRCA) Model**

The above-mentioned models such as, HOLSERV, LODGSERV, CASERV, DINESERV, SERVPERF, LQI, and SERVQUAL assume a symmetric or linear correlation between service quality attributes and customer satisfaction (Albayrak & Caber, 2013; Ju, Back, Choi, & Lee, 2018). However, Penalty-Reward Contrast Analysis model describes the correlation in an asymmetric or non-linear way (Matzler & Sauerwein, 2002; Busacca & Padula, 2005; Albayrak & Caber, 2013).

An excellent summative analysis conducted by Albayrak and Caber (2013) listing the important studies that applied the Penalty-Reward Contrast Analysis Model up to the year 2013. Table 1 summarized the studies and updates the listing with more recent work in the area. The first chapter in this thesis discussed the Kano and Penalty-Reward Contrast Analysis model,
Table 1 summarizes the essence of the research conducted in the area along with the results achieved.

Table 1

*Recent Studies that Used Penalty-Reward Contrast Analysis Model for Their Research*

<table>
<thead>
<tr>
<th>Researcher(s)</th>
<th>Focus area and findings</th>
<th>Data size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matzler, &amp; Sauerwein (2002)</td>
<td>Focused on customer satisfaction in a hospital IT department. The research identified five quality attributes: accessibility, competence, reliability, friendliness, and project management. All these attributes are very significant for customer satisfaction.</td>
<td>171</td>
</tr>
<tr>
<td>Matzler, Fuchs, &amp; Schubert, (2004)</td>
<td>Measured employee satisfaction in a pharmaceutical company in Australia. The researchers revealed that there is an asymmetric relationship between job factors such as job content, salary, working environment, and overall employee satisfaction.</td>
<td>123</td>
</tr>
<tr>
<td>Fuchs, &amp; Weiermair (2004)</td>
<td>The focused area was the service quality attributes that delivered by tourist destination and its influence on customer satisfaction. The research identified that higher quality service attributes of destination increase tourist satisfaction.</td>
<td>2571</td>
</tr>
<tr>
<td>Busacca, &amp; Padula (2005)</td>
<td>The research focused on mobile Communication company and its customer satisfaction. In the result, the researchers identified an asymmetric relationship between attributes Performance and overall satisfaction.</td>
<td>182</td>
</tr>
</tbody>
</table>
Table 1 (Continued)

<table>
<thead>
<tr>
<th>Researcher(s)</th>
<th>Focus area and findings</th>
<th>Data size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matzler, Renzl, &amp; Rothenberger</td>
<td>The research discussed on customer satisfaction which is related to some important factors, such as service dimensions and guest satisfaction on purchasing price in the hotel industry. The research implemented the three-Factor theory for guests’</td>
<td>1,555</td>
</tr>
<tr>
<td>Matzler, Renzl, &amp; Faullant (2007)</td>
<td>The researchers measured customer satisfaction in retail banking depending on the dimensionality of price satisfaction. The research showed that five price dimensions could play a crucial role in overall customer satisfaction.</td>
<td>406</td>
</tr>
<tr>
<td>Mikulić, &amp; Prebežac (2008)</td>
<td>The focus area of the research is to evaluate Croatian airport’s service quality and passenger satisfaction.</td>
<td>1,049</td>
</tr>
<tr>
<td></td>
<td>In the result, the researchers showed that the relationship between attribute-level and customer satisfaction are asymmetric</td>
<td></td>
</tr>
<tr>
<td>Füller, &amp; Matzler (2008)</td>
<td>The research focused on customers satisfaction on the top ten alpine ski resorts in Italy, Switzerland, and Australia. The research revealed that the three factors of service quality attributes (Basic, Performance, and Excitement) have a different role depending on the market segment.</td>
<td>6,172</td>
</tr>
<tr>
<td>Researcher(s)</td>
<td>Focus area and findings</td>
<td>Data size</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Lin, Yang, Chan, &amp; Sheu (2010)</td>
<td>The research evaluated the service quality delivered by online tax declaration service. The result revealed that each individual service quality attributes are not equal to customers for overall satisfaction.</td>
<td>268</td>
</tr>
<tr>
<td>Mikulić, &amp; Prebežac (2011)</td>
<td>The research identified tourist satisfaction and dissatisfaction in the three categories of hotel animation programs (sports program, evening entertainment program, and children’s entertainment program) in the coastal area.</td>
<td>994</td>
</tr>
<tr>
<td>Back (2012)</td>
<td>Evaluated key-factors for customer satisfaction in the Korean restaurants in the southern metropolitan city in the USA. The results revealed that impact asymmetry analysis (IAA) and impact-range Performance analysis (IRPA) methods can overcome the limitations that are related to importance-Performance analysis to assess customer satisfaction.</td>
<td>239</td>
</tr>
<tr>
<td>Caber, Albayrak, &amp; Loiacono (2013)</td>
<td>The study focused on extranet (Computer software in tour operation) user’s satisfaction in the travel business. The study categorized the attributes of extranet system to identify its asymmetric effect on its operator' satisfaction.</td>
<td>336</td>
</tr>
<tr>
<td>Researcher(s)</td>
<td>Focus area and findings</td>
<td>Data size</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Albayrak, &amp; Caber</td>
<td>Service quality attributes and its symmetric and asymmetric influence on OCS in the fitness club. The researchers used the Penalty-Reward Contrast Analysis model to measure the asymmetrical relationship between service quality and OCS and importance-Performance analysis (IPA) for measuring the symmetrical relationship. The result revealed that CS enhancement area can be different depending on the which model is used by researchers.</td>
<td>165</td>
</tr>
<tr>
<td>Ye, Fu, &amp; Law</td>
<td>The research focused on using online travel agents (OTAs) in Chinese tourism sectors. The result revealed that the Performance attributes of various websites have a different level of influence on guests’ satisfaction. Moreover, the OTA websites’ supervisors need to focus on the dimensions of guests relations.</td>
<td>289</td>
</tr>
<tr>
<td>Zhang, &amp; Cole</td>
<td>The focus area of the research is the service quality that delivers to physically disable guest in the lodging industry. The research showed a strategic order of service quality attributes that the lodging industry needs to address for guest satisfaction with mobility challenges, even with the limited resources.</td>
<td>543</td>
</tr>
<tr>
<td>Researcher(s)</td>
<td>Focus area and findings</td>
<td>Data size</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Tontini, Bento, Milbratz, Volles, &amp; Ferrari (2017)</td>
<td>The research emphasizes on the impact of service quality factors on guests’ satisfaction in the three-star level hotels in Brazil. The research revealed some quality attributes that are frequently used by guests for the reviews and rating on the various website such as TripAdvisor regarding service quality have very low or no influence on customer satisfaction. However, the attributes that are not very often mentioned in the reviews site can have a huge impact on guests’ satisfaction.</td>
<td>400</td>
</tr>
<tr>
<td>Ju, Back, Choi, &amp; Lee, (Ju et al., 2018)</td>
<td>The focus of the research is on Airbnb’s various service quality attributes both in the USA and Canadian markets. The researchers revealed that Airbnb’s website design, functionality, user-friendliness, and responsiveness are very influential quality attributes for guests’ satisfaction. The results also mentioned that the service quality of Airbnb either has a positive asymmetric effect or negative asymmetric effect for overall guests’ satisfaction.</td>
<td>322</td>
</tr>
<tr>
<td>Davras, &amp; Caber (2019).</td>
<td>The researchers focus on service quality attributes and its symmetrical and asymmetrical impacts on overall guests’ satisfaction in various hotels in Turkish, German and Russian. After implementing the Penalty-Reward Contrast Analysis model, the research revealed that Entertainment Services works as a Basic Factor, Service Staff as Excitement factors.</td>
<td>621</td>
</tr>
</tbody>
</table>

Source: Albayrak, & Caber (2013) and modified and updated for the current research
As Table 1 shows, Penalty-Reward Contrast Analysis has been a very popular methodology used in customer satisfaction. The model is used in this study as it has been identified as being empirically verified and competitively accurate and reliable approach.

**Conceptual Framework**

The conceptual model for this study was developed based on extensive literature review and the data available for this research from AirDNA. In the area of service quality, Airbnb only collects data in six different areas: Accuracy, Cleanliness, Check-in, Communication, Location, and Value, all of which were used in this study. All of these quality attributes were determined to have an influence on the overall satisfaction ratings of the customers through previous research (Ju et al., 2018).

*Figure 3. The conceptual model*
It was also hypothesized that the type of property being rented by the customer will have an influence on their ratings of the quality attributes, a relationship illustrated by the dotted line in the conceptual model in Figure 3. The model also depicts the relationship between the six quality attributes and the overall satisfaction ratings with the bold lines. In the model, the overall quality rating is an independent related to the individual quality attribute ratings of the customers.

**Hypothesis**

Four major hypotheses were tested in this research as described below.

**Hypothesis 1**- Higher quality attribute ratings will lead to higher overall satisfaction ratings.

**Hypothesis 2**- The relationship between overall quality ratings and the attribute ratings will be dependent on the type of property.

**Hypothesis 3**- Considering all types of accommodations offered by Airbnb, the six quality attributes will be as follows:

- H3 (a) - Cleanliness will be a Basic Factor.
- H3 (b) - Communication will be Basic Factor.
- H3 (c) - Accuracy will be Performance Factor.
- H3 (d) - Check-in will be a Performance Factor.
- H3 (e) - Location will be an Excitement Factor.
- H3 (f) - Value will be an Excitement Factor.
The current research hypothesizes that the quality attributes Cleanliness and Communication will be Basic Factors since they are essential requirements to the guests and if the requirements are not fulfilled, it will lead to dissatisfaction, however, when fulfilled it may does not necessarily lead to satisfaction (Zhang & Cole, 2016). For instance, in the hotel industry, room Cleanliness may be as Basic Factor since it is a core expectation of the guests from the hotel. Similarly, Airbnb’s guests always expect a clean and tidy room from the hosts. However, if Airbnb’s hosts fulfill this requirement, then it will not enhance overall quality ratings but if they fail to provide a neat and tidy room to the guests then it will drastically reduce the overall quality ratings.

The quality attributes Communication is also considered to be a Basic Factor. Communication refers to interactions with the host during pre-booking, getting information on the property, post-booking communication, information about getting the keys/check-in process, getting answers to questions during the stay, and the information about the checkout process. Airbnb is operating its business through the online platform therefore a smooth and effective communication is very essential to its guests. If the hosts fail to ensure effective communications, then it will reduce the overall quality ratings. On the other hand, if Airbnb’s hosts perform these two quality attributes perfectly to may not enhance overall ratings.

In hypothesis three, the researcher hypothesized that the quality attributes Accuracy and Check-in will be Performance Factors. The Performance Factor is responsible for both guests’ satisfaction and dissatisfaction. If the guests’ need is fulfilled, it leads to satisfaction; whereas if it is not fulfilled, then it leads to dissatisfaction (Matzler & Sauerwein, 2002). The quality attribute Accuracy refers to the process of getting the key elements of the rental experience correctly. In the case of Airbnb, the quality attribute Accuracy might include the billing process.
and the information provided on the company’s website by hosts regarding the properties and its amenities. If the hosts complete all the financial transaction accurately and provide all information correctly, then it will increase overall ratings. On the other hand, if hosts fail to ensure secure transaction or provide misinformation on the website then it will lead to customers dissatisfaction. The quality attribute Check-in refers to the accuracy of the Check-in process regarding obtaining the key for the rental property and completing the associated paperwork. If all key elements of the Check-in process are fulfilled then it will lead to guests’ satisfaction, whereas if the hosts fail to provide this service then it will lead to guests’ dissatisfaction.

The quality attribute Location and Value are hypothesized to be Excitement Factors. The Excitement Factor implies that it adds more value to the guests’ experience. If it is fulfilled then, it leads to much higher levels of satisfaction, however, if it is not fulfilled, it does not lead to guests’ dissatisfaction since they may not be expecting that level of service (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). In the case of Airbnb, Location refers to the geographical position of hosts’ properties and the availability of resources such as public transportation, restaurants, and entertainment in the surroundings of the hosts’ properties. Moreover, Location also covers the safety issue of the neighborhood, local aesthetics, and commerce. Before renting the property, Airbnb’s guest can get a details idea regarding the property’s location and its surrounding area through Airbnb’s website that is provided by the hosts. Moreover, guests have a pre-notion regarding the property’s location. For example, if the guests can see something that they are not expected regarding the location such as a natural spring or a historical building in the nearby area then it will provide more value to the guests’ experience. This experience will enhance the overall quality ratings from the guests. However, if the guests cannot see this type of scenic beauty in their rented property’s area then it will not
make them unhappy, because they are not expecting it. In case of Airbnb, Value refers to the price-value relationship in terms of the amenities available at the facility, the value-added services provided by the host such as local information, guided tours, and in-house services. If the guests get this service from the hosts then it will enhance the guests' satisfaction and the overall ratings, while not getting the amenities from the hosts will not decrease the overall rating.

**Hypothesis 4** - The type of property will have an influence on the quality attributes’ status as a Basic or Performance or an Exciting Factor.

- H4 (a) Communication will be a Basic Factor for all property types.
- H4 (b) Accuracy will be a Performance Factor for all property types.
- H4 (c) Cleanliness will be a Performance Factor for all property types.
- H4 (d) Check-in will be a Performance Factor for all property types.
- H4 (e) Location will be an Excitement Factor for all property types.
- H4 (e) Value will be a Basic Factor for all property types.

**Methodology**

Research methodology is a systematic way to solve a problem. For a fruitful result, a first step is to properly frame the research by keeping the focuses or research aims in mind. To establish a standard framework, researchers must follow a research method properly based on the nature of their study topic. Sometime researchers need to change their predetermined methods depending on the data collection. There are three types of research model; Quantitative, Qualitative and mixed method model. All these methods have their unique characteristics and have some positive and negative aspects (Creswell, 2014).
**Quantitative methods.** In the broad sense, the quantitative method implies a structural procedure to collect, analyze, interpret data and writing the results that related to a survey or experimental study. Furthermore, the method is related to using mathematical, computational, and statistical tools (e.g. SPSS, SAS) to originate meaningful and accurate results for the research (Creswell, 2014). “If the researcher intentionally quantifies the variation in a problem, issue, phenomenon, or situation, then the information gathered will be primarily quantitative (i.e., numerical); furthermore, if the researcher is concerned with analyzing the magnitude of the variation, then the study is classified as quantitative” (Andrew, Pedersen & McEvoy, 2011). One of the important discussion topics in the quantitative method is the survey and experimental method plan. There are five components in the survey plan: the survey design, the population and sample, instrumentation, variables in the study, and data analysis and interpretation. In the experimental method plan, there are four components: participants, materials, procedures, and measures. The strong points of the quantitative method are numerous, such as it allows to gather information from a large number of participants and many groups. This model is useful for determining the relationship between variables. Quantitative data is more efficient and able to test hypotheses. These types of qualities make the model very popular among the researchers to conduct a good research on the vast topic based on numerical data, survey, etc. In contrast, in the case of new and unconventional concept, it is difficult to work with this model. Sometimes, the size of datapoints may not be good enough for analyzing a new and complicated research subject.

**Qualitative method.** “Qualitative approaches to data collection, analysis, interpretation, and report writing differ from the traditional, quantitative approaches. Purposeful sampling, collection of open-ended data, analysis of text or pictures, representation of information in
figures and tables, and personal interpretation of the findings all inform qualitative methods” (Creswell, 2014). There are some characteristics of qualitative research model such as natural setting, researchers work as a key instrument, multiple sources of data, inductive and deductive data analysis, participant’s meanings, emergent design, reflexivity, and holistic account. In this method, data is generally collected following different ways like observation, interviews, documents and audio and visual materials. For data analysis, the qualitative method follows six steps: first, organizing and preparing data; secondly, to read or look at gathering data; the next step is to do coding; fourth step is to use the coding process to generate a description of the setting; the fifth step is a representation of the information in the qualitative narrative approach; and the final step is to do interpretation in qualitative research (Creswell, 2014). The main strength of this model is: covered issues can be evaluated in depth with good details. The data in this method is based on human experiences which is more compelling and powerful. Data collection is comparatively easy and cost-efficient whereas readers can easily understand and get involved in the topic. On the other hand, in this method, the researcher may only know roughly in advance regarding the goal or target of his study. Data collection is time-consuming and difficult to make a generalization. Furthermore, this method is not suitable for working in case of a large data size or a vast region of operation.

Mix method. “Research that adopts both qualitative and quantitative approaches in a single study is classified as mixed method research. This type of study often involves both predetermined and emerging methods, open- and closed-ended questions, multiple forms of data, statistical and textual analysis, and a final conclusion based upon findings obtained from both qualitative and quantitative perspectives” (Andrew, Pedersen & McEvoy, p, 9. 2011). There are different types of mixed methods design; such as convergent parallel mixed methods design,
explanatory sequential mixed methods design, and exploratory sequential mixed methods design. Besides these three Basic designs, there are several advance mixed methods designs: embedded mixed methods, transformative mixed methods and multiphase mixed methods. There are some advantages of this method, such as it works with rich and comprehensive data and reflects the participant’s point of views. This method is flexible to use different types of observation and study designs which results in an appropriate study method combining the benefits of both qualitative and quantitative approach. But this method is rigorous which requires a more time-consuming process. It increases the complexity in evaluation also.

Nature and type of research topic directs the appropriate method needed to be followed. A well-defined and directed methodology is very important for conducting a successful research. Moreover, data collection and data interpretation play a vital role for an effective and fruitful study. In case of the current research, quantitative methodology will be the suitable because of large secondary data set available for this research.

For data analyzation purpose, the use of a statistical tool is very effective. Some commonly used software systems are Statistical Analysis System (SAS), Statistical Package for the Social Sciences (SPSS), R, MS Excel and more (Ali & Bhaskar, 2016). Many web resources related to statistical power analysis are also available such as StatPages.net (provides links to online power calculators), G-Power (provides downloadable power analysis program) etc. (Ali & Bhaskar, 2016). Among these options, the current research uses SPSS and MS Excel to analyze the data.

For the data collection purpose, researchers can use various strategies. Among the data collection strategies, experiment and quasi-experiment are crucial for measuring the effect of a
treatment. Structured questionnaires that mainly used for large sample sizes (Hox & Boeije, 2005). Researchers have categorized the data source into two main segments; the primary data source and the secondary data source (Hox & Boeije, 2005; Stephanie, 2018). In a broad perspective, primary data implies those types of data that are collected from the first-hand source by the researcher. The researcher can implement various types of tools for collecting the data, such as survey, interview, and lab experiment (Stephanie, 2018). Primary data is used to fulfill specific types of research problems. Secondary data refers to collection of data by the researcher from a secondary source. The data is collected by interview, studies, an experiment that has been collected by other people or companies. The researchers who address social science related issue, usually get secondary data form government bodies, such as Census Reports. Researchers can save time and money by using secondary data source. When researcher want to conduct a project on a large sample then secondary data is the effective way to get the best results by minimum errors if such data is already available (Hox & Boeije, 2005; Stephanie, 2018).

As an example, a researcher can conduct research on last five years hotels’ sales in Memphis. In the case of data collection, researchers can collect the data either as a primary source or from secondary sources depending on various circumstances. In the case of primary data collection, research can conduct a survey on the selected sample hotels in Memphis. The survey can be conducted in various ways; such as sending questionnaires to the respondent through email, mail or researcher can arrange a face-to-face interview by visiting selected hotels properties. Moreover, the researcher can conduct an interview over the telephone for saving time and money. On the other hand, the researchers can collect the secondary data from the syndicated data provider companies, such as STR report and HotelMarketData.
The current research will analyze four years of online quality review data (from May 2014 to May 2018) of Airbnb’s customers in Tennessee. The data is purchased from a data syndicated company, AirDNA that aggregates customer review data for all Airbnb properties across the globe. The total number of data points analyzed for this research is approximately Thirty-one thousand seven hundred covering all Airbnb properties in Tennessee. The study only focuses on Airbnb review data rather than other short-term rental accommodations, such as BRVO and HomeAway and other such listings in Tennessee.

Table 2 shows the breakdown of the property types used in the analysis for this research.

Table 2

<table>
<thead>
<tr>
<th>SL</th>
<th>Property Type</th>
<th>No. of Property</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>House</td>
<td>14,340</td>
<td>45.20</td>
</tr>
<tr>
<td>2</td>
<td>Apartment</td>
<td>5,783</td>
<td>18.23</td>
</tr>
<tr>
<td>3</td>
<td>Cabin</td>
<td>4,683</td>
<td>14.76</td>
</tr>
<tr>
<td>4</td>
<td>Condominium</td>
<td>1,848</td>
<td>5.83</td>
</tr>
<tr>
<td>5</td>
<td>Guest suite</td>
<td>451</td>
<td>1.42</td>
</tr>
<tr>
<td>6</td>
<td>Loft</td>
<td>432</td>
<td>1.36</td>
</tr>
<tr>
<td>7</td>
<td>B&amp;B</td>
<td>310</td>
<td>0.98</td>
</tr>
<tr>
<td>8</td>
<td>Bungalow</td>
<td>293</td>
<td>0.92</td>
</tr>
<tr>
<td>9</td>
<td>Guesthouse</td>
<td>334</td>
<td>1.05</td>
</tr>
<tr>
<td>10</td>
<td>Tent</td>
<td>303</td>
<td>0.96</td>
</tr>
<tr>
<td>11</td>
<td>Place</td>
<td>570</td>
<td>1.80</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th>SL</th>
<th>Property Type</th>
<th>No. of Property</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Private room</td>
<td>733</td>
<td>2.31</td>
</tr>
<tr>
<td>13</td>
<td>Camper/RV</td>
<td>258</td>
<td>0.81</td>
</tr>
<tr>
<td>14</td>
<td>Others</td>
<td>1,387</td>
<td>4.37</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31,725</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: AirDNA Data from May 2014 to May 2018

Table 2 indicates that the total number of listed properties of Airbnb is 31,725 as per 2017 AirDNA data. The current research categorizes the listed properties into fifteen main segments for better outcomes of the results. In the table, property that categorized as House, occupies almost half of the total listed properties in Tennessee and total number of houses is 14,340 (45.20%). Apartment and Cabin ranked second and third on the list and the number of properties is 5,783 (18.23%) and 4,683 (14.76%) respectively. The “others” category included: Cottage, Chalet, Farm stay, Resort, Villa, Boat, Hostel, Boutique hotel, Nature lodge, Treehouse, Barn, Castle, Yurt, Tipi, Dorm, Hut, Cave, and Plane. The number of properties listed in other categories on the table are 1,387 and in percentage it is (4.37%). On the other hand, Dome house, Island, Pension (Lodging), and Train have only one listed property in Tennessee, respectively.

Descriptions of Property Types

House- For the purpose of this research, a house refers to a building that facilitates one or two families for short-term rental. The array of houses can range from a simple hut (made from wood and straw) to a single-family home that provides all modern amenities. Most traditional houses in modern society usually encompass one to four bedrooms, living room, a balcony,
multiple bathrooms, a kitchen area, and a dining area. In the western world, the term house and home are used interchangeably but in Asia, the home refers to a larger space than a house (Wikipedia.com; Merriam-webster.com).

Source: bing.com; Free to modify, share, and use for personal and commercial purpose

**Apartment**- For the purpose of this research, an apartment refers to a unit or a flat that occupies a portion of space in a large multi-story building and is on a single level without stairs. In other words, the apartment is defined as a living space in a large residential or commercial building. The building also is named as an apartment complex, flat complex, apartment house, apartment building, and a block of flats (Leshnower, 2019).

Source: bing.com; the image is free to modify, share, and use for personal purpose
**Cabin**- For the purpose of this research, cabin refers to a small house that is mainly located in the forest or remote area and made from log, wood, and basic housing materials (Wikipedia.com).

![Cabin Image](image.jpg)

Source: bing.com; the image is free to modify, share, and use for personal purpose

**Condominium**- For the purpose of this research, condominium refers to a typical living space similar to an apartment with the distinction of being owned by the person living in the facility versus the renting of an apartment. However, the main differences between condominium and apartment are that a condominium can be sold by its owner, but apartments cannot be sold or purchased independently by the renter. Moreover, condominiums are usually managed by Homeowners’ Association (HOA), though each condo might have a separate owner. On the other hand, apartments are managed by its own management company. Condominium is also called condo as a short form, especially in the USA and Canada (Gibbons, 2019).
Private room in house- This refers to booking a private room at Airbnb where the guest has exclusive access to an individual bedroom or sleeping area - similar to renting a typical hotel room. Other areas of the house such as living room, kitchen and dining will be open for both guests and hosts. Other guests or even the host will not have access to the private room which is assigned to the renting guest. On the contrary, a shared room can be used by either another guest or even by the host (Airbnb.com).

Guest Suite- This refers to one or two bedrooms plus another area that might include dining space, small living room, private bathroom and a small kitchen area. In a private guest
suite, guests might have a shared entrance with the host; however, in entire guest suite, hosts must ensure a separate entrance for the guests (Airbnb.com).

Loft- This generally refers to the attic space or the mezzanine floor of a house or a building. The access can be through a narrow stair, a ladder or even an elevator. Lofts can be used for various purposes such as storage room or extra space for accommodation. The main difference between and attic and aloft is that the attic usually covers the entire space under the roof, but a loft covers a partial space in the building. There are various types of lofts such as loft apartment, commercial loft, mould loft, and living loft which are available in different cities and regions (Wikipedia.com).
Bed and breakfast (B&B)- Traditionally, a bed and breakfast include accommodation and morning breakfast for the guests. B&B guests have to stay with hosts in the same property and usually guests are accommodated in a private room with an attached bathroom. Breakfast is served to the guests in the common dining area, the kitchen nook, or even in the guests ‘bedroom. The breakfast provided by hosts is included in the room charge per night (Wikipedia.com).
**Bungalow**- This type of accommodation has originated in the Indian subcontinent after the first quarter of twentieth century. The Bungalow style house spread to various regions in the world, especially in the USA and Canada after the end of the Second World War. The Bungalow usually refers to a small single-story building which is surrounded by a spacious and open veranda (balcony) - in the USA the bungalow is a one-and-a-half story building and has multi-window dormers (Dictionary.com). The bungalow is very friendly for mobility challenged guests and also for elderly people for its easy accessibility (Wikipedia.com).

![Bungalow Image](https://bing.com/search?q=bungalow&go=Search)

Source: bing.com; the image is free to modify, share, and use for personal purpose

**Guesthouse**- This refers to a kind of accommodation that is close to B&B. Depending on the location, a guesthouse can be a more affordable version of B&B because of limited availability of amenities. However, in the U.S., a guesthouse can be a full-service facility with extensive amenities. In many countries, guesthouses are managed by private owners, and they live on the same premises, but in a separate house. Guests can get some extra benefits such as inexpensive accommodation, healthy and homecooked foods, and close interaction with hosts by staying in a guesthouse (Trivedi, 2017).
Tent - This refers to a temporary shelter or accommodation that is made by fiber sheets, and others structural materials, such as wooden poles, rope, hooks and metal pipe. Tents initially were used by nomads as a portable house, but presently it is using for recreation camping by travelers. Depending on the purposes, people use various types of tents such as: the pop-up tent, dome tent, tunnel tent, ridge tent, bell tent, backpacking tent, and family tent. Smaller tents such as backpacking, or pop-up tents are very convenient to use and can be attached to the ground vary easily. However, large size tents, such as Bedouin tents, need more time and labor to set up and come in various sizes (Wikipedia.com).
Camper- This refers to a recreational vehicle, that is widely called as an RV. This type of accommodation mainly includes some basic amenities such as kitchen, bathroom, and one or more sleeping areas. The features of the campers can be from basic cooking and sleeping area to luxurious amenities such as fancy bedroom and bathroom, small living room, water heater, heating and cooling system, television, refrigerator, and microwave. Depending on the choice and affordability, travelers use various types of RVs such as motorhomes (class A motorhomes, class B, and class C), travel trailers, fifth Wheel trailers, popup trailer, and truck camper (Agrella, 2015).

Source: bing.com; the image is free to modify, share, and use for personal purpose

Place- Airbnb defines a place as a host provided service that unlocks the endless list of secret spots and local favorites in a community. The service is driven by the fact that the hosts know their city better than anyone else and so can make recommendations of places that are beloved local neighborhood and trendy dives (Airbnb.com).

Others- In the current research, the others mainly indicate the rest of the listed properties in the Tennessee that are not discussed in the above properties’ descriptions. The others category
included: Cottage, Chalet, Farm stay, Resort, Villa, Boat, Hostel, Boutique hotel, Nature lodge, Treehouse, Barn, Castle, Yurt, Tipi, Dorm, Hut, Cave, and Plane.

**Description of Data**

This section provides a details description of the data available from AirDNA that was used in this research.

**Quality Factor: Accuracy.** This Factor refers to the process of getting the key elements of the rental experience correctly. In areas of evaluation may include, Accuracy of the billing process and the information provided. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.

**Quality Factor: Cleanliness.** This Factor evaluates the Cleanliness of the facility including the inside and outside of the premises rented. Common evaluation criteria may include Cleanliness of bedroom, kitchen, bathroom and the front or backyard. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.

**Quality Factor: Check-In.** This Factor evaluates the Accuracy of the Check-in process with regard to obtaining the key for the rental property and completing the associated paperwork. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.
**Quality Factor: Communication.** This Factor includes several considerations such as: communicating with host during pre-booking, getting information on the property, post-booking Communication, information about getting the keys / Check-in process, getting answers to questions during the stay, and the information about the checkout process. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.

**Quality Factor: Location.** This Factor evaluates the Location of the facility based on the availability of resources such as public transportation, restaurants, entertainment, etc. and the proximity to historic landmarks or downtown/commercial districts. It could include aspects such as safety, local aesthetics and commerce. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.

**Quality Factor: Value.** This Factor evaluates the price-value relationship in terms of the amenities available at the facility, the value-added services provided by the host such as local information, guided tours, and in-house services. This attribute is scaled from 1-10 with 1 = Poor and 10 = Excellent. The dataset gives the quality attribute scores of all properties rented by the Airbnb customers during the time-period of this study i.e. May 2014 through May 2018.

**Overall Satisfaction.** This Factor evaluates the composite perceptions of the renters by considering all aspects of their experience across the six quality factors evaluated. The renter provides an overall score independent of their respective scores for the other six quality factors. The overall quality score is measured on a 100-point scale with 0 = Poor and 100 = Excellent.
Penalty-Reward Factors Explained

It will behoove the reader to reiterate the three factors involved in penalty-reward analysis. Figure 4 illustrates the conceptual understanding of the three factors.

**Basic Factor**- Basic Factor refers to the essential requirements of guests’ needs and if the requirements are not fulfilled, it leads to the guests’ dissatisfaction, however, when fulfilled it does not necessarily lead to guests’ satisfaction (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example might be the Check-in process at a hotel. If the process is done well, the customer may not even notice it since it is expected. However, a flawed Check-in process will be seen negatively by the guest.

**Performance Factor**- The Performance Factor is responsible for both guests’ satisfaction and dissatisfaction. If the guests’ need is fulfilled, it leads to satisfaction, whereas, if not fulfilled, it leads to dissatisfaction (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example is restaurant service during a hotel stay. The guest’s perception of the service will influence the satisfaction ratings. If the service is great, the guest’s satisfaction is enhanced or vice versa.

**Excitement Factor**- The Excitement Factor is responsible for adding extra value to the guests’ experience. If it is fulfilled then, it leads to much higher levels of satisfaction, however, if not fulfilled, it does not lead to guests’ dissatisfaction since they may not be expecting that attribute of service (Matzler & Sauerwein, 2002; Zhang & Cole, 2016). A good example would be leaving a bottle of champagne in a guest’s room while they are not expecting it.
Figure 4. Conceptual understanding of performance model

In the Performance model, the vertical axis shows the Performance level (above, average, and below) and the horizontal axis shows the satisfaction level that is related to the three factors. In the Basic Factor, when the service attributes are in the below position then it will lead guest dissatisfaction. Whereas, when the Performance level is the above position, it will not enhance the guest’s satisfaction. In the Performance Factor, service attributes are responsible for both guests’ satisfaction and dissatisfaction. When the Performance level in the below position it will lead the guest’s dissatisfaction, whereas, when the Performance level is in the above position then it will lead the guests’ satisfaction. In the Excitement Factor, the service quality attributes are only responsible for guests’ satisfaction. If the Performance level is even the below of the
above position, then it will not lead the guests’ dissatisfaction; however, when the Performance level is in the above position it will increase guests’ satisfaction.

In this research, each of the six quality attributes are categorized into one of the three factors describes above based on the quality ratings of the customers. Such an analysis is also performed for each property type to evaluate if there is any variation within them.

Method for Analysis

This section provides a detailed description of the test of the hypothesis developed for this study. The main hypothesis is tested as follows:

• **Hypothesis 1**- Higher quality attribute ratings will lead to higher overall satisfaction ratings.

  ➢ \[ Y = \alpha + b_1 X_1 + \epsilon \]

  Where, \( b_1 \) is regression parameter; \( Y \) = overall ratings, \( \alpha \) is the regression constant, \( X_1 \) is quality attribute rating (separately) for Communication, Accuracy, Cleanliness, check-in, Location, and Value and \( \epsilon \) is the error in the model.

• **Hypothesis 2**- The relationship between overall quality rating and the attribute rating will be dependent on the type of property.

  ➢ \[ Y = \alpha + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + \epsilon \]

  Where, \( b_1 \ldots b_6 \) are regression parameters; \( Y \) = overall ratings, \( \alpha \) is the regression constant, \( X_1 \ldots X_6 \) are quality attribute ratings for Communication, Accuracy, Cleanliness, Check-in, Location, and Value; \( \epsilon \) is the error in the model.

• **Hypothesis 3**- Considering all types of accommodations offered by Airbnb, the six quality attributes will be categorized as follows:
➢ Ha - Cleanliness will be a Basic Factor

- Ha: $\beta_{\text{Cleanliness\_Penalty}} > \beta_{\text{Cleanliness\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{\text{Cleanliness\_Low}} + \beta_2 X_{\text{Cleanliness\_High}} + \epsilon$

➢ Hb - Communication will be Basic Factor

- Ha: $\beta_{\text{Communication\_Penalty}} > \beta_{\text{Communication\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\epsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{\text{Communication\_Low}} + \beta_2 X_{\text{Communication\_High}} + \epsilon$

➢ Hc - Accuracy will be Performance Factor

- Ha: $\beta_{\text{Accuracy\_Penalty}} > \beta_{\text{Accuracy\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{\text{Accuracy\_Low}} + \beta_2 X_{\text{Accuracy\_High}} + \epsilon$

➢ Hd - Check-in will be a Performance Factor

- Ha: $\beta_{\text{Check-in\_Penalty}} > \beta_{\text{Check-in\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.
• \( Y = \alpha + \beta_1 X_{\text{Check-in\_Low}} + \beta_2 X_{\text{Check-in\_High}} + \epsilon \)

➢ He - Location will be an Excitement Factor
  ▪ Ha: \( \beta_{\text{Location\_Penalty}} > \beta_{\text{Location\_Reward}} \)
  ▪ \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and \( \epsilon \) is the error in the model.

• \( Y = \alpha + \beta_1 X_{\text{Location\_Low}} + \beta_2 X_{\text{Location\_High}} + \epsilon \)

➢ Hf - Value will be an Excitement Factor
  ▪ Ha: \( \beta_{\text{Value\_Penalty}} > \beta_{\text{Value\_Reward}} \)
  ▪ \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and \( \epsilon \) is the error in the model.

• \( Y = \alpha + \beta_1 X_{\text{Value\_Low}} + \beta_2 X_{\text{Value\_High}} + \epsilon \)

• **Hypothesis 4**- The type of property will have an influence on the quality attributes’ status as a Basic or Performance or an exciting Factor.

➢ Communication will be a Basic Factor for all property types.
  ▪ H4 -1a: Communication will be a Basic Factor for Apartments
    • \( \beta_{\text{Apartments\_Communication\_Penalty}} > \beta_{\text{Apartments\_Communication\_Reward}} \)
    • \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and \( \epsilon \) is the error in the model.

    ▪ \( Y = \alpha + \beta_1 X_{\text{Apartmment\_Communication\_Low}} + \beta_2 X_{\text{Apartmment\_Communication\_High}} + \epsilon \)
▪ H4 -1b: Communication will be a Basic Factor for B&B
  • $\beta_{B&B\_Communication\_Penalty} > \beta_{B&B\_Communication\_Reward}$
  • $\beta$ is regression coefficient of overall score as dependent variable
    and the high and low dummy variables for Communication as the
    independent variables and $\epsilon$ is the error in the model.
    
    $Y = \alpha + \beta_1 X_{B&B\_Communication\_Low} + \beta_2 X_{Apartment\_Communication\_High} + \epsilon$

▪ H4 -1c: Communication will be a Basic Factor for Bungalow
  • $\beta_{Bungalow\_Communication\_Penalty} > \beta_{Bungalow\_Communication\_Reward}$
  • $\beta$ is regression coefficient of overall score as dependent variable
    and the high and low dummy variables for Communication as the
    independent variables and $\epsilon$ is the error in the model.
    
    $Y = \alpha + \beta_1 X_{Bungalow\_Communication\_Low} + \beta_2 X_{Bungalow\_Communication\_High} + \epsilon$

▪ H4 -1d: Communication will be a Basic Factor for Cabin
  • $\beta_{Cabin\_Communication\_Penalty} > \beta_{Cabin\_Communication\_Reward}$
  • $\beta$ is regression coefficient of overall score as dependent variable
    and the high and low dummy variables for Communication as the
    independent variables and $\epsilon$ is the error in the model.
    
    $Y = \alpha + \beta_1 X_{Cabin\_Communication\_Low} + \beta_2 X_{Cabin\_Communication\_High} + \epsilon$

▪ H4 -1e: Communication will be a Basic Factor for Camper/RV
  • $\beta_{Camper/RV\_Communication\_Penalty} > \beta_{Camper/RV\_Communication\_Reward}$
• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Camper/RV\_Communication\_Low}} + \beta_2 X_{\text{Camper/RV\_Communication\_High}} + \varepsilon
\]

- **H4 -1f: Communication will be a Basic Factor for Condominium**

  • $\beta_{\text{Condominium\_Communication\_Penalty}} > \beta_{\text{Condominium\_Communication\_Reward}}$

  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Condominium\_Communication\_Low}} + \beta_2 X_{\text{Condominium\_Communication\_High}} + \varepsilon
\]

- **H4 -1g: Communication will be a Basic Factor for Guest Suite**

  • $\beta_{\text{Guest Suite\_Communication\_Penalty}} > \beta_{\text{Guest Suite\_Communication\_Reward}}$

  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guest Suite\_Communication\_Low}} + \beta_2 X_{\text{Guest Suite\_Communication\_High}} + \varepsilon
\]

- **H4 -1h: Communication will be a Basic Factor for Guesthouse**

  • $\beta_{\text{Guesthouse\_Communication\_Penalty}} > \beta_{\text{Guesthouse\_Communication\_Reward}}$
• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guesthouse\_Communication\_Low}} + \beta_2 X_{\text{Guesthouse\_Communication\_High}} + \varepsilon
\]

- **H4 -1i: Communication will be a Basic Factor for House**
  
  - \( \beta_{\text{House\_Communication\_Penalty}} > \beta_{\text{House\_Communication\_Reward}} \)
  
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{House\_Communication\_Low}} + \beta_2 X_{\text{House\_Communication\_High}} + \varepsilon
\]

- **H4 -1j: Communication will be a Basic Factor for Loft**
  
  - \( \beta_{\text{Loft\_Communication\_Penalty}} > \beta_{\text{Loft\_Communication\_Reward}} \)
  
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Loft\_Communication\_Low}} + \beta_2 X_{\text{Loft\_Communication\_High}} + \varepsilon
\]

- **H4 -1k: Communication will be a Basic Factor for Place**
  
  - \( \beta_{\text{Place\_Communication\_Penalty}} > \beta_{\text{Place\_Communication\_Reward}} \)
- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\epsilon$ is the error in the model.

  \[ Y = \alpha + \beta_1 X_{\text{Place\_Communication\_Low}} + \beta_2 X_{\text{Place\_Communication\_High}} + \epsilon \]

\[\text{H4 -1l}: \text{Communication will be a Basic Factor for Tent} \]

- $\beta_{\text{Tent\_Communication\_Penalty}} > \beta_{\text{Tent\_Communication\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\epsilon$ is the error in the model.

  \[ Y = \alpha + \beta_1 X_{\text{Tent\_Communication\_Low}} + \beta_2 X_{\text{Tent\_Communication\_High}} + \epsilon \]

\[\text{H4 -1m}: \text{Communication will be a Basic Factor for Private Room} \]

- $\beta_{\text{Private Room\_Communication\_Penalty}} > \beta_{\text{Private Room\_Communication\_Reward}}$

- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\epsilon$ is the error in the model.

  \[ Y = \alpha + \beta_1 X_{\text{Private Room\_Communication\_Low}} + \beta_2 X_{\text{Private Room\_Communication\_High}} + \epsilon \]

\[\text{H4 -1n}: \text{Communication will be a Basic Factor for Others} \]

- $\beta_{\text{Others\_Communication\_Penalty}} > \beta_{\text{Others\_Communication\_Reward}}$
• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and $\epsilon$ is the error in the model.
  
  \[ Y = \alpha + \beta_1 \times \text{Others\_Communication\_Low} + \beta_2 \times \text{Others\_Communication\_High} + \epsilon \]

➢ Accuracy will be a Performance Factor for all property types.

- **H4 -2a: Accuracy will be a Performance Factor for Apartments**
  
  • $\beta_{\text{Apartments\_Accuracy\_Penalty}} > \beta_{\text{Apartments\_Accuracy\_Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.
  
  \[ Y = \alpha + \beta_1 \times \text{Apartment\_Accuracy\_Low} + \beta_2 \times \text{Apartment\_Accuracy\_High} + \epsilon \]

- **H4 -2b: Accuracy will be a Performance Factor for B&B**
  
  • $\beta_{\text{B&B\_Accuracy\_Penalty}} > \beta_{\text{B&B\_Accuracy\_Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.
  
  \[ Y = \alpha + \beta_1 \times \text{B&B\_Accuracy\_Low} + \beta_2 \times \text{B&B\_Accuracy\_High} + \epsilon \]

- **H4 -2c: Accuracy will be a Performance Factor for Bungalow**
  
  • $\beta_{\text{Bungalow\_Accuracy\_Penalty}} > \beta_{\text{Bungalow\_Accuracy\_Reward}}$
• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Bungalow_Accuracy_Low}} + \beta_2 X_{\text{Bungalow_Accuracy_High}} + \varepsilon
\]

- **H4 -2d: Accuracy will be a Performance Factor for Cabin**
  
  - \( \beta_\text{Cabin\_Accuracy\_Penalty} > \beta_\text{Cabin\_Accuracy\_Reward} \)

• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Cabin\_Accuracy\_Low}} + \beta_2 X_{\text{Cabin\_Accuracy\_High}} + \varepsilon
\]

- **H4 -2e: Accuracy will be a Performance Factor for Camper/RV**
  
  - \( \beta_\text{Camper/RV\_Accuracy\_Penalty} > \beta_\text{Camper/RV\_Accuracy\_Reward} \)

• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Camper/RV\_Accuracy\_Low}} + \beta_2 X_{\text{Camper/RV\_Accuracy\_High}} + \varepsilon
\]

- **H4 -2f: Accuracy will be a Performance Factor for Condominium**
  
  - \( \beta_\text{Condominium\_Accuracy\_Penalty} > \beta_\text{Condominium\_Accuracy\_Reward} \)

• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.
\[ Y = \alpha + \beta_1 X_{\text{Condominium\_Accuracy\_Low}} + \beta_2 X_{\text{Condominium\_Accuracy\_High}} + \varepsilon \]

- **H4 -2g: Accuracy will be a Performance Factor for Guest Suite**
  - \( \beta_{\text{Guest Suite\_Accuracy\_Penalty}} > \beta_{\text{Guest Suite\_Accuracy\_Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{Guest Suite\_Accuracy\_Low}} + \beta_2 X_{\text{Accuracy\_Communication\_High}} + \varepsilon \]

- **H4 -2h: Accuracy will be a Performance Factor for Guesthouse**
  - \( \beta_{\text{Guesthouse\_Accuracy\_Penalty}} > \beta_{\text{Guesthouse\_Accuracy\_Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{Guesthouse\_Accuracy\_Low}} + \beta_2 X_{\text{Guesthouse\_Accuracy\_High}} + \varepsilon \]

- **H4 -2i: Accuracy will be a Performance Factor for House**
  - \( \beta_{\text{House\_Accuracy\_Penalty}} > \beta_{\text{House\_Accuracy\_Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{House\_Accuracy\_Low}} + \beta_2 X_{\text{House\_Accuracy\_High}} + \varepsilon \]

- **H4 -2j: Accuracy will be a Performance Factor for Loft**
• $\beta_{\text{Loft\_Accuracy\_Penalty}} > \beta_{\text{Loft\_Accuracy\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.

○ $Y = \alpha + \beta_1 X_{\text{Loft\_Accuracy\_Low}} + \beta_2 X_{\text{Loft\_Accuracy\_High}} + \epsilon$

- H4 -2k: Accuracy will be a Performance Factor for Place

• $\beta_{\text{Place\_Accuracy\_Penalty}} > \beta_{\text{Place\_Accuracy\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.

○ $Y = \alpha + \beta_1 X_{\text{Place\_Accuracy\_Low}} + \beta_2 X_{\text{Place\_Accuracy\_High}} + \epsilon$

- H4 -2l: Accuracy will be a Performance Factor for Tent

• $\beta_{\text{Tent\_Accuracy\_Penalty}} > \beta_{\text{Tent\_Accuracy\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.

○ $Y = \alpha + \beta_1 X_{\text{Tent\_Accuracy\_Low}} + \beta_2 X_{\text{Tent\_Accuracy\_High}} + \epsilon$

- H4 -2m: Accuracy will be a Performance Factor for Private Room

• $\beta_{\text{Private Room\_Accuracy\_Penalty}} > \beta_{\text{Private Room\_Accuracy\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and $\epsilon$ is the error in the model.
H4 -2n: Accuracy will be a Performance Factor for Others

- \( \beta_{\text{Others\_Accuracy\_Penalty}} > \beta_{\text{Others\_Accuracy\_Reward}} \)
- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \epsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{Private\_Room\_Accuracy\_Low}} + \beta_2 X_{\text{Private\_Room\_Accuracy\_High}} + \epsilon \]

Cleanliness will be a Performance Factor for all property types.

H4 -3a: Cleanliness will be a Performance Factor for Apartments

- \( \beta_{\text{Aparments\_Cleanliness\_Penalty}} > \beta_{\text{Aparments\_Cleanliness\_Reward}} \)
- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and \( \epsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{Apartment\_Cleanliness\_Low}} + \beta_2 X_{\text{Apartment\_Cleanliness\_High}} + \epsilon \]

H4 -3b: Cleanliness will be a Performance Factor for B&B

- \( \beta_{\text{B&B\_Cleanliness\_Penalty}} > \beta_{\text{B&B\_Cleanliness\_Reward}} \)
- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and \( \epsilon \) is the error in the model.

\[ Y = \alpha + \beta_1 X_{\text{B&B\_Cleanliness\_Low}} + \beta_2 X_{\text{B&B\_Cleanliness\_High}} + \epsilon \]

H4 -3c: Cleanliness will be a Performance Factor for Bungalow
• $\beta_{\text{Bungalow\_Cleanliness\_Penalty}} > \beta_{\text{Bungalow\_Cleanliness\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

  \[
  Y = \alpha + \beta_1 X_{\text{Bungalow\_Cleanliness\_Low}} + \beta_2 X_{\text{Bungalow\_Cleanliness\_High}} + \epsilon
  \]

▪ H4 -3d: Cleanliness will be a Performance Factor for Cabin

• $\beta_{\text{Cabin\_Cleanliness\_Penalty}} > \beta_{\text{Cabin\_Cleanliness\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

  \[
  Y = \alpha + \beta_1 X_{\text{Cabin\_Cleanliness\_Low}} + \beta_2 X_{\text{Cabin\_Cleanliness\_High}} + \epsilon
  \]

▪ H4 -3e: Cleanliness will be a Performance Factor for Camper/RV

• $\beta_{\text{Camper/RV\_Cleanliness\_Penalty}} > \beta_{\text{Camper/RV\_Cleanliness\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

  \[
  Y = \alpha + \beta_1 X_{\text{Camper/RV\_Cleanliness\_Low}} + \beta_2 X_{\text{Camper/RV\_Cleanliness\_High}} + \epsilon
  \]

▪ H4 -3f: Cleanliness will be a Performance Factor for Condominium

• $\beta_{\text{Condominium\_Cleanliness\_Penalty}} > \beta_{\text{Condominium\_Cleanliness\_Reward}}$
• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Condominium\_Cleanliness\_Low}} + \beta_2 X_{\text{Condominium\_Cleanliness\_High}} + \varepsilon
\]

- **H4 -3g: Cleanliness will be a Performance Factor for Guest Suite**
  
  - $\beta_{\text{Guest Suite\_Cleanliness\_Penalty}} > \beta_{\text{Guest Suite\_Cleanliness\_Reward}}$
  
  - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guest Suite\_Cleanliness\_Low}} + \beta_2 X_{\text{Guest Suite\_Cleanliness\_High}} + \varepsilon
\]

- **H4 -3h: Cleanliness will be a Performance Factor for Guesthouse**
  
  - $\beta_{\text{Guesthouse\_Cleanliness\_Penalty}} > \beta_{\text{Guesthouse\_Cleanliness\_Reward}}$
  
  - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\varepsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guesthouse\_Cleanliness\_Low}} + \beta_2 X_{\text{Guesthouse\_Cleanliness\_High}} + \varepsilon
\]

- **H4 -3i: Cleanliness will be a Performance Factor for House**
  
  - $\beta_{\text{House\_Cleanliness\_Penalty}} > \beta_{\text{House\_Cleanliness\_Reward}}$
• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and \( \epsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{House\_Cleanliness\_Low}} + \beta_2 X_{\text{House\_Cleanliness\_High}} + \epsilon
\]

- **H4 -3j:** Cleanliness will be a Performance Factor for Loft
  
  • \( \beta_{\text{Loft\_Cleanliness\_Penalty}} > \beta_{\text{Loft\_Cleanliness\_Reward}} \)

- **H4 -3k:** Cleanliness will be a Performance Factor for Place
  
  • \( \beta_{\text{Place\_Cleanliness\_Penalty}} > \beta_{\text{Place\_Cleanliness\_Reward}} \)

- **H4 -3l:** Cleanliness will be a Performance Factor for Tent
  
  • \( \beta_{\text{Tent\_Cleanliness\_Penalty}} > \beta_{\text{Tent\_Cleanliness\_Reward}} \)

- **H4 -3m:** Cleanliness will be a Performance Factor for Private Room
• $\beta_{\text{Private Room Cleanliness Penalty}} > \beta_{\text{Private Room Cleanliness Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

$$Y = \alpha + \beta_1 X_{\text{Private Room Cleanliness Low}} + \beta_2 X_{\text{Private Room Cleanliness High}} + \epsilon$$

**H4 - 3n: Cleanliness will be a Performance Factor for Others**

• $\beta_{\text{Others Cleanliness Penalty}} > \beta_{\text{Others Cleanliness Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\epsilon$ is the error in the model.

$$Y = \alpha + \beta_1 X_{\text{Others Cleanliness Low}} + \beta_2 X_{\text{Others Cleanliness High}} + \epsilon$$

➢ Check-in will be a Performance Factor for all property types.

**H4 - 4a: Check-in will be an Excitement Factor for Apartments**

• $\beta_{\text{Apartments Check-in Penalty}} > \beta_{\text{Apartments Check-in Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

$$Y = \alpha + \beta_1 X_{\text{Apartment Check-in Low}} + \beta_2 X_{\text{Apartment Check-in High}} + \epsilon$$

**H4 - 4b: Check-in will be an Excitement factor for B&B**

• $\beta_{\text{B&B Check-in Penalty}} > \beta_{\text{B&B Check-in Reward}}$
• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

$$Y = \alpha + \beta_1 X_{B&B\_Check-in\_Low} + \beta_2 X_{B&B\_Check-in\_High} + \epsilon$$

- **H4 - 4c: Check-in will be an Excitement Factor for Bungalow**
  
  • $\beta_{Bungalow\_Check-in\_Penalty} > \beta_{Bungalow\_Check-in\_Reward}$

  - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

  $$Y = \alpha + \beta_1 X_{Bungalow\_Check-in\_Low} + \beta_2 X_{Bungalow\_Check-in\_High} + \epsilon$$

- **H4 - 4d: Check-in will be an Excitement Factor for Cabin**

  • $\beta_{Cabin\_Check-in\_Penalty} > \beta_{Cabin\_Check-in\_Reward}$

  - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

  $$Y = \alpha + \beta_1 X_{Cabin\_Check-in\_Low} + \beta_2 X_{Cabin\_Check-in\_High} + \epsilon$$

- **H4 - 4e: Check-in will be an Excitement Factor for Camper/RV**

  • $\beta_{Camper/RV\_Check-in\_Penalty} > \beta_{Camper/RV\_Check-in\_Reward}$

  - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.
\[
Y = \alpha + \beta_1 X_{\text{Camper/RV Check-in Low}} + \beta_2 X_{\text{Camper/RV Check-in High}} + \epsilon
\]

- **H4 - 4f: Check-in will be an Excitement Factor for Condominium**
  - \(\beta_{\text{Condominium Check-in Penalty}} > \beta_{\text{Condominium Check-in Reward}}\)
  - \(\beta\) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and \(\epsilon\) is the error in the model.
  - \[
  Y = \alpha + \beta_1 X_{\text{Condominium Check-in Low}} + \beta_2 X_{\text{Condominium Check-in High}} + \epsilon
  \]

- **H4 - 4g: Check-in will be an Excitement Factor for Guest Suite**
  - \(\beta_{\text{Guest Suite Check-in Penalty}} > \beta_{\text{Guest Suite Check-in Reward}}\)
  - \(\beta\) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and \(\epsilon\) is the error in the model.
  - \[
  Y = \alpha + \beta_1 X_{\text{Guest Suite Check-in Low}} + \beta_2 X_{\text{Check-in Communication High}} + \epsilon
  \]

- **H4 - 4h: Check-in will be an Excitement Factor for Guesthouse**
  - \(\beta_{\text{Guesthouse Check-in Penalty}} > \beta_{\text{Guesthouse Check-in Reward}}\)
  - \(\beta\) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and \(\epsilon\) is the error in the model.
  - \[
  Y = \alpha + \beta_1 X_{\text{Guesthouse Check-in Low}} + \beta_2 X_{\text{Guesthouse Check-in High}} + \epsilon
  \]
• H4 - 4i: Check-in will be an Excitement Factor for House
  
  • $\beta_{\text{House Check-in Penalty}} > \beta_{\text{House Check-in Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{House Check-in Low}} + \beta_2 X_{\text{House Check-in High}} + \epsilon$

• H4 - 4j: Check-in will be an Excitement Factor for Loft
  
  • $\beta_{\text{Loft Check-in Penalty}} > \beta_{\text{Loft Check-in Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{Loft Check-in Low}} + \beta_2 X_{\text{Loft Check-in High}} + \epsilon$

• H4 - 4k: Check-in will be an Excitement Factor for Place
  
  • $\beta_{\text{Place Check-in Penalty}} > \beta_{\text{Place Check-in Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{Place Check-in Low}} + \beta_2 X_{\text{Place Check-in High}} + \epsilon$

• H4 - 4l: Check-in will be an Excitement Factor for Tent
  
  • $\beta_{\text{Tent Check-in Penalty}} > \beta_{\text{Tent Check-in Reward}}$
  
  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and $\epsilon$ is the error in the model.
O Y = α + β₁ X_{Tent\text{-}Check-in\_Low} + β₂ X_{Tent\text{-}Check-in\_High} + ε

- **H4 - 4m: Check-in will be an Excitement Factor for Private Room**
  - β_{Private\text{-}Room\_Check-in\_ Penalty} > β_{Private\text{-}Room\_Check-in\_ Reward}
  - β is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and ε is the error in the model.

  O Y = α + β₁ X_{Private\text{-}Room\_Check-in\_Low} + β₂ X_{Private\text{-}Room\_Check-in\_High} + ε

- **H4 - 4n: Check-in will be an Excitement Factor for Others**
  - β_{Others\text{-}Check-in\_Penalty} > β_{Others\text{-}Check-in\_Reward}
  - β is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and ε is the error in the model.

  O Y = α + β₁ X_{Others\text{-}Check-in\_Low} + β₂ X_{Others\text{-}Check-in\_High} + ε

- ➢ Location will be an Excitement Factor for all property types.
  - **H4 - 5a: Location will be an Excitement Factor for Apartments**
  - β_{Apartments\_Location\_Penalty} > β_{Apartments\_Location\_Reward}
  - β is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and ε is the error in the model.

    O Y = α + β₁ X_{Apartment\_Location\_Low} + β₂ X_{Apartment\_Location\_High} + ε

- **H4 - 5b: Location will be an Excitement Factor for B&B**
• $\beta_{B&B\_Location\_Penalty} > \beta_{B&B\_Location\_Reward}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

  $\circ \quad Y = \alpha + \beta_1 X_{B&B\_Location\_Low} + \beta_2 X_{B&B\_Location\_High} + \epsilon$

- H4 - 5c: Location will be an Excitement Factor for Bungalow

  • $\beta_{Bungalow\_Location\_Penalty} > \beta_{Bungalow\_Location\_Reward}$

  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

    $\circ \quad Y = \alpha + \beta_1 X_{Bungalow\_Location\_Low} + \beta_2 X_{Bungalow\_Location\_High} + \epsilon$

- H4 - 5d: Location will be an Excitement Factor for Cabin

  • $\beta_{Cabin\_Location\_Penalty} > \beta_{Cabin\_Location\_Reward}$

  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

    $\circ \quad Y = \alpha + \beta_1 X_{Cabin\_Location\_Low} + \beta_2 X_{Cabin\_Location\_High} + \epsilon$

- H4 - 5e: Location will be an Excitement Factor for Camper/RV

  • $\beta_{Camper/RV\_Location\_Penalty} > \beta_{Camper/RV\_Location\_Reward}$

  • $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.
- $Y = \alpha + \beta_1 X_{Camper/RV\_Location\_Low} + \beta_2 X_{Camper/RV\_Location\_High} + \varepsilon$

**H4 - 5f: Location will be an Excitement Factor for Condominium**

- $\beta_{Condominium\_Location\_Penalty} > \beta_{Condominium\_Location\_Reward}$
- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\varepsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{Condominium\_Location\_Low} + \beta_2 X_{Condominium\_Location\_High} + \varepsilon$

**H4 - 5g: Location will be an Excitement Factor for Guest Suite**

- $\beta_{Guest Suite\_Location\_Penalty} > \beta_{Guest Suite\_Location\_Reward}$
- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\varepsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{Guest Suite\_Location\_Low} + \beta_2 X_{Location\_Communication\_High} + \varepsilon$

**H4 - 5h: Location will be an Excitement Factor for Guesthouse**

- $\beta_{Guesthouse\_Location\_Penalty} > \beta_{Guesthouse\_Location\_Reward}$
- $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\varepsilon$ is the error in the model.

- $Y = \alpha + \beta_1 X_{Guesthouse\_Location\_Low} + \beta_2 X_{Guesthouse\_Location\_High} + \varepsilon$
H4 - 5i: Location will be an Excitement Factor for House

• $\beta_{\text{House Location Penalty}} > \beta_{\text{House Location Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{House Location Low}} + \beta_2 X_{\text{House Location High}} + \epsilon$

H4 - 5j: Location will be an Excitement Factor for Loft

• $\beta_{\text{Loft Location Penalty}} > \beta_{\text{Loft Location Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{Loft Location Low}} + \beta_2 X_{\text{Loft Location High}} + \epsilon$

H4 - 5k: Location will be an Excitement Factor for Place

• $\beta_{\text{Place Location Penalty}} > \beta_{\text{Place Location Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.

  $Y = \alpha + \beta_1 X_{\text{Place Location Low}} + \beta_2 X_{\text{Place Location High}} + \epsilon$

H4 - 5l: Location will be an Excitement Factor for Tent

• $\beta_{\text{Tent Location Penalty}} > \beta_{\text{Tent Location Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and $\epsilon$ is the error in the model.
\( Y = \alpha + \beta_1 X_{\text{Tent Location Low}} + \beta_2 X_{\text{Tent Location High}} + \epsilon \)

- **H4 - 5m: Location will be an Excitement Factor for Private Room**
  - \( \beta_{\text{Private Room Location Penalty}} > \beta_{\text{Private Room Location Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and \( \epsilon \) is the error in the model.

\( Y = \alpha + \beta_1 X_{\text{Private Room Location Low}} + \beta_2 X_{\text{Private Room Location High}} + \epsilon \)

- **H4 - 5n: Location will be an Excitement Factor for Others**
  - \( \beta_{\text{Others Location Penalty}} > \beta_{\text{Others Location Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and \( \epsilon \) is the error in the model.

\( Y = \alpha + \beta_1 X_{\text{Others Location Low}} + \beta_2 X_{\text{Others Location High}} + \epsilon \)

➢ **Value will be a Basic Factor for all property types.**

- **H4 - 6a: Value will be a Basic Factor for Apartments**
  - \( \beta_{\text{Apartments Value Penalty}} > \beta_{\text{Apartments Value Reward}} \)
  - \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and \( \epsilon \) is the error in the model.

\( Y = \alpha + \beta_1 X_{\text{Apartment Value Low}} + \beta_2 X_{\text{Apartment Value High}} + \epsilon \)

- **H4 - 6b: Value will be a Basic Factor for B&B**
  - \( \beta_{\text{B&B Value Penalty}} > \beta_{\text{B&B Value Reward}} \)
• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and \( \epsilon \) is the error in the model.

\[
Y = \alpha \ + \ \beta_1 \ X_{B&B\_Value\_Low} + \beta_2 \ X_{B&B\_Value\_High} + \epsilon
\]

- **H4 - 6c: Value will be a Basic Factor for Bungalow**
  - \( \beta_{Bungalow\_Value\_Penalty} > \beta_{Bungalow\_Value\_Reward} \)

- **H4 - 6d: Value will be a Basic Factor for Cabin**
  - \( \beta_{Cabin\_Value\_Penalty} > \beta_{Cabin\_Value\_Reward} \)

- **H4 - 6e: Value will be a Basic Factor for Camper/RV**
  - \( \beta_{Camper/RV\_Value\_Penalty} > \beta_{Camper/RV\_Value\_Reward} \)

- **H4 - 6f: Value will be a Basic Factor for Condominium**
• $\beta_{\text{Condominium Value\_Penalty}} > \beta_{\text{Condominium Value\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\epsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Condominium Value\_Low}} + \beta_2 X_{\text{Condominium Value\_High}} + \epsilon
\]

- **H4 - 6g: Value will be a Basic Factor for Guest Suite**

• $\beta_{\text{Guest Suite\_Value\_Penalty}} > \beta_{\text{Guest Suite\_Value\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\epsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guest Suite\_Value\_Low}} + \beta_2 X_{\text{Value\_Communication\_High}} + \epsilon
\]

- **H4 - 6h: Value will be a Basic Factor for Guesthouse**

• $\beta_{\text{Guesthouse Value\_Penalty}} > \beta_{\text{Guesthouse Value\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\epsilon$ is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Guesthouse\_Value\_Low}} + \beta_2 X_{\text{Guesthouse\_Value\_High}} + \epsilon
\]

- **H4 - 6i: Value will be a Basic Factor for House**

• $\beta_{\text{House Value\_Penalty}} > \beta_{\text{House Value\_Reward}}$
• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\varepsilon$ is the error in the model.

$$Y = \alpha + \beta_1 X_{House\_Value\_Low} + \beta_2 X_{House\_Value\_High} + \varepsilon$$

- **H4 - 6j:** Value will be a Basic Factor for Loft
  
  • $\beta_{Loft\_Value\_Penalty} \geq \beta_{Loft\_Value\_Reward}$

- **H4 - 6k:** Value will be a Basic Factor for Place
  
  • $\beta_{Place\_Value\_Penalty} \geq \beta_{Place\_Value\_Reward}$

- **H4 - 6l:** Value will be a Basic Factor for Tent
  
  • $\beta_{Tent\_Value\_Penalty} \geq \beta_{Tent\_Value\_Reward}$

- **H4 - 6m:** Value will be a Basic Factor for Private Room
• $\beta_{\text{Private Room\_Value\_Penalty}} > \beta_{\text{Private Room\_Value\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\epsilon$ is the error in the model.

  \[ Y = \alpha + \beta_1 X_{\text{Private Room\_Value\_Low}} + \beta_2 X_{\text{Private Room\_Value\_High}} + \epsilon \]

- **H4 - 6n: Value will be a Basic Factor for Others**

• $\beta_{\text{Others\_Value\_Penalty}} > \beta_{\text{Others\_Value\_Reward}}$

• $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and $\epsilon$ is the error in the model.

  \[ Y = \alpha + \beta_1 X_{\text{Others\_Value\_Low}} + \beta_2 X_{\text{Others\_Value\_High}} + \epsilon \]

The results of tests for all the above hypotheses are provided in the next section.

**Results**

This section presents the results for the analysis conducted in this study. For this study, analysis was conducted at two levels – at the univariate level, descriptive statistics were computed to profile the data used in terms of property type and mean quality ratings. At the secondary level, regression and multi-variate analysis techniques were used to test the four-hypothesis used in this study.

**Description of Data**

As a reminder, the date used for this study was obtained from a syndicated company, AirDNA for Airbnb operations in Tennessee for the period from May 2014 to May 2018. A total
of 31,725 properties were included in this study for analysis. Table 3 below summarized the profile of the data considered for this study.

Table 3

*Summary Profile of Airbnb Properties in Tennessee*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Rate</td>
<td>21,070</td>
<td>$240.08</td>
<td>$226.18</td>
</tr>
<tr>
<td>Annual Revenue LTM</td>
<td>31,326</td>
<td>$12,299.70</td>
<td>$22,031.78</td>
</tr>
<tr>
<td>Occupancy Rate LTM</td>
<td>21,070</td>
<td>47.65%</td>
<td>26.75%</td>
</tr>
<tr>
<td>Number of Bookings LTM</td>
<td>31,326</td>
<td>18.65</td>
<td>27.27</td>
</tr>
<tr>
<td>Number of Reviews</td>
<td>31,372</td>
<td>16.76</td>
<td>37.83</td>
</tr>
<tr>
<td>Bedrooms</td>
<td>31,681</td>
<td>1.95</td>
<td>1.41</td>
</tr>
<tr>
<td>Bathrooms</td>
<td>31,670</td>
<td>1.76</td>
<td>1.17</td>
</tr>
<tr>
<td>Max Guests</td>
<td>31,641</td>
<td>5.45</td>
<td>3.62</td>
</tr>
<tr>
<td>Response Rate</td>
<td>28,017</td>
<td>93.83%</td>
<td>18.40%</td>
</tr>
<tr>
<td>Response Time (min)</td>
<td>27,718</td>
<td>168.99</td>
<td>352.30</td>
</tr>
<tr>
<td>Security Deposit</td>
<td>11,175</td>
<td>$309.37</td>
<td>$341.72</td>
</tr>
<tr>
<td>Cleaning Fee</td>
<td>23,029</td>
<td>$102.60</td>
<td>$88.07</td>
</tr>
<tr>
<td>Extra People Fee</td>
<td>9,332</td>
<td>$24.39</td>
<td>$24.33</td>
</tr>
<tr>
<td>Published Nightly Rate</td>
<td>31,725</td>
<td>$281.31</td>
<td>$412.59</td>
</tr>
<tr>
<td>Published Monthly Rate</td>
<td>31,671</td>
<td>$6,009.01</td>
<td>$10,894.70</td>
</tr>
<tr>
<td>Published Weekly Rate</td>
<td>31,690</td>
<td>$1,509.81</td>
<td>$2,740.50</td>
</tr>
<tr>
<td>Minimum Stay</td>
<td>31,675</td>
<td>2.25</td>
<td>6.51</td>
</tr>
</tbody>
</table>

Table 3 shows that the average daily rate of Airbnb’s properties in Tennessee was $240 and the average occupancy rate was 47.67%. The number of average bedrooms for each property
was approximately two and the number of bathrooms was also two that means that almost every bedroom had a bathroom. The percentage of response rate was about ninety-four percent and the average response time is approximately three hours. The average nightly, weekly and monthly rate for the properties was $281.31, $6,009 and $1,510, respectively. On an average all the properties had fees for cleaning, security and for extra guests. The maximum number of guests seems to be about 6 guests. On an average, each property seemed to have about 19 bookings during the period considered. The properties, on an average, required a minimum stay of 2.2 nights. The average number of guest reviewers that each property seemed to have was slightly under 17 during the period.
<table>
<thead>
<tr>
<th>Property Type</th>
<th>Overall Rating*</th>
<th>Communication Rating**</th>
<th>Accuracy Rating**</th>
<th>Cleanliness Rating**</th>
<th>Check-in Rating**</th>
<th>Location Rating**</th>
<th>Value Rating**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>95.25</td>
<td>9.79</td>
<td>9.65</td>
<td>9.58</td>
<td>9.79</td>
<td>9.64</td>
<td>9.64</td>
</tr>
<tr>
<td>House</td>
<td>96.05</td>
<td>9.86</td>
<td>9.77</td>
<td>9.64</td>
<td>9.88</td>
<td>9.56</td>
<td>9.68</td>
</tr>
<tr>
<td>Tent</td>
<td>96.41</td>
<td>9.82</td>
<td>9.71</td>
<td>9.62</td>
<td>9.89</td>
<td>9.70</td>
<td>9.60</td>
</tr>
<tr>
<td>Bungalow</td>
<td>97.32</td>
<td>9.96</td>
<td>9.91</td>
<td>9.79</td>
<td>9.96</td>
<td>9.70</td>
<td>9.84</td>
</tr>
</tbody>
</table>

* Scale is a percentage score; ** Scale is 1-10 ratings with 1 = Poor and 10 = Excellent
Table 4 displays a clearer picture of the overall quality ratings and the quality ratings of the six attributes considered in this study. From the table, it is very clear that on an average, all the properties are receiving extradentary high ratings overall and for the six individual quality attributes. Considering the overall ratings, property type Places received the lowest rating (91.37%), the second lowest ratings were scored by Condominiums (93.76), while Guesthouses received the highest rating (98.13). The second highest score (97.93) was received by Guest Suits.

With respect to the Communication quality attribute, the property type Guest suites received the highest score (9.99). The second highest score (9.97) and the third highest score (9.96) were received by Guesthouses and Bungalows respectively. On the other hand, the property type Places received the lowest score (9.53) in Communication.

For the Accuracy rating attribute, property type Guest suites and Guesthouses received the similar and the highest score (9.94). The property type Bungalows received the second highest score (91.91) for Accuracy ratings. On the contrary, the property type Places received the lowest score (9.39) for Accuracy ratings, and the second lowest score (9.63) was received by Condominiums, Apartments, and Cabins.

For Cleanliness attribute, Guest Suites and Guesthouses received similar and the highest score (9.89), while the property type Places received the lowest score (9.22). The property type Bungalows received the second highest score for the quality attribute Cleanliness rating. In contrast, the second lowest score was received by the property type Apartments (9.51).

The quality attribute Check-in received the highest score (9.89) for the property type Guest Suits, and the second highest score (9.97) was received by Guesthouses. On the other hand, the lowest score (9.42) for Check-in ratings was received by the property type Places.
For the quality attribute Location, the property type Guesthouses received the highest score (9.85); while, the lowest score was received by the property type Places.

For the last quality attribute Value ratings, the highest score (9.92) was received by the property type Guest Suits and the second highest score (9.87) was received by Guesthouses. On the contrary, the lowest score (9.18) for Value ratings was received by the property type Places and the second lowest score (9.48) was received by Condominiums.

![Overall Rating (Percentage)](image)

**Figure 5.** Overall rating for fourteen types of property in Tennessee

Figure 5 shows the overall ratings for the fourteen types of properties. One of the interesting findings is that all the property types received over ninety percent in overall ratings. The lowest score (91.37%) was received by property type Places, while Guesthouses received the highest score (98.13%). Some property types received almost similar overall ratings, such as Houses and Lofts (96.05% and 96.09%, respectively). Similar results were also found in Camper/RVs and B&B, 97.06% and 97.09%, respectively.
### Fourteen Types of Properties, Statistical Results, and Quality Ratings

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Statistics</th>
<th>Overall Rating*</th>
<th>Communication Rating**</th>
<th>Accuracy Rating**</th>
<th>Cleanliness Rating**</th>
<th>Check-in Rating**</th>
<th>Location Rating**</th>
<th>Value Rating**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>3707</td>
<td>3705</td>
<td>3701</td>
<td>3704</td>
<td>3697</td>
<td>3695</td>
<td>3694</td>
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<td>Std. Deviation</td>
<td>8.183</td>
<td>0.659</td>
<td>0.794</td>
<td>0.902</td>
<td>0.672</td>
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<td>199</td>
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<td></td>
<td>Std. Deviation</td>
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<td>0.552</td>
<td>0.721</td>
<td>0.639</td>
<td>0.648</td>
<td>0.741</td>
<td>0.726</td>
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<tr>
<td>Bungalow</td>
<td>Mean</td>
<td>97.32</td>
<td>9.96</td>
<td>9.91</td>
<td>9.79</td>
<td>9.96</td>
<td>9.70</td>
<td>9.84</td>
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<td>256</td>
<td>256</td>
<td>256</td>
<td>256</td>
<td>256</td>
<td>256</td>
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<td>Std. Deviation</td>
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<td>0.513</td>
<td>0.205</td>
<td>0.560</td>
<td>0.398</td>
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<td></td>
<td>Std. Deviation</td>
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<td>1.033</td>
<td>0.992</td>
<td>0.964</td>
<td>0.874</td>
<td>0.841</td>
<td>1.05</td>
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<td>Property Type</td>
<td>Statistics</td>
<td>Overall Rating*</td>
<td>Communication Rating**</td>
<td>Accuracy Rating**</td>
<td>Cleanliness Rating**</td>
<td>Check-in Rating**</td>
<td>Location Rating**</td>
<td>Value Rating**</td>
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<tr>
<td>---------------------</td>
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<td>Camper/RV</td>
<td>Mean</td>
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<td>131</td>
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<td></td>
<td>Std. Deviation</td>
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<td>9.66</td>
<td>9.60</td>
<td>9.48</td>
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<td>9.97</td>
<td>9.85</td>
<td>9.87</td>
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### Table 4.5 (Continued)

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<th>Property Type</th>
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<th>Overall Rating*</th>
<th>Communication Rating**</th>
<th>Accuracy Rating**</th>
<th>Cleanliness Rating**</th>
<th>Check-in Rating**</th>
<th>Location Rating**</th>
<th>Value Rating**</th>
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<tr>
<td>House</td>
<td>Mean</td>
<td>96.05</td>
<td>9.86</td>
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<td>9.88</td>
<td>9.56</td>
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<td>9.56</td>
<td>9.55</td>
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<td>0.578</td>
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<td>Place</td>
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<td>114</td>
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<td>114</td>
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<td>Std. Deviation</td>
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<td>1.318</td>
<td>1.583</td>
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<td>1.612</td>
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<td>9.82</td>
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<td>9.62</td>
<td>9.89</td>
<td>9.70</td>
<td>9.60</td>
</tr>
<tr>
<td>Tent</td>
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<td>146</td>
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<td>Std. Deviation</td>
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<td>0.936</td>
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<td>9.89</td>
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Table 5 (Continued)

<table>
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<th>Property Type</th>
<th>Statistics</th>
<th>Overall Rating*</th>
<th>Communication Rating**</th>
<th>Accuracy Rating**</th>
<th>Cleanliness Rating**</th>
<th>Check-in Rating**</th>
<th>Location Rating**</th>
<th>Value Rating**</th>
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<td>Private Room</td>
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<td>520</td>
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<td>513</td>
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<td>Std. Deviation</td>
<td>7.279</td>
<td>0.574</td>
<td>0.744</td>
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<td>0.513</td>
<td>0.818</td>
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<td>Mean</td>
<td>95.25</td>
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<td>9.79</td>
<td>9.64</td>
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<td>Others</td>
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<td>695</td>
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<td>695</td>
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<tr>
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<td>0.801</td>
<td>0.903</td>
<td>0.904</td>
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</tbody>
</table>

* Scale is a percentage score; ** Scale is 1-10 ratings with 1 = Poor and 10 = Excellent.
Table 5 shows property types which are classified into fourteen main segments. The “Others” category includes property types that are not significant in numbers such as Caves, Trains, and Treehouses, etc. The second column in the table lists the number of respondents rating the properties, the mean quality score and the corresponding standard deviation. Considering the overall ratings, Guesthouses and guest suits showed the highest ranks, 98.13% and 97.93%, respectively. Houses (9,606) and Apartments (3,707) had the highest number of respondents while, property type Place (114) had lowest.

![Quality Ratings Chart](chart.png)

*Figure 6. Six quality attributes’ ratings for Places and Condominiums*

In the above Figure 6, the property type Places received the highest score (9.53) for Communication and received the lowest score (9.18) for the Value rating among the six quality attributes. The listed property Condominium received the highest score (9.66) for Check-in ratings; whereas, the Value rating received the lowest score (9.48) for the same property.
Figure 7 represents that the property type Apartments received the highest score (9.77) for Communication ratings, while the lowest score (9.49) for Value ratings. The property type Cabins received the highest score (9.76) for Check-in ratings; whereas, the lowest score (9.52) for Value rating.

*Scale: 1-10, where 1 = Poor and 10 = Excellent
Figure 8. Six quality attributes’ rating for Others and Houses

Figure 8 shows the property types Others (that includes Cottages, Chalets, Farms stay, Resorts, Villas, Boats, Hostels, Boutique hotels, Nature lodges, Treehouses, Barns, Castles, Yurts, Tipis, Dorms, Huts, Caves, and Planes) received the highest score (9.79) for Communication and Check-in ratings; whereas, the lowest score (9.64) for Location and Value ratings. The property type Houses received the highest score (9.88) for Check-in and the lowest score (9.56) for Location.
*Scale: 1-10, where 1 = Poor and 10 = Excellent

**Figure 9.** Six quality attributes’ rating for Lofts and Private Rooms

Figure 9 shows that the property type Lofts received the highest score (9.88) for Check-in ratings and the second highest score (9.84) for Communication attribute. On the other hand, the lowest score (9.63) was received by Lofts for Value rating. The property types Private rooms also received the highest score (9.89) for Check-in, while the lowest score (9.62) for Location ratings.
*Scale: 1-10, where 1 = Poor and 10 = Excellent

**Figure 10.** Six quality attributes’ rating for Tents and Camper/RVs

The above Chart 10 represents that the property type Tents and Campers/RVs received the highest score of 9.89 and 9.96 respectively for the same quality attributes Check-in. On the contrary, the Tents received the lowest score 9.60 for Value rating and Campers received the lowest score 9.69 for Location ratings.
Figure 11. Six quality attributes’ rating for B&Bs and Bungalows

The above Figure 11 shows that the property type B&Bs received the highest score 9.96 for Communication ratings and the property type Bungalows received the highest score 9.96 for Check-in ratings. Whereas, the B&Bs received the lowest score 9.71 for Value ratings and the listed property Bungalows received the lowest score 9.70 for Location.
*Scale: 1-10, where 1 = Poor and 10 = Excellent

Figure 12. Six quality attributes’ rating for Guest Suites and Guesthouses

Figure 12 shows that the property type Guest Suites received the highest score 9.99 for both Communication and Check-in ratings; while, the lowest score 9.79 for Location ratings. The property type Guesthouses received the highest score 9.97 for both Communication and Check-in; whereas, the lowest score 9.85 received for Location ratings.

Test of Hypothesis

Hypothesis 1

- Hypothesis 1- Higher quality attribute ratings will lead to higher overall satisfaction ratings.
  
    \[ Y = \alpha + b_1 X_1 + \varepsilon \]
Where, \( b_1 \) is regression parameters; \( Y \) = overall ratings, \( \alpha \) is the regression constant, \( X_1 \) is quality attribute rating (separately) for Communication, Accuracy Cleanliness, chick-in, Location, and Value and \( \epsilon \) is the error in the model.

The regression results are shown in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Quality Attribute</th>
<th>Collinearity</th>
<th>Coefficient</th>
<th>Beta</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.624***</td>
<td>7.261***</td>
<td>0.624***</td>
<td>F (1, 19238) = 12277.20; p &lt;= 0.001; Adj. ( R^2 ) = 0.39</td>
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<tr>
<td>Accuracy</td>
<td>0.733***</td>
<td>7.473***</td>
<td>0.733***</td>
<td>F (1, 19249) = 22327.24; p &lt;= 0001; Adj. ( R^2 ) = 0.53</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>0.702***</td>
<td>6.475***</td>
<td>0.702***</td>
<td>F (1, 19266) = 18766.50; p &lt;= 0001; Adj. ( R^2 ) = 0.49</td>
</tr>
<tr>
<td>Check-in</td>
<td>0.567***</td>
<td>6.897***</td>
<td>0.567***</td>
<td>F (1, 19169) = 9060.13; p &lt;= 0001; Adj. ( R^2 ) = 0.32</td>
</tr>
<tr>
<td>Location</td>
<td>0.497***</td>
<td>5.094***</td>
<td>0.497***</td>
<td>F (1, 19164) = 6273.94; p &lt;= 0001; Adj. ( R^2 ) = 0.24</td>
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<tr>
<td>Value</td>
<td>0.749***</td>
<td>7.03***</td>
<td>0.749***</td>
<td>F (1, 19156) = 24443.94; p &lt;= 0001; Adj. ( R^2 ) = 0.56</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

Table 6 shows the regression results for six quality attributes and all the results are significant. The highest beta score is 0.749 \( F (1, 19156) = 24443.94; p <= 0001; Adj. \( R^2 \) =
0.56} and the attribute Value received the score; whereas, the lowest beta score is 0.497 {F (1, 19164) = 6273.94; p <= 0.001; Adj. R² = 0.24} that received by the quality attribute Location. The ranges of Adj. R² are from 0.24 to 0.56. The regression results show that all the quality attributes have a significant positive correlation with overall quality ratings. The correlations ranged from r = 0.497 (n = 19,166; p <= 0.001) for Location, to r = 0.749 (n = 19,158; p <= 0.001) for Value.

The regression results show that for every one-unit increase in overall score, there is a positive increase in the ratings for the six quality attributes. The coefficients in Table 6 show that for each unit increase in overall score, Communication increases by 7.261 unites, Accuracy increases by 7.473, Cleanliness increases by 6.475, Check-in increases by 6.897, Location increases by 5.094, and Value increases by 7.003.

The results show that Hypothesis 1 is accepted showing that higher quality attribute ratings will lead to higher overall satisfaction ratings.

Hypothesis 2

- Hypothesis 2- The relationship between overall quality rating and the attribute rating will be dependent on the type of property.

  ➢  Y = a₁ + b₁ X₁ + b₂ X₂ + b₃ X₃ + b₄ X₄ + b₅ X₅ + b₆ X₆ + ε

Where, b₁ … b₆ are regression parameters; Y = overall ratings, a₀ is the regression constant, X₁ … X₆ are quality attribute rating for Communication, Accuracy, Cleanliness, Check-in, Location, and Value; ε is the error in the model.

The regressions were run separately for each property type in order to determine the differences in the regression parameters for each property type.
Table 7

Unstandardized Regression Coefficients of Overall Scores by Quality Attribute Ratings for Each Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>(Constant)</th>
<th>Communication Rating</th>
<th>Accuracy Rating</th>
<th>Cleanliness Rating</th>
<th>Check-in Rating</th>
<th>Location Rating</th>
<th>Value Rating</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>-15.301***</td>
<td>2.013***</td>
<td>2.629***</td>
<td>2.654***</td>
<td>0.838***</td>
<td>0.941***</td>
<td>2.308***</td>
<td>F (6, 3686) = 1617.05; p &lt;= 0.001; Adj. R² = 0.72</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-0.963</td>
<td>0.452</td>
<td>3.558***</td>
<td>2.377***</td>
<td>-0.460</td>
<td>0.445</td>
<td>3.678***</td>
<td>F (6, 191) = 130.79; p &lt;= 0.001; Adj. R² = 0.79</td>
</tr>
<tr>
<td>Bungalow</td>
<td>-5.246</td>
<td>0.043</td>
<td>2.562***</td>
<td>2.567***</td>
<td>1.546</td>
<td>1.669***</td>
<td>2.034***</td>
<td>F (6, 249) = 99.42; p &lt;= 0.001; Adj. R² = 0.69</td>
</tr>
<tr>
<td>Cabin</td>
<td>-0.121</td>
<td>1.725***</td>
<td>2.174***</td>
<td>1.971***</td>
<td>0.398</td>
<td>0.788***</td>
<td>2.831***</td>
<td>F (6, 1960) = 814.81; p &lt;= 0.001; Adj. R² = 0.71</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>48.929**</td>
<td>0.121</td>
<td>0.899</td>
<td>2.443***</td>
<td>-1.322</td>
<td>0.757</td>
<td>2.067**</td>
<td>F (6, 124) = 12.15; p &lt;= 0.001; Adj. R² = 0.34</td>
</tr>
<tr>
<td>Condominium</td>
<td>-11.538***</td>
<td>2.517***</td>
<td>2.303***</td>
<td>3.259***</td>
<td>0.127</td>
<td>0.972***</td>
<td>1.825***</td>
<td>F (6, 901) = 435.91; p &lt;= 0.001; Adj. R² = 0.74</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001, **Significant at p <= 0.002
Table 7 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>(Constant)</th>
<th>Communication Rating</th>
<th>Accuracy Rating</th>
<th>Cleanliness Rating</th>
<th>Check-in Rating</th>
<th>Location Rating</th>
<th>Value Rating</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guest Suite</td>
<td>-17.608</td>
<td>-3.370**</td>
<td>5.939***</td>
<td>1.722***</td>
<td>4.558***</td>
<td>0.452</td>
<td>2.332***</td>
<td>F (6, 377) = 107.47; p &lt;= 0.001; Adj. R² = 0.62</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>25.028**</td>
<td>-1.179</td>
<td>0.873</td>
<td>5.048***</td>
<td>-2.511</td>
<td>2.009***</td>
<td>3.192***</td>
<td>F (6, 261) = 127.48; p &lt;= 0.001; Adj. R² = 0.74</td>
</tr>
<tr>
<td>House</td>
<td>-7.903***</td>
<td>1.746***</td>
<td>2.364***</td>
<td>2.734***</td>
<td>0.7518***</td>
<td>0.4335***</td>
<td>2.655***</td>
<td>F (6, 9537) = 4462.20; p &lt;= 0.001; Adj. R² = 0.73</td>
</tr>
<tr>
<td>Loft</td>
<td>-12.413***</td>
<td>2.033***</td>
<td>3.600***</td>
<td>2.230***</td>
<td>0.621</td>
<td>0.789</td>
<td>1.836***</td>
<td>F (6, 336) = 247.97; p &lt;= 0.001; Adj. R² = 0.81</td>
</tr>
<tr>
<td>Place</td>
<td>-20.354***</td>
<td>-0.143</td>
<td>3.636***</td>
<td>3.143***</td>
<td>0.551</td>
<td>1.648</td>
<td>3.178***</td>
<td>F (6, 106) = 114.78; p &lt;= 0.001; Adj. R² = 0.85</td>
</tr>
<tr>
<td>Tent</td>
<td>-1.843</td>
<td>4.327***</td>
<td>4.272***</td>
<td>2.598***</td>
<td>-2.751***</td>
<td>0.907</td>
<td>0.793</td>
<td>F (6, 129) = 109.89; p &lt;= 0.001; Adj. R² = 0.82</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001, **Significant at p <= 0.002
<table>
<thead>
<tr>
<th>Property Type</th>
<th>(Constant)</th>
<th>Communication Rating</th>
<th>Accuracy Rating</th>
<th>Cleanliness Rating</th>
<th>Check-in Rating</th>
<th>Location Rating</th>
<th>Value Rating</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Room</td>
<td>-12.162***</td>
<td>1.595***</td>
<td>2.304***</td>
<td>2.962***</td>
<td>0.933</td>
<td>1.469***</td>
<td>1.856***</td>
<td>F (6, 506) = 295.00; p &lt;= 0.001; Adj. R² = 0.77</td>
</tr>
<tr>
<td>Others</td>
<td>-10.039***</td>
<td>1.525***</td>
<td>3.943***</td>
<td>2.155***</td>
<td>0.999***</td>
<td>0.212</td>
<td>2.065***</td>
<td>F (6, 685) = 491.97; p &lt;= 0.001; Adj. R² = 0.81</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001, **Significant at p <= 0.002
Table 7 shows the regression results of overall scores as dependent variable and the six quality attribute scores as the independent variables. The table presents the regression results for each property type separately. The regression results for all the property types were significant as shown in the last column of Table 7. The adjusted $R^2$ for the regression models ranged from 0.62 to 0.85, except for Camper/RVs (0.34) indicating that a good majority of the variance in overall ratings are explained by the six quality attributes.

It is interesting to note that not all the quality attributes were found to be significant ($p \leq 0.001$) for each type of property. For example, only Accuracy, Cleanliness and Value were found to be significant ($p \leq 0.001$) for B&Bs; while, all the six quality attributes were significant ($p \leq 0.001$) for Apartments. Check-in and Location were not found to be significant ($p \leq 0.001$) for Camper/RVs, Lofts and Places. Check-in was not found to be significant ($p \leq 0.001$) for Bungalows, Cabins, Condominiums, Guesthouses, and Private Rooms.

The relative importance of each of the six quality attributes by property type is represented by the standardized regression coefficients (beta) shown in Table 8.
Table 8

*Standardized Regression Coefficients (Beta) of Overall Ratings with Individual Quality Attribute Ratings for Each Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Communication Rating</th>
<th>Accuracy Rating</th>
<th>Cleanliness rating</th>
<th>Check-in Rating</th>
<th>Location Rating</th>
<th>Value Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td>0.161***</td>
<td>0.257***</td>
<td>0.298***</td>
<td>0.068***</td>
<td>0.084***</td>
<td>0.247***</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>0.036</td>
<td>0.369***</td>
<td>0.219***</td>
<td>-0.043</td>
<td>0.047</td>
<td>0.385***</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.002</td>
<td>0.208***</td>
<td>0.363***</td>
<td>0.087</td>
<td>0.257***</td>
<td>0.223***</td>
</tr>
<tr>
<td>Cabin</td>
<td>0.188***</td>
<td>0.224***</td>
<td>0.199***</td>
<td>0.037</td>
<td>0.068***</td>
<td>0.314***</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.010</td>
<td>0.096</td>
<td>0.296***</td>
<td>-0.066</td>
<td>0.132</td>
<td>0.327**</td>
</tr>
<tr>
<td>Condominium</td>
<td>0.245***</td>
<td>0.216***</td>
<td>0.339***</td>
<td>0.013</td>
<td>0.077***</td>
<td>0.189***</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>-0.108**</td>
<td>0.486***</td>
<td>0.211***</td>
<td>0.127***</td>
<td>0.066</td>
<td>0.209***</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>-0.053</td>
<td>0.069</td>
<td>0.534***</td>
<td>-0.109</td>
<td>0.210***</td>
<td>0.318***</td>
</tr>
<tr>
<td>House</td>
<td>0.136***</td>
<td>0.229***</td>
<td>0.307***</td>
<td>0.056***</td>
<td>0.046***</td>
<td>0.282***</td>
</tr>
<tr>
<td>Loft</td>
<td>0.146***</td>
<td>0.366***</td>
<td>0.246***</td>
<td>0.043</td>
<td>0.070</td>
<td>0.201***</td>
</tr>
<tr>
<td>Place</td>
<td>-0.011</td>
<td>0.324***</td>
<td>0.276***</td>
<td>0.050</td>
<td>0.128</td>
<td>0.310***</td>
</tr>
<tr>
<td>Tent</td>
<td>0.410***</td>
<td>0.412***</td>
<td>0.266***</td>
<td>-0.213***</td>
<td>0.085</td>
<td>0.084</td>
</tr>
<tr>
<td>Private Room</td>
<td>0.125***</td>
<td>0.235***</td>
<td>0.329***</td>
<td>0.066</td>
<td>0.164***</td>
<td>0.175***</td>
</tr>
<tr>
<td>Others</td>
<td>0.128***</td>
<td>0.404***</td>
<td>0.241***</td>
<td>0.081***</td>
<td>0.020</td>
<td>0.201***</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001, **Significant at p <= 0.002
Table 8 shows the regression beta values for all six quality attributes for all fourteen listed property types in Tennessee. The regression Beta values can be viewed as an indication of the relative importance of the six quality attributes for each property type. For Apartments, the most important attribute is Cleanliness (Beta = 0.298) followed by Accuracy (Beta = 0.257). The least important quality attribute seems to be Check-in (Beta = 0.068). The property type B&Bs, the most important quality attribute is Check-in (Beta = 0.385) followed by Accuracy (Beta = 0.369), Value (Beta = 0.219), Location (Beta = 0.047), and Cleanliness (Beta = 0.036). The least important attribute is Communication (Beta = -0.043) for the property type B&Bs. For the property type Bungalows, the most important quality attribute is Cleanliness (Beta = 0.363) followed by Location (Beta = 0.257), Value (Beta = 0.223), Accuracy (Beta = 0.208), and Check-in (Beta = 0.087). The least important attribute seems to be Communication (Beta = 0.002) for the property type Bungalows. For Cabins, the most important attribute is Value (Beta = 0.314) and the second important attribute is Accuracy (Beta = 0.224). The least important attribute for Cabins is Check-in (Beta = 0.037). For Camper/RVs the most important attribute is Value (Beta = 0.327) followed by Cleanliness (Beta = 0.296) and Location (Beta = 0.132). The least significant (p <= 0.001) attribute is Check-in for the property type Camper/RVs (Beta = -0.066). For the property type Condominiums, the most important attribute is Cleanliness (Beta = 0.339) followed by Communication (Beta = 0.245), Accuracy (Beta = 0.216), Value (Beta = 0.189), and Location (Beta = 0.077). The least quality attribute for property type Condominium is Check-in (Beta = 0.013). For Guest Suites, the most important attribute is Accuracy (Beta = 0.486) followed by Cleanliness (Beta = 0.211), and Value (Beta = 0.209). The least important attribute is Communication (Beta = -0.108). For the property type Guesthouses, the most important attribute is Cleanliness (Beta = 0.307), while the least important
attribute is Location (Beta = 0.046). For the property types Lofts, Places, and Tents the most important attributes is Accuracy, Beta = 0.366; 0.324, and 0.412, respectively. The least important attributes for Lofts, Places, and Tents are Check-in (Beta = 0.043), Communication (Beta=-0.011), and Check-in (Beta = -0.213), respectively. For the property type Private Rooms, the most important attribute is Cleanliness (Beta = 0.329) followed by Accuracy (Beta = 0.235), Value (Beta = 0.175), Location (Beat = 0.1640, and Communication (Beta = 0.125). The least important attribute for Private rooms is Check-in (Beta = 0.066). For the last listed property type Others, the most important attribute is Accuracy (Beta = 0.404) followed by Cleanliness (Beta = 0.241), Value (Beta = 0.201), Communication (Beta = 0.128), and Check-in (Beta = 0.081). The least important attribute for property type Others is Location (Beta = 0.020).

Hypothesis 3

- Hypothesis 3- Considering all types of accommodations offered by Airbnb, the six quality attributes will be categorized as follows:
  
  ➢ Ha - Cleanliness will be a Basic Factor
    
    - Ha: $\beta_{\text{Cleanliness\_Penalty}} > \beta_{\text{Cleanliness\_Reward}}$
    
    - $\beta$ is regression coefficient of overall score as dependent variable and the high and low dummy variables for Cleanliness as the independent variables and $\varepsilon$ is the error in the model.
    
    - $Y = \alpha + \beta_1 X_{\text{Cleanliness\_Low}} + \beta_2 X_{\text{Cleanliness\_High}} + \varepsilon$

  ➢ Hb - Communication will be Basic Factor
    
    - Ha: $\beta_{\text{Communication\_Penalty}} > \beta_{\text{Communication\_Reward}}$
- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Communication as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Communication\_Low}} + \beta_2 X_{\text{Communication\_High}} + \varepsilon
\]

- **Hc** - Accuracy will be Performance Factor

- **Ha**: \( \beta_{\text{Accuracy\_Penalty}} > \beta_{\text{Accuracy\_Reward}} \)

- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Accuracy as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Accuracy\_Low}} + \beta_2 X_{\text{Accuracy\_High}} + \varepsilon
\]

- **Hd** - Check-in will be a Performance Factor

- **Ha**: \( \beta_{\text{Check-in\_Penalty}} > \beta_{\text{Check-in\_Reward}} \)

- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Check-in as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Check-in\_Low}} + \beta_2 X_{\text{Check-in\_High}} + \varepsilon
\]

- **He** - Location will be an Excitement Factor

- **Ha**: \( \beta_{\text{Location\_Penalty}} > \beta_{\text{Location\_Reward}} \)

- \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Location as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Location\_Low}} + \beta_2 X_{\text{Location\_High}} + \varepsilon
\]

- **Hf** - Value will be an Excitement Factor
• Ha: \( \beta_{\text{Value} \_ \text{Penalty}} > \beta_{\text{Value} \_ \text{Reward}} \)

• \( \beta \) is regression coefficient of overall score as dependent variable and the high and low dummy variables for Value as the independent variables and \( \varepsilon \) is the error in the model.

\[
Y = \alpha + \beta_1 X_{\text{Value} \_ \text{Low}} + \beta_2 X_{\text{Value} \_ \text{High}} + \varepsilon
\]

The methodology used for the regressions was as follows:

• The average score for each of the six-quality attribute was computed for the entire date set.

• Two dummy variables were created for each of the six quality attributes, one for lower than average scores and one for higher than average scores. For example, Low-Cleanliness dummy was coded as \( 0 = \) higher than average score and \( 1 = \) lower than average score. On the other hand, High-Cleanliness were coded as \( 0 = \) lower than average score and \( 1 = \) higher than average score.

➢ Regressions were run with overall scores as the dependent variables and the respective two high and low dummy variables as the independent variables.

➢ The differences between the regression coefficients between the two dummy variables determined the quality attribute Factor categories (Basic, Performance or Excitements)

Table 9

<table>
<thead>
<tr>
<th>Six Attributes</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>-0.513</td>
<td>11.400***</td>
<td>F (2, 19281) = 2893.45; p &lt;= 0.001; Adj. ( R^2 = 0.23 )</td>
</tr>
</tbody>
</table>
### Table 9 (Continued)

<table>
<thead>
<tr>
<th>Six Attributes</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>8.805***</td>
<td>19.961***</td>
<td>F (2, 19281) = 4175.09; p &lt;= 0.001; Adj. R^2 = 0.30</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>20.428***</td>
<td>28.967***</td>
<td>F (2, 19281) = 2903.92; p &lt;= 0.001; Adj. R^2 = 0.23</td>
</tr>
<tr>
<td>Check-in</td>
<td>-6.223***</td>
<td>4.966***</td>
<td>F (2, 19281) = 2176.02; p &lt;= 0.001; Adj. R^2 = 0.18</td>
</tr>
<tr>
<td>Location</td>
<td>-0.109</td>
<td>5.167***</td>
<td>F (2, 19281) = 974.27; p &lt;= 0.001; Adj. R^2 = 0.09</td>
</tr>
<tr>
<td>Value</td>
<td>-2.654***</td>
<td>6.420***</td>
<td>F (2, 19281) = 3217.65; p &lt;= 0.001; Adj. R^2 = 0.25</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

The Table 9 shows that all the Reward scores were significant, and the highest score in the Reward column was (28.967*** ) and that was received by the quality attribute Cleanliness. On the other hand, the lowest score was (4.967*** ) and was received by the attribute Check-in. In the Penalty column, four results were significant {( p <= 0.001) (Accuracy, Cleanliness, Check-in, Value)}, and the rest of the two (Communication and Location) were not significant. The quality attribute Cleanliness received the highest score for Penalty (20.428*** ); while, the attribute Location received the lowest insignificant score (-0.109). The adjusted R^2 for the regression models ranged from 0.18 to 0.30, except for Location (0.09). Generally, the regression models show that the dependence of the variability in overall scores ranged from 9% for Location to 30% for Accuracy.
Table 10

*Penalty-Reward Status Determination of the Six Quality Attributes*

<table>
<thead>
<tr>
<th>Six Attributes</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>-0.513</td>
<td>11.4</td>
<td>11.913</td>
<td>125.07</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Accuracy</td>
<td>8.805</td>
<td>19.961</td>
<td>11.156</td>
<td>117.12</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>20.428</td>
<td>28.967</td>
<td>8.539</td>
<td>89.65</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Check-in</td>
<td>-6.223</td>
<td>4.966</td>
<td>11.189</td>
<td>117.47</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Location</td>
<td>-0.109</td>
<td>5.167</td>
<td>5.276</td>
<td>55.39</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Value</td>
<td>-2.654</td>
<td>6.42</td>
<td>9.074</td>
<td>95.27</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>9.5245</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10 represents the six quality attributes and their determination as Basic, Performance, and Excitement factors. The high/low was determinate by the index scores. If the index scores were above hundred it was considered to be high, while the scores that were below hundred was considered to be low. The low scores refer to the Performance Factor since it indicated that the difference between the Penalty and Reward scores were not dissimilar. On the other hand, a high may refer to either a Basic Factor or the Excitement Factor depending on whether the Penalty score was greater or less than the Reward score – if the absolute Reward score was higher, it would be an Excitement Factor whereas, if the absolute Penalty score was higher than it was considered to be a Basic Factor. The results of hypothesis three have given below:

- Hypothesis 3- Considering all types of accommodations offered by Airbnb, the six quality attributes will be categorized as follows:
  - H(a) - Cleanliness will be a Basic Factor
▪ Ha: $\beta_{\text{Cleanliness}_\text{Penalty}} > \beta_{\text{Cleanliness}_\text{Reward}}$ - Rejected

$\beta_{\text{Cleanliness}_\text{Penalty}} = 20.428^{***} > \beta_{\text{Cleanliness}_\text{Reward}} = 28.967^{***}$ F (2, 19281) = 2903.92; p $\leq$ 0.001;

Adj. $R^2 = 0.23$

➢ H(b) - Communication will be Basic Factor

▪ Ha: $\beta_{\text{Communication}_\text{Penalty}} > \beta_{\text{Communication}_\text{Reward}}$ - Rejected

$\beta_{\text{Communication}_\text{Penalty}} = -0.513 > \beta_{\text{Communication}_\text{Reward}} = 11.400^{***}$ F (2, 19281) = 2893.45;

p $\leq$ 0.001; Adj. $R^2 = 0.23$

➢ H(c) - Accuracy will be Performance Factor

▪ Ha: $\beta_{\text{Accuracy}_\text{Penalty}} > \beta_{\text{Accuracy}_\text{Reward}}$ - Rejected

$\beta_{\text{Accuracy}_\text{Penalty}} = 8.805^{***} > \beta_{\text{Accuracy}_\text{Reward}} = 19.961^{***}$ F (2, 19281) = 4175.09; p $\leq$ 0.001;

Adj. $R^2 = 0.30$

➢ H(d) - Check-in will be a Performance Factor

▪ Ha: $\beta_{\text{Check-in}_\text{Penalty}} > \beta_{\text{Check-in}_\text{Reward}}$ - Rejected

$\beta_{\text{Check-in}_\text{Penalty}} = -6.223^{***} > \beta_{\text{Check-in}_\text{Reward}} = 4.966^{***}$ F (2, 19281) = 2176.02; p $\leq$ 0.001;

Adj. $R^2 = 0.18$

➢ H(e) - Location will be an Excitement Factor

▪ Ha: $\beta_{\text{Location}_\text{Penalty}} > \beta_{\text{Location}_\text{Reward}}$ - Rejected

$\beta_{\text{Location}_\text{Penalty}} = -0.109 > \beta_{\text{Location}_\text{Reward}} = 5.167^{***}$ F (2, 19281) = 974.27; p $\leq$ 0.001;

Adj. $R^2 = 0.09$

➢ H(f) - Value will be an Excitement Factor

▪ Ha: $\beta_{\text{Value}_\text{Penalty}} > \beta_{\text{Value}_\text{Reward}}$ - Rejected
\( \beta_{\text{Value\_ Penalty}} = -2.654^{***} > \beta_{\text{Value\_ Reward}} = 6.420^{***} \) \( F(2, 19281) = 3217.65; p \leq 0.001; \)

Adj. \( R^2 = 0.25 \)

**Figure 13.** Relative Penalty and Reward values for the six quality attributes

Figure 13 shows that among the six quality attributes, the Reward scores dominated for Communication, Accuracy, Location, Cleanliness, and Value; while, the quality attributes Check-in was dominated by the Penalty score. The highest difference between the Penalty and the Reward was 11.156, and it was noticed in the quality attribute Accuracy. On the contrary, the lowest difference between the Penalty and Reward was 3.766 and it was identified in the quality attribute Value.
Hypothesis 4

- Hypothesis 4 - The type of property will have an influence on the quality attributes’ status as a Basic or Performance or an exciting Factor.
  
  ➢ Communication will be a Basic Factor for all property types.
    
    ▪ H4 -1a: Communication will be a Basic Factor for Apartments - Rejected
      
      - $\beta_{\text{Apartments\_Communication\_Penalty}} > \beta_{\text{Apartments\_Communication\_Reward}}$
        
        - $\beta_{\text{Apartments\_Communication\_Penalty}} = 24.901^{***}$
        
        - $\beta_{\text{Apartments\_Communication\_Reward}} = 35.745^{***}$
        
        - $F (2, 3704) = 588.50; p <= 0.001; \text{Adj. } R^2 = 0.24$
    
    ▪ H4 -1b: Communication will be a Basic Factor for B&B – Accepted
      
      - $\beta_{\text{B&B\_Communication\_Penalty}} > \beta_{\text{B&B\_Communication\_Reward}}$
        
        - $\beta_{\text{B&B\_Communication\_Penalty}} = -14.642$
        
        - $\beta_{\text{B&B\_Communication\_Reward}} = 2.037$
        
        - $F (2, 197) = 27.41; p <= 0.001; \text{Adj. } R^2 = 0.21$
    
    ▪ H4 -1c: Communication will be a Basic Factor for Bungalow- Rejected
      
      - $\beta_{\text{Bungalow\_Communication\_Penalty}} > \beta_{\text{Bungalow\_Communication\_Reward}}$
        
        - $\beta_{\text{Bungalow\_Communication\_Penalty}} = 0.000$
        
        - $\beta_{\text{Bungalow\_Communication\_Reward}} = 8.051^{***}$
        
        - $F (1, 254) = 51.34; p <= 0.001; \text{Adj. } R^2 = 0.16$
    
    ▪ H4 -1d: Communication will be a Basic Factor for Cabin – Rejected
      
      - $\beta_{\text{Cabin\_Communication\_Penalty}} > \beta_{\text{Cabin\_Communication\_Reward}}$
        
        - $\beta_{\text{Cabin\_Communication\_Penalty}} = -0.950$
        
        - $\beta_{\text{Cabin\_Communication\_Reward}} = 11.013^{***}$
F (2, 1979) = 282.98; p <= 0.001; Adj. R² = 0.22

H4 -le: Communication will be a Basic Factor for Camper/RV - Rejected
- \( \beta_{\text{Camper/RV Communication Penalty}} > \beta_{\text{Camper/RV Communication Reward}} \)
  - \( \beta_{\text{Camper/RV Communication Penalty}} = 0.000 \)
  - \( \beta_{\text{Camper/RV Communication Reward}} = 7.539*** \)
  - F (1, 130) = 11.55; p <= 0.001; Adj. R² = 0.07

H4 -lf: Communication will be a Basic Factor for Condominium-Rejected
- \( \beta_{\text{Condominium Communication Penalty}} > \beta_{\text{Condominium Communication Reward}} \)
  - \( \beta_{\text{Condominium Communication Penalty}} = 30.785*** \)
  - \( \beta_{\text{Condominium Communication Reward}} = 42.903*** \)
  - F (2, 915) = 175.28; p <= 0.001; Adj. R² = 0.27

H4 -lg: Communication will be a Basic Factor for Guest Suite- Rejected
- \( \beta_{\text{Guest Suite Communication Penalty}} > \beta_{\text{Guest Suite Communication Reward}} \)
  - \( \beta_{\text{Guest Suite Communication Penalty}} = 0.000 \)
  - \( \beta_{\text{Guest Suite Communication Reward}} = 5.994*** \)
  - F (1, 385) = 14.82; p <= 0.001; Adj. R² = 0.03

H4 -lh: Communication will be a Basic Factor for Guesthouse- Rejected
- \( \beta_{\text{Guesthouse Communication Penalty}} > \beta_{\text{Guesthouse Communication Reward}} \)
  - \( \beta_{\text{Guesthouse Communication Penalty}} = 0.000 \)
  - \( \beta_{\text{Guesthouse Communication Reward}} = 8.994*** \)
  - F (1, 266) = 23.90; p <= 0.001; Adj. R² = 0.07

H4 -li: Communication will be a Basic Factor for House- Rejected
- \( \beta_{\text{House Communication Penalty}} > \beta_{\text{House Communication Reward}} \)
- $\beta_{\text{House\_Communication\_Penalty}} = -0.370$
- $\beta_{\text{House\_Communication\_Reward}} = 11.142^{***}$
- $F(2, 9603) = 1362.38; p <= 0.001; \text{Adj. } R^2 = 0.22$

- H4 -1j: Communication will be a Basic Factor for Loft- Rejected
  - $\beta_{\text{Loft\_Communication\_Penalty}} > \beta_{\text{Loft\_Communication\_Reward}}$
    - $\beta_{\text{Loft\_Communication\_Penalty}} = 0.000$
    - $\beta_{\text{Loft\_Communication\_Reward}} = 9.720^{***}$
    - $F(1, 342) = 109.42; p <= 0.001; \text{Adj. } R^2 = 0.24$

- H4 -1k: Communication will be a Basic Factor for Place- Rejected
  - $\beta_{\text{Place\_Communication\_Penalty}} > \beta_{\text{Place\_Communication\_Reward}}$
    - $\beta_{\text{Place\_Communication\_Penalty}} = 0.000$
    - $\beta_{\text{Place\_Communication\_Reward}} = 23.508^{***}$
    - $F(1, 112) = 40.47; p <= 0.001; \text{Adj. } R^2 = 0.25$

- H4 -1l: Communication will be a Basic Factor for Tent- Accepted
  - $\beta_{\text{Tent\_Communication\_Penalty}} > \beta_{\text{Tent\_Communication\_Reward}}$
    - $\beta_{\text{Tent\_Communication\_Penalty}} = -19.111^{***}$
    - $\beta_{\text{Tent\_Communication\_Reward}} = 4.688$
    - $F(2, 147) = 36.48; p <= 0.001; \text{Adj. } R^2 = 0.32$

- H4 -1m: Communication will be a Basic Factor for Private Room Accepted
  - $\beta_{\text{Private\_Room\_Communication\_Penalty}} > \beta_{\text{Private\_Room\_Communication\_Reward}}$
    - $\beta_{\text{Private\_Room\_Communication\_Penalty}} = -16.733$
    - $\beta_{\text{Private\_Room\_Communication\_Reward}} = -2.639$
o $F(2, 517) = 109.43; p <= 0.001; Adj. R^2 = 0.29$

- H4 -1n: Communication will be a Basic Factor for Others- Accepted
  - $\beta_{\text{Communication}_\text{Penalty}} > \beta_{\text{Communication}_\text{Reward}}$
    - $\beta_{\text{Communication}_\text{Penalty}} = -17.440^{***}$
    - $\beta_{\text{Communication}_\text{Reward}} = -3.252$
    - $F(2, 697) = 91.74; p <= 0.001; Adj. R^2 = 0.20$

- Accuracy will be a Performance Factor for all property types.
  - H4 -2a: Accuracy will be a Performance Factor for Apartments= Accepted
    - $\beta_{\text{Apartments}_\text{Accuracy}_\text{Penalty}} > \beta_{\text{Apartments}_\text{Accuracy}_\text{Reward}}$
      - $\beta_{\text{Apartments}_\text{Accuracy}_\text{Penalty}} = 12.984^{***}$
      - $\beta_{\text{Apartments}_\text{Accuracy}_\text{Reward}} = 23.512^{***}$
      - $F(2, 3704) = 919.19; p <= 0.001; Adj. R^2 = 0.33$
  
  - H4 -2b: Accuracy will be a Performance Factor for B&B- Accepted
    - $\beta_{\text{B&B}_\text{Accuracy}_\text{Penalty}} > \beta_{\text{B&B}_\text{Accuracy}_\text{Reward}}$
      - $\beta_{\text{B&B}_\text{Accuracy}_\text{Penalty}} = -11.967$
      - $\beta_{\text{B&B}_\text{Accuracy}_\text{Reward}} = -2.639$
      - $F(2, 197) = 42.97; p <= 0.001; Adj. R^2 = 0.29$
  
  - H4 -2c: Accuracy will be a Performance Factor for Bungalow- Accepted
    - $\beta_{\text{Bungalow}_\text{Accuracy}_\text{Penalty}} > \beta_{\text{Bungalow}_\text{Accuracy}_\text{Reward}}$
      - $\beta_{\text{Bungalow}_\text{Accuracy}_\text{Penalty}} = 0.000$
      - $\beta_{\text{Bungalow}_\text{Accuracy}_\text{Reward}} = 8.497^{***}$
      - $F(1, 254) = 180.74; p <= 0.001; Adj. R^2 = 0.41$
  
- H4 -2d: Accuracy will be a Performance Factor for Cabin – Rejected
• $\beta_{\text{Cabin\_Accuracy\_Penalty}} > \beta_{\text{Cabin\_Accuracy\_Reward}}$
  - $\beta_{\text{Cabin\_Accuracy\_Penalty}} = -1.639$
  - $\beta_{\text{Cabin\_Accuracy\_Reward}} = 10.533$
  - $F (2, 1979) = 360.35; p <= 0.001; \text{Adj. } R^2 = 0.26$

- **H4 -2e**: Accuracy will be a Performance Factor for Camper/RV - Accepted
  - $\beta_{\text{Camper/RV\_Accuracy\_Penalty}} > \beta_{\text{Camper/RV\_Accuracy\_Reward}}$
    - $\beta_{\text{Camper/RV\_Accuracy\_Penalty}} = 0.000$
    - $\beta_{\text{Camper/RV\_Accuracy\_Reward}} = 4.593^{***}$
    - $F (1, 130) = 17.00; p <= 0.001; \text{Adj. } R^2 = 0.10$

- **H4 -2f**: Accuracy will be a Performance Factor for Condominium- Rejected
  - $\beta_{\text{Condominium\_Accuracy\_Penalty}} > \beta_{\text{Condominium\_Accuracy\_Reward}}$
  - $\beta_{\text{Condominium\_Accuracy\_Penalty}} = 31.127^{***}$
  - $\beta_{\text{Condominium\_Accuracy\_Reward}} = 43.299^{***}$
  - $F (2, 915) = 201.46; p <= 0.001; \text{Adj. } R^2 = 0.30$

- **H4 -2g**: Accuracy will be a Performance Factor for Guest Suite- Accepted
  - $\beta_{\text{Guest Suite\_Accuracy\_Penalty}} > \beta_{\text{Guest Suite\_Accuracy\_Reward}}$
    - $\beta_{\text{Guest Suite\_Accuracy\_Penalty}} = 0.000$
    - $\beta_{\text{Guest Suite\_Accuracy\_Reward}} = 9.243^{***}$
    - $F (1, 385) = 305.43; p <= 0.001; \text{Adj. } R^2 = 0.44$

- **H4 -2h**: Accuracy will be a Performance Factor for Guesthouse- Accepted
  - $\beta_{\text{Guesthouse\_Accuracy\_Penalty}} > \beta_{\text{Guesthouse\_Accuracy\_Reward}}$
    - $\beta_{\text{Guesthouse\_Accuracy\_Penalty}} = 0.000$
- $\beta_{\text{Guesthouse\_Accuracy\_Reward}} = 9.991^{***}$
- $F (1, 266) = 59.56; p <= 0.001; \text{Adj. } R^2 = 0.18$

- **H4 -2i: Accuracy will be a Performance Factor for House= Accepted**
  - $\beta_{\text{House\_Accuracy\_Penalty}} > \beta_{\text{House\_Accuracy\_Reward}}$
    - $\beta_{\text{House\_Accuracy\_Penalty}} = 7.277^{***}$
    - $\beta_{\text{House\_Accuracy\_Reward}} = 17.746^{***}$
    - $F (2, 9603) = 1989.30; p <= 0.001; \text{Adj. } R^2 = 0.29$

- **H4 -2j: Accuracy will be a Performance Factor for Loft- Accepted**
  - $\beta_{\text{Loft\_Accuracy\_Penalty}} > \beta_{\text{Loft\_Accuracy\_Reward}}$
    - $\beta_{\text{Loft\_Accuracy\_Penalty}} = 0.000$
    - $\beta_{\text{Loft\_Accuracy\_Reward}} = 10.173^{***}$
    - $F (1, 342) = 140.67; p <= 0.001; \text{Adj. } R^2 = 0.28$

- **H4 -2k: Accuracy will be a Performance Factor for Place- Rejected**
  - $\beta_{\text{Place\_Accuracy\_Penalty}} > \beta_{\text{Place\_Accuracy\_Reward}}$
    - $\beta_{\text{Place\_Accuracy\_Penalty}} = 0.000$
    - $\beta_{\text{Place\_Accuracy\_Reward}} = 21.739^{***}$
    - $F (1, 112) = 42.06; p <= 0.001; \text{Adj. } R^2 = 0.26$

- **H4 -2l: Accuracy will be a Performance Factor for Tent- Rejected**
  - $\beta_{\text{Tent\_Accuracy\_Penalty}} > \beta_{\text{Tent\_Accuracy\_Reward}}$
    - $\beta_{\text{Tent\_Accuracy\_Penalty}} = -13.888^{**}$
    - $\beta_{\text{Tent\_Accuracy\_Reward}} = 3.601$
    - $F (2, 147) = 36.45; p <= 0.001; \text{Adj. } R^2 = 0.32$
H4 -2m: Accuracy will be a Performance Factor for Private Room - Rejected

- $\beta_{\text{Private Room\_Accuracy\_Penalty}} > \beta_{\text{Private Room\_Accuracy\_Reward}}$
  - $\beta_{\text{Private Room\_Accuracy\_Penalty}} = 0.000$
  - $\beta_{\text{Private Room\_Accuracy\_Reward}} = 12.778^{***}$
  - $F (1, 58) = 296.49; p <= 0.001; Adj. R^2 = 0.36$

H4 -2n: Accuracy will be a Performance Factor for Others - Rejected

- $\beta_{\text{Others\_Accuracy\_Penalty}} > \beta_{\text{Others\_Accuracy\_Reward}}$
  - $\beta_{\text{Others\_Accuracy\_Penalty}} = 24.722^{***}$
  - $\beta_{\text{Others\_Accuracy\_Reward}} = 38.008^{***}$
  - $F (2, 697) = 192.75; p <= 0.001; Adj. R^2 = 0.35$

Cleanliness will be a Performance Factor for all property types.

H4 -3a: Cleanliness will be a Performance Factor for Apartments - Accepted

- $\beta_{\text{Apartments\_Cleanliness\_Penalty}} > \beta_{\text{Apartments\_Cleanliness\_Reward}}$
  - $\beta_{\text{Apartments\_Cleanliness\_Penalty}} = 35.070^{***}$
  - $\beta_{\text{Apartments\_Cleanliness\_Reward}} = 43.580^{***}$
  - $F (2, 3704) = 653.65; p <= 0.001; Adj. R^2 = 0.26$

H4 -3b: Cleanliness will be a Performance Factor for B&B - Accepted

- $\beta_{\text{B&B\_Cleanliness\_Penalty}} > \beta_{\text{B&B\_Cleanliness\_Reward}}$
  - $\beta_{\text{B&B\_Cleanliness\_Penalty}} = -10.437$
  - $\beta_{\text{B&B\_Cleanliness\_Reward}} = -1.485$
  - $F (2, 197) = 28.85; p <= 0.001; Adj. R^2 = 0.21$
▪ H4 -3c: Cleanliness will be a Performance Factor for Bungalow- Accepted
  • \( \beta_{\text{Bungalow\_Cleanliness\_Penalty}} > \beta_{\text{Bungalow\_Cleanliness\_Reward}} \)
    ◦ \( \beta_{\text{Bungalow\_Cleanliness\_Penalty}} = 0.000 \)
    ◦ \( \beta_{\text{Bungalow\_Cleanliness\_Reward}} = -1.485 \)
    ◦ \( F (2, 197) = 28.85; p <= 0.001; \text{Adj. } R^2 = 0.21 \)

▪ H4 -3d: Cleanliness will be a Performance Factor for Cabin- Accepted
  • \( \beta_{\text{Cabin\_Cleanliness\_Penalty}} > \beta_{\text{Cabin\_Cleanliness\_Reward}} \)
    ◦ \( \beta_{\text{Cabin\_Cleanliness\_Penalty}} = 0.000 \)
    ◦ \( \beta_{\text{Cabin\_Cleanliness\_Reward}} = 8.714*** \)
    ◦ \( F (1, 1980) = 413.37; p <= 0.001; \text{Adj. } R^2 = 0.17 \)

▪ H4 -3e: Cleanliness will be a Performance Factor for Camper/RV- Accepted
  • \( \beta_{\text{Camper/RV\_Cleanliness\_Penalty}} > \beta_{\text{Camper/RV\_Cleanliness\_Reward}} \)
    ◦ \( \beta_{\text{Camper/RV\_Cleanliness\_Penalty}} = 0.000 \)
    ◦ \( \beta_{\text{Camper/RV\_Cleanliness\_Reward}} = 4.250*** \)
    ◦ \( F (1, 130) = 19.64; p <= 0.001; \text{Adj. } R^2 = 0.12 \)

▪ H4 -3f: Cleanliness will be a Performance Factor for Condominium- Rejected
  • \( \beta_{\text{Condominium\_Cleanliness\_Penalty}} > \beta_{\text{Condominium\_Cleanliness\_Reward}} \)
    ◦ \( \beta_{\text{Condominium\_Cleanliness\_Penalty}} = 47.379*** \)
    ◦ \( \beta_{\text{Condominium\_Cleanliness\_Reward}} = 4.250*** \)
    ◦ \( F (2, 915) = 145.62; p <= 0.001; \text{Adj. } R^2 = 0.24 \)
▪ H4 -3g: Cleanliness will be a Performance Factor for Guest Suite-Accepted

  • $\beta_{\text{Guest Suite\_Cleanliness\_Penalty}} > \beta_{\text{Guest Suite\_Cleanliness\_Reward}}$
    
    - $\beta_{\text{Guest Suite\_Cleanliness\_Penalty}} = 0.000$
    - $\beta_{\text{Guest Suite\_Cleanliness\_Reward}} = 6.375^{***}$
    - $F (1, 385) = 188.40; p <= 0.001; \text{Adj. } R^2 = 0.32$

▪ H4 -3h: Cleanliness will be a Performance Factor for Guesthouse-Accepted

  • $\beta_{\text{Guesthouse\_Cleanliness\_Penalty}} > \beta_{\text{Guesthouse\_Cleanliness\_Reward}}$
    
    - $\beta_{\text{Guesthouse\_Cleanliness\_Penalty}} = 0.000$
    - $\beta_{\text{Guesthouse\_Cleanliness\_Reward}} = 7.701^{***}$
    - $F (1, 266) = 62.69; p <= 0.001; \text{Adj. } R^2 = 0.18$

▪ H4 -3i: Cleanliness will be a Performance Factor for House- Accepted

  • $\beta_{\text{House\_Cleanliness\_Penalty}} > \beta_{\text{House\_Cleanliness\_Reward}}$
    
    - $\beta_{\text{House\_Cleanliness\_Penalty}} = 10.106^{***}$
    - $\beta_{\text{House\_Cleanliness\_Reward}} = 18.014^{***}$
    - $F (2, 9603) = 1430.26; p <= 0.001; \text{Adj. } R^2 = 0.23$

▪ H4 -3j: Cleanliness will be a Performance Factor for Loft- Accepted

  • $\beta_{\text{Loft\_Cleanliness\_Penalty}} > \beta_{\text{Loft\_Cleanliness\_Reward}}$
    
    - $\beta_{\text{Loft\_Cleanliness\_Penalty}} = 0.000$
    - $\beta_{\text{Loft\_Cleanliness\_Reward}} = 7.013^{***}$
    - $F (1, 342) = 80.70; p <= 0.001; \text{Adj. } R^2 = 0.19$
- **H4 -3k: Cleanliness will be a Performance Factor for Place- Rejected**
  - $\beta_{\text{Place\_Cleanliness\_Penalty}} > \beta_{\text{Place\_Cleanliness\_Reward}}$
    - $\beta_{\text{Place\_Cleanliness\_Penalty}} = 0.000$
    - $\beta_{\text{Place\_Cleanliness\_Reward}} = 20.265^{***}$
    - $F (1, 112) = 42.42; p <= 0.001; \text{Adj. } R^2 = 0.26$

- **H4 -3l: Cleanliness will be a Performance Factor for Tent- Rejected**
  - $\beta_{\text{Tent\_Cleanliness\_Penalty}} > \beta_{\text{Tent\_Cleanliness\_Reward}}$
    - $\beta_{\text{Tent\_Cleanliness\_Penalty}} = -13.444$
    - $\beta_{\text{Tent\_Cleanliness\_Reward}} = -1.442$
    - $F (2, 147) = 20.63; p <= 0.001; \text{Adj. } R^2 = 0.20$

- **H4 -3m: Cleanliness will be a Performance Factor for Private Room- Rejected**
  - $\beta_{\text{Private Room\_Cleanliness\_Penalty}} > \beta_{\text{Private Room\_Cleanliness\_Reward}}$
    - $\beta_{\text{Private Room\_Cleanliness\_Penalty}} = 0.000$
    - $\beta_{\text{Private Room\_Cleanliness\_Reward}} = 9.482^{***}$
    - $F (1, 518) = 203.14; p <= 0.001; \text{Adj. } R^2 = 0.28$

- **H4 -3n: Cleanliness will be a Performance Factor for Others- Rejected**
  - $\beta_{\text{Others\_Cleanliness\_Penalty}} > \beta_{\text{Others\_Cleanliness\_Reward}}$
    - $\beta_{\text{Others\_Cleanliness\_Penalty}} = 27.333^{***}$
    - $\beta_{\text{Others\_Cleanliness\_Reward}} = 38.019^{***}$
    - $F (2, 697) = 138.21; p <= 0.001; \text{Adj. } R^2 = 0.28$

- Check-in will be a Performance Factor for all property types.
  - **H4 - 4a: Check-in will be an Excitement Factor for Apartments- Rejected**
- $\beta_{\text{Apartments Check-in Penalty}} > \beta_{\text{Apartments Check-in Reward}}$
  - $\beta_{\text{Apartments Check-in Penalty}} = -0.009$
  - $\beta_{\text{Apartments Check-in Reward}} = 9.666^{***}$
  - $F(2, 3704) = 453.00; p \leq 0.001; \text{Adj. } R^2 = 0.19$

- **H4 - 4b: Check-in will be an Excitement factor for B&B** - Rejected

- $\beta_{\text{B&B Check-in Penalty}} > \beta_{\text{B&B Check-in Reward}}$
  - $\beta_{\text{B&B Check-in Penalty}} = -10.047$
  - $\beta_{\text{B&B Check-in Reward}} = -2.096$
  - $F(2, 197) = 14.23; p \leq 0.001; \text{Adj. } R^2 = 0.11$

- **H4 - 4c: Check-in will be an Excitement Factor for Bungalow** - Rejected

- $\beta_{\text{Bungalow Check-in Penalty}} > \beta_{\text{Bungalow Check-in Reward}}$
  - $\beta_{\text{Bungalow Check-in Penalty}} = 0.000$
  - $\beta_{\text{Bungalow Check-in Reward}} = 7.431^{***}$
  - $F(1, 254) = 37.22; p \leq 0.001; \text{Adj. } R^2 = 0.12$

- **H4 - 4d: Check-in will be an Excitement Factor for Cabin** - Rejected

- $\beta_{\text{Cabin Check-in Penalty}} > \beta_{\text{Cabin Check-in Reward}}$
  - $\beta_{\text{Cabin Check-in Penalty}} = -10.604^{***}$
  - $\beta_{\text{Cabin Check-in Reward}} = 0.742$
  - $F(2, 1979) = 183.27; p \leq 0.001; \text{Adj. } R^2 = 0.15$

- **H4 - 4e: Check-in will be an Excitement Factor for Camper/RV** - Rejected

- $\beta_{\text{Camper/RV Check-in Penalty}} > \beta_{\text{Camper/RV Check-in Reward}}$
  - $\beta_{\text{Camper/RV Check-in Penalty}} = -8.500$
  - $\beta_{\text{Camper/RV Check-in Reward}} = -2.787$
H4 - 4f: Check-in will be an Excitement Factor for Condominium-
Rejected

- $\beta_{\text{Condominium Check-in Penalty}} > \beta_{\text{Condominium Check-in Reward}}$
  - $\beta_{\text{Condominium Check-in Penalty}} = 14.063$
  - $\beta_{\text{Condominium Check-in Reward}} = 23.494$
  - $F (2, 915) = 97.36; p <= 0.001; \text{Adj. } R^2 = 0.17$

H4 - 4g: Check-in will be an Excitement Factor for Guest Suite-
Rejected

- $\beta_{\text{Guest Suite Check-in Penalty}} > \beta_{\text{Guest Suite Check-in Reward}}$
  - $\beta_{\text{Guest Suite Check-in Penalty}} = -15.000^{***}$
  - $\beta_{\text{Guest Suite Check-in Reward}} = -1.976$
  - $F (2, 384) = 29.66; p <= 0.001; \text{Adj. } R^2 = 0.12$

H4 - 4h: Check-in will be an Excitement Factor for Guesthouse-
Rejected

- $\beta_{\text{Guesthouse Check-in Penalty}} > \beta_{\text{Guesthouse Check-in Reward}}$
  - $\beta_{\text{Guesthouse Check-in Penalty}} = 0.000$
  - $\beta_{\text{Guesthouse Check-in Reward}} = 10.115^{***}$
  - $F (1, 266) = 25.42; p <= 0.001; \text{Adj. } R^2 = 0.08$

H4 - 4i: Check-in will be an Excitement Factor for House-
Rejected

- $\beta_{\text{House Check-in Penalty}} > \beta_{\text{House Check-in Reward}}$
  - $\beta_{\text{House Check-in Penalty}} = -6.198^{***}$
  - $\beta_{\text{House Check-in Reward}} = 5.155^{***}$
  - $F (2, 9603) = 1057.04; p <= 0.001; \text{Adj. } R^2 = 0.18$

H4 - 4j: Check-in will be an Excitement Factor for Loft-
Rejected
• $\beta_{\text{Loft}_-\text{Check-in}_-\text{Penalty}} > \beta_{\text{Loft}_-\text{Check-in}_-\text{Reward}}$
  o $\beta_{\text{Loft}_-\text{Check-in}_-\text{Penalty}} = -14.129$
  o $\beta_{\text{Loft}_-\text{Check-in}_-\text{Reward}} = -2.910$
  o $F (2, 341) = 54.73; p <= 0.001; \text{Adj. } R^2 = 0.23$

• H4 - 4k: Check-in will be an Excitement Factor for Place- Accepted
  • $\beta_{\text{Place}_-\text{Check-in}_-\text{Penalty}} > \beta_{\text{Place}_-\text{Check-in}_-\text{Reward}}$
    o $\beta_{\text{Place}_-\text{Check-in}_-\text{Penalty}} = 0.000$
    o $\beta_{\text{Place}_-\text{Check-in}_-\text{Reward}} = 23.943***$
    o $F (1, 112) = 44.72; p <= 0.001; \text{Adj. } R^2 = 0.27$

• H4 - 4l: Check-in will be an Excitement Factor for Tent- Rejected
  • $\beta_{\text{Tent}_-\text{Check-in}_-\text{Penalty}} > \beta_{\text{Tent}_-\text{Check-in}_-\text{Reward}}$
    o $\beta_{\text{Tent}_-\text{Check-in}_-\text{Penalty}} = -27.392***$
    o $\beta_{\text{Tent}_-\text{Check-in}_-\text{Reward}} = -0.006$
    o $F (2, 147) = 18.39; p <= 0.001; \text{Adj. } R^2 = 0.18$

• H4 - 4m: Check-in will be an Excitement Factor for Private Room- Rejected
  • $\beta_{\text{Private Room}_-\text{Check-in}_-\text{Penalty}} > \beta_{\text{Private Room}_-\text{Check-in}_-\text{Reward}}$
    o $\beta_{\text{Private Room}_-\text{Check-in}_-\text{Penalty}} = -15.675***$
    o $\beta_{\text{Private Room}_-\text{Check-in}_-\text{Reward}} = -2.985$
    o $F (2, 517) = 66.39; p <= 0.001; \text{Adj. } R^2 = 0.20$

• H4 - 4n: Check-in will be an Excitement Factor for Others- Rejected
  • $\beta_{\text{Others}_-\text{Check-in}_-\text{Penalty}} > \beta_{\text{Others}_-\text{Check-in}_-\text{Reward}}$
    o $\beta_{\text{Others}_-\text{Check-in}_-\text{Penalty}} = -8.897$
Location will be an Excitement Factor for all property types.

- **H4 - 5a: Location will be an Excitement Factor for Apartments- Rejected**
  - $\beta_{\text{Apartments Location Penalty}} > \beta_{\text{Apartments Location Reward}}$
    - $\beta_{\text{Apartments Location Penalty}} = 8.348^{***}$
    - $\beta_{\text{Apartments Location Reward}} = 14.056^{***}$
    - $F(2, 3704) = 222.39; p <= 0.001; \text{Adj. } R^2 = 0.10$

- **H4 - 5b: Location will be an Excitement Factor for B&B- Rejected**
  - $\beta_{\text{B&B Location Penalty}} > \beta_{\text{B&B Location Reward}}$
    - $\beta_{\text{B&B Location Penalty}} = -8.722$
    - $\beta_{\text{B&B Location Reward}} = -1.644$
    - $F(2, 197) = 18.17; p <= 0.001; \text{Adj. } R^2 = 0.14$

- **H4 - 5c: Location will be an Excitement Factor for Bungalow- Rejected**
  - $\beta_{\text{Bungalow Location Penalty}} > \beta_{\text{Bungalow Location Reward}}$
    - $\beta_{\text{Bungalow Location Penalty}} = 0.000$
    - $\beta_{\text{Bungalow Location Reward}} = 4.057^{***}$
    - $F(1, 254) = 78.46; p <= 0.001; \text{Adj. } R^2 = 0.23$

- **H4 - 5d: Location will be an Excitement Factor for Cabin- Rejected**
  - $\beta_{\text{Cabin Location Penalty}} > \beta_{\text{Cabin Location Reward}}$
    - $\beta_{\text{Cabin Location Penalty}} = -6.487$
    - $\beta_{\text{Cabin Location Reward}} = 2.376$
    - $F(2, 1979) = 172.55; p <= 0.001; \text{Adj. } R^2 = 0.14$
- H4 - 5e: Location will be an Excitement Factor for Camper/RV - Rejected
  - $\beta_{\text{Camper/RV\_Location\_Penalty}} > \beta_{\text{Camper/RV\_Location\_Reward}}$
    - $\beta_{\text{Camper/RV\_Location\_Penalty}} = -6.370$
    - $\beta_{\text{Camper/RV\_Location\_Reward}} = -2.077$
    - $F (2, 129) = 11.33; p <= 0.001; Adj. R^2 = 0.13$

- H4 - 5f: Location will be an Excitement Factor for Condominium - Rejected
  - $\beta_{\text{Condominium\_Location\_Penalty}} > \beta_{\text{Condominium\_Location\_Reward}}$
    - $\beta_{\text{Condominium\_Location\_Penalty}} = 17.117^{***}$
    - $\beta_{\text{Condominium\_Location\_Reward}} = 23.627^{***}$
    - $F (2, 915) = 68.18; p <= 0.001; Adj. R^2 = 0.12$

- H4 - 5g: Location will be an Excitement Factor for Guest Suite - Rejected
  - $\beta_{\text{Guest Suite\_Location\_Penalty}} > \beta_{\text{Guest Suite\_Location\_Reward}}$
    - $\beta_{\text{Guest Suite\_Location\_Penalty}} = -4.137$
    - $\beta_{\text{Guest Suite\_Location\_Reward}} = -1.601$
    - $F (2, 384) = 21.91; p <= 0.001; Adj. R^2 = 0.09$

- H4 - 5h: Location will be an Excitement Factor for Guesthouse - Rejected
  - $\beta_{\text{Guesthouse\_Location\_Penalty}} > \beta_{\text{Guesthouse\_Location\_Reward}}$
    - $\beta_{\text{Guesthouse\_Location\_Penalty}} = 0.000$
    - $\beta_{\text{Guesthouse\_Location\_Reward}} = 4.647^{***}$
    - $F (1, 266) = 29.54; p <= 0.001; Adj. R^2 = 0.09$

- H4 - 5i: Location will be an Excitement Factor for House - Rejected
  - $\beta_{\text{House\_Location\_Penalty}} > \beta_{\text{House\_Location\_Reward}}$
- $\beta_{\text{House Location Penalty}} = 0.509$
- $\beta_{\text{House Location Reward}} = 4.757^{***}$
- $F(2, 9603) = 413.58; p \leq 0.001; \text{Adj. } R^2 = 0.07$

- **H4 - 5j:** Location will be an Excitement Factor for Loft - Rejected
  - $\beta_{\text{Loft Location Penalty}} > \beta_{\text{Loft Location Reward}}$
    - $\beta_{\text{Loft Location Penalty}} = -9.529$
    - $\beta_{\text{Loft Location Reward}} = -2.945$
    - $F(2, 341) = 25.33; p \leq 0.001; \text{Adj. } R^2 = 0.12$

- **H4 - 5k:** Location will be an Excitement Factor for Place - Accepted
  - $\beta_{\text{Place Location Penalty}} > \beta_{\text{Place Location Reward}}$
    - $\beta_{\text{Place Location Penalty}} = 0.000$
    - $\beta_{\text{Place Location Reward}} = 20.845^{***}$
    - $F(1, 112) = 38.80; p \leq 0.001; \text{Adj. } R^2 = 0.25$

- **H4 - 5l:** Location will be an Excitement Factor for Tent - Rejected
  - $\beta_{\text{Tent Location Penalty}} > \beta_{\text{Tent Location Reward}}$
    - $\beta_{\text{Tent Location Penalty}} = -11.792^{***}$
    - $\beta_{\text{Tent Location Reward}} = 1.081$
    - $F(2, 147) = 17.73; p \leq 0.001; \text{Adj. } R^2 = 0.18$

- **H4 - 5m:** Location will be an Excitement Factor for Private Room - Rejected
  - $\beta_{\text{Private Room Location Penalty}} > \beta_{\text{Private Room Location Reward}}$
    - $\beta_{\text{Private Room Location Penalty}} = -8.742^{***}$
    - $\beta_{\text{Private Room Location Reward}} = -2.091$
H4 - 5n: Location will be an Excitement Factor for Others - Rejected

- $\beta_{\text{Others\_Location\_Penalty}} > \beta_{\text{Others\_Location\_Reward}}$
  - $\beta_{\text{Others\_Location\_Penalty}} = -11.170$
  - $\beta_{\text{Others\_Location\_Reward}} = -2.987$
  - $F(2, 697) = 49.57; p \leq 0.001; \text{Adj. } R^2 = 0.12$

➢ Value will be a Basic Factor for all property types.

H4 - 6a: Value will be a Basic Factor for Apartments - Rejected

- $\beta_{\text{Apartments\_Value\_Penalty}} > \beta_{\text{Apartments\_Value\_Reward}}$
  - $\beta_{\text{Apartments\_Value\_Penalty}} = 7.311^{***}$
  - $\beta_{\text{Apartments\_Value\_Reward}} = 15.661^{***}$
  - $F(2, 3704) = 621.45; p \leq 0.001; \text{Adj. } R^2 = 0.25$

H4 - 6b: Value will be a Basic Factor for B&B - Accepted

- $\beta_{\text{B&B\_Value\_Penalty}} > \beta_{\text{B&B\_Value\_Reward}}$
  - $\beta_{\text{B&B\_Value\_Penalty}} = -11.229$
  - $\beta_{\text{B&B\_Value\_Reward}} = -1.152$
  - $F(2, 197) = 43.83; p \leq 0.001; \text{Adj. } R^2 = 0.30$

H4 - 6c: Value will be a Basic Factor for Bungalow - Rejected

- $\beta_{\text{Bungalow\_Value\_Penalty}} > \beta_{\text{Bungalow\_Value\_Reward}}$
  - $\beta_{\text{Bungalow\_Value\_Penalty}} = 0.000$
  - $\beta_{\text{Bungalow\_Value\_Reward}} = 6.314^{***}$
  - $F(1, 254) = 159.22; p \leq 0.001; \text{Adj. } R^2 = 0.38$

H4 - 6d: Value will be a Basic Factor for Cabin - Accepted
• $\beta_{\text{Cabin\_Value\_Penalty}} > \beta_{\text{Cabin\_Value\_Reward}}$
  - $\beta_{\text{Cabin\_Value\_Penalty}} = -7.338^{***}$
  - $\beta_{\text{Cabin\_Value\_Reward}} = 3.390$
  - $F\ (2,\ 1979) = 334.73;\ p \leq 0.001;\ \text{Adj. R}^2 = 0.25$

- **H4 - 6e: Value will be a Basic Factor for Camper/RV - Rejected**

• $\beta_{\text{Camper/RV\_Value\_Penalty}} > \beta_{\text{Camper/RV\_Value\_Reward}}$
  - $\beta_{\text{Camper/RV\_Value\_Penalty}} = -6.586$
  - $\beta_{\text{Camper/RV\_Value\_Reward}} = -1.931$
  - $F\ (2,\ 129) = 14.57;\ p \leq 0.001;\ \text{Adj. R}^2 = 0.17$

- **H4 - 6f: Value will be a Basic Factor for Condominium - Rejected**

• $\beta_{\text{Condominium\_Value\_Penalty}} > \beta_{\text{Condominium\_Value\_Reward}}$
  - $\beta_{\text{Condominium\_Value\_Penalty}} = 13.144^{***}$
  - $\beta_{\text{Condominium\_Value\_Reward}} = 22.704^{***}$
  - $F\ (2,\ 915) = 139.89;\ p \leq 0.001;\ \text{Adj. R}^2 = 0.23$

- **H4 - 6g: Value will be a Basic Factor for Guest Suite - Rejected**

• $\beta_{\text{Guest Suite\_Value\_Penalty}} > \beta_{\text{Guest Suite\_Value\_Reward}}$
  - $\beta_{\text{Guest Suite\_Value\_Penalty}} = -8.333^{***}$
  - $\beta_{\text{Guest Suite\_Value\_Reward}} = -1.611$
  - $F\ (2,\ 384) = 81.92;\ p \leq 0.001;\ \text{Adj. R}^2 = 0.29$

- **H4 - 6h: Value will be a Basic Factor for Guesthouse - Rejected**

• $\beta_{\text{Guesthouse\_Value\_Penalty}} > \beta_{\text{Guesthouse\_Value\_Reward}}$
  - $\beta_{\text{Guesthouse\_Value\_Penalty}} = 0.000$
  - $\beta_{\text{Guesthouse\_Value\_Reward}} = 5.594^{***}$
- $F(1, 266) = 43.52; p \leq 0.001; \text{Adj. } R^2 = 0.13$

- **H4 - 6i: Value will be a Basic Factor for House- Rejected**
  - $\beta_{\text{House_Value\_Penalty}} > \beta_{\text{House_Value\_Reward}}$
    - $\beta_{\text{House_Value\_Penalty}} = -3.458^{***}$
    - $\beta_{\text{House_Value\_Reward}} = 5.222^{***}$
    - $F(2, 9603) = 1653.07; p \leq 0.001; \text{Adj. } R^2 = 0.25$

- **H4 - 6j: Value will be a Basic Factor for Loft- Rejected**
  - $\beta_{\text{Loft\_Value\_Penalty}} > \beta_{\text{Loft\_Value\_Reward}}$
    - $\beta_{\text{Loft\_Value\_Penalty}} = -8.314$
    - $\beta_{\text{Loft\_Value\_Reward}} = -1.987$
    - $F(2, 341) = 42.59; p \leq 0.001; \text{Adj. } R^2 = 0.19$

- **H4 - 6k: Value will be a Basic Factor for Place- Accepted**
  - $\beta_{\text{Place\_Value\_Penalty}} > \beta_{\text{Place\_Value\_Reward}}$
    - $\beta_{\text{Place\_Value\_Penalty}} = -21.914$
    - $\beta_{\text{Place\_Value\_Reward}} = -2.782$
    - $F(2, 111) = 18.50; p \leq 0.001; \text{Adj. } R^2 = 0.23$

- **H4 - 6l: Value will be a Basic Factor for Tent- Accepted**
  - $\beta_{\text{Tent\_Value\_Penalty}} > \beta_{\text{Tent\_Value\_Reward}}$
    - $\beta_{\text{Tent\_Value\_Penalty}} = -10.309^{***}$
    - $\beta_{\text{Tent\_Value\_Reward}} = 1.223$
    - $F(2, 147) = 16.22; p \leq 0.001; \text{Adj. } R^2 = 0.17$

- **H4 - 6m: Value will be a Basic Factor for Private Room-Accepted**
  - $\beta_{\text{Private Room\_Value\_Penalty}} > \beta_{\text{Private Room\_Value\_Reward}}$
\( \beta_{\text{Private Room}_{-}\text{Value}_{-}\text{Penalty}} = -11.598^{***} \)

\( \beta_{\text{Private Room}_{-}\text{Value}_{-}\text{Reward}} = -1.758 \)

\( F (2, 517) = 117.28; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.30 \)

- H4 - 6n: Value will be a Basic Factor for Others- Rejected
  - \( \beta_{\text{Others}_{-}\text{Value}_{-}\text{Penalty}} > \beta_{\text{Others}_{-}\text{Value}_{-}\text{Reward}} \)
    - \( \beta_{\text{Others}_{-}\text{Value}_{-}\text{Penalty}} = 2.962 \)
    - \( \beta_{\text{Others}_{-}\text{Value}_{-}\text{Reward}} = 13.747^{***} \)
    - \( F (2, 697) = 101.81; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.22 \)

Table 11

*Aggregate Penalty-Reward Regression Parameters by Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>12.984***</td>
<td>23.512***</td>
<td>F (2, 3704) = 919.19; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.33</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-11.967</td>
<td>-2.639</td>
<td>F (2, 197) = 42.97; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.29</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>8.497***</td>
<td>F (1, 254) = 180.74; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.41</td>
</tr>
<tr>
<td>Cabin</td>
<td>-1.639</td>
<td>10.533</td>
<td>F (2, 1979) = 360.35; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.26</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.000</td>
<td>4.593***</td>
<td>F (1, 130) = 17.00; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.10</td>
</tr>
<tr>
<td>Condominium</td>
<td>31.127***</td>
<td>43.299***</td>
<td>F (2, 915) = 201.46; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.30</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>0.000</td>
<td>9.243***</td>
<td>F (1, 385) = 305.43; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.44</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>9.991***</td>
<td>F (1, 266) = 59.56; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.18</td>
</tr>
<tr>
<td>House</td>
<td>7.277***</td>
<td>17.746***</td>
<td>F (2, 9603) = 1989.30; \ p \leq 0.001; \ \text{Adj.} \ R^2 = 0.29</td>
</tr>
</tbody>
</table>

*** Significant at \( p \leq 0.001 \). **\( p \leq 0.005 \)
Table 11 (Continued)

<table>
<thead>
<tr>
<th>Quality Attribute: Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Type</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Loft</td>
</tr>
<tr>
<td>Tent</td>
</tr>
<tr>
<td>Private Room</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

*** Significant at p<=0.001. **p<=0.005

Table 11 shows that the Penalty-Reward regression results for all fourteen listed property types were statistically significant. It is interesting to notice that not all the independent Penalty and the Reward scores were found to be statistically significant (p<=0.001) for each type of property. The property types Apartments, Condominiums, Houses, and Others had significant (p <= 0.001) scores for both the Penalty and Reward; while none of the scores were statistically significant for the property types B&Bs and Cabins. The property type Condominiums received the highest Penalty significant (p<=0.001) score (31.127***); though, many properties, such as Bungalows Guest Suites, Lofts, Places, Private Rooms, and Guesthouses received zero scores for Penalty. In the Reward column, the highest score was also received by the property type Condominiums; whereas, the property type B&Bs received the lowest non-statistically significant score (-2.639) for Reward. The Adj. R^2 for the regression models ranged from 0.20 to 0.41, except Camper/RVs (0.10) and Guesthouses (0.18). Therefore, the variance in the overall score could be explained by the property types and ranged between 10% and 41%.
Table 12 shows for attribute Accuracy was a Basic Factor for Tents while, the property types Cabins, Condominiums, Places, Private Rooms, and Others considered it at an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the differences’ column in the Table. Accuracy was a Performance Factor for property types, Apartments, B&Bs, Bungalows, Camper/RVs, Guest Suites, Guesthouses, Houses, and Lofts. In
the status column, Table 12 also represents the number of the Basic Factor was one and the number of Excitement Factor was two; while the number of Performance Factor was eight.

**Penalty-Reward Analysis for Accuracy Ratings**

![Penalty-Reward Analysis for Accuracy Ratings](image)

*Figure 14. Relative Penalty and Reward values for the quality attribute Accuracy by property type*

Figure 14 represents the differences between the Penalty and Reward scores for each property types considering only the quality attribute, Accuracy. The Reward dominated most of the property types, while Penalty dominated for the property types, B&Bs and Tents. The highest difference between the Penalty and Reward was 21.739 and was found in the property type Places. On the other hand, the minimum difference between the Penalty and Reward was 4.593 and was found for the property type Campers/RVs.
Table 13

Aggregate Penalty-Reward Regression Parameters by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>-0.009</td>
<td>9.666***</td>
<td>F (2, 3704) =453.00; p&lt;=0.001; Adj. R^2 = 0.19</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-10.047</td>
<td>-2.096</td>
<td>F (2, 197) =14.23; p&lt;=0.001; Adj. R^2 = 0.11</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>7.431***</td>
<td>F (1, 254) =37.22; p&lt;=0.001; Adj. R^2 = 0.12</td>
</tr>
<tr>
<td>Cabin</td>
<td>-10.604***</td>
<td>0.742</td>
<td>F (2, 1979) =183.27; p&lt;=0.001; Adj. R^2 = 0.15</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>-8.500</td>
<td>-2.787</td>
<td>F (2, 129) =3.39; p&lt;=0.001; Adj. R^2 = 0.03</td>
</tr>
<tr>
<td>Condominium</td>
<td>14.063</td>
<td>23.494</td>
<td>F (2, 915) =97.36; p&lt;=0.001; Adj. R^2 = 0.17</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>-15.000***</td>
<td>-1.976</td>
<td>F (2, 384) =29.66; p&lt;=0.001; Adj. R^2 = 0.12</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>10.115***</td>
<td>F (1, 266) =25.42; p&lt;=0.001; Adj. R = 0.08</td>
</tr>
<tr>
<td>House</td>
<td>-6.198***</td>
<td>5.155***</td>
<td>F (2, 9603) =1057.04; p&lt;=0.001; Adj. R^2 = 0.18</td>
</tr>
<tr>
<td>Loft</td>
<td>-14.129</td>
<td>-2.910</td>
<td>F (2, 341) =54.73; p&lt;=0.001; Adj. R^2 = 0.23</td>
</tr>
<tr>
<td>Place</td>
<td>0.000</td>
<td>23.943***</td>
<td>F (1, 112) =44.72; p&lt;=0.001; Adj. R^2 = 0.27</td>
</tr>
<tr>
<td>Tent</td>
<td>-27.392***</td>
<td>-0.006</td>
<td>F (2, 147) =18.39; p&lt;=0.001; Adj. R^2 = 0.18</td>
</tr>
<tr>
<td>Private Room</td>
<td>-15.675***</td>
<td>-2.985</td>
<td>F (2, 517) =66.39; p&lt;=0.001; Adj. R^2 = 0.20</td>
</tr>
<tr>
<td>Others</td>
<td>-8.897</td>
<td>4.807</td>
<td>F (2, 697) =87.49; p&lt;=0.001; Adj. R^2 = 0.19</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

Table 13 shows that among the fourteen listed properties, some properties, such as Bungalows, Guesthouses, and Places had Reward scores for the quality attributes Check-in while they showed no Penalty scores. The property type Places received the highest score (23.943****) for Rewards; whereas, the lowest score (-0.006) received by the property type
Tents. For the quality attribute Check-in, the highest Penalty score was received by the property type Tents and the second highest score was received by the property type Private Rooms.

Table 13 shows the results of the regressions of overall scores on the high and low scores for Check-in by each property type. The Table shows that all the regressions were statistically significant (p <= 0.001). The Adj. R² for the regression models ranged from 0.03 (Camper/RVs) to 0.27 (Places). The property type Houses received the significant score for both the Penalty and Reward.

Table 14

<p>| Penalty-Reward Status Determination of the Six Quality Attributes by Property Type |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Quality Attribute: Check-in</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>-0.009</td>
<td>9.666</td>
<td>9.68</td>
<td>77.41</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-10.047</td>
<td>-2.096</td>
<td>7.95</td>
<td>63.61</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>7.431</td>
<td>7.43</td>
<td>59.45</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Cabin</td>
<td>-10.604</td>
<td>0.742</td>
<td>11.35</td>
<td>90.78</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>-8.500</td>
<td>-2.787</td>
<td>5.71</td>
<td>45.71</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Condominium</td>
<td>14.063</td>
<td>23.494</td>
<td>9.43</td>
<td>75.46</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>-15.000</td>
<td>-1.976</td>
<td>13.02</td>
<td>104.20</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>10.115</td>
<td>10.12</td>
<td>80.93</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>House</td>
<td>-6.198</td>
<td>5.155</td>
<td>11.35</td>
<td>90.83</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Loft</td>
<td>-14.129</td>
<td>-2.910</td>
<td>11.22</td>
<td>89.76</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Tent</td>
<td>-27.392</td>
<td>-0.006</td>
<td>27.39</td>
<td>219.11</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Private Room</td>
<td>-15.675</td>
<td>-2.985</td>
<td>12.69</td>
<td>101.53</td>
<td>H</td>
<td>Basic</td>
</tr>
</tbody>
</table>
Table 14 shows for attribute Check-in was a Basic Factor for Guest Suites, Tents, Private Rooms and Others; while, the property type Places considered it as an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the difference’s column in Table 14. Check-in was a Performance Factor for the remaining property types Apartments, B&B, Bungalow, Cabin, Camper/RV, Condominium, Guesthouses, Houses, and Lofts. In the status column of Table 14 four of the property types were Basic Factor (Guest Suites, Tents, Private Rooms and Others), one was an Excitement (Places), while nine were Performance Factor (Apartments, B&B, Bungalow, Cabin, Camper/RV, Condominium, Guesthouses, Houses, and Lofts).
Figure 15. Relative Penalty and Reward values for the quality attribute Check-in by property type

Figure 15 shows that among the fourteen listed properties, nine of the of the properties were dominated by the Penalty for the quality attribute Check-in; while, the remaining five listed property types (Apartments, Bungalows, Condominiums, Guesthouses, and Places) were dominated by the Reward. The highest difference between the Penalty and Reward was 23.944 and it was found in the property type Places for the quality attribute Check-in; while, the minimum difference between the Penalty and Reward was -1.043 and was found for the property type Houses.
Table 15

Aggregate Penalty-Reward Regression Parameters by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>35.070***</td>
<td>43.580***</td>
<td>F (2, 3704) = 653.65; p &lt;= 0.001; Adj. R² = 0.26</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-10.437</td>
<td>-1.485</td>
<td>F (2, 197) = 28.85; p &lt;= 0.001; Adj. R² = 0.21</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>5.974***</td>
<td>F (1, 254) = 166.11; p &lt;= 0.001; Adj. R² = 0.39</td>
</tr>
<tr>
<td>Cabin</td>
<td>0.000</td>
<td>8.714***</td>
<td>F (1, 1980) = 413.37; p &lt;= 0.001; Adj. R² = 0.17</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.000</td>
<td>4.250***</td>
<td>F (1, 130) = 19.64; p &lt;= 0.001; Adj. R² = 0.12</td>
</tr>
<tr>
<td>Condominium</td>
<td>47.379***</td>
<td>56.694***</td>
<td>F (2, 915) = 145.62; p &lt;= 0.001; Adj. R² = 0.24</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>0.000</td>
<td>6.375***</td>
<td>F (1, 385) = 188.40; p &lt;= 0.001; Adj. R² = 0.32</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>7.701***</td>
<td>F (1, 266) = 62.69; p &lt;= 0.001; Adj. R² = 0.18</td>
</tr>
<tr>
<td>House</td>
<td>10.106***</td>
<td>18.014***</td>
<td>F (2, 9603) = 1430.26; p &lt;= 0.001; Adj. R² = 0.23</td>
</tr>
<tr>
<td>Loft</td>
<td>0.000</td>
<td>7.013***</td>
<td>F (1, 342) = 80.70; p &lt;= 0.001; Adj. R² = 0.19</td>
</tr>
<tr>
<td>Place</td>
<td>0.000</td>
<td>20.265***</td>
<td>F (1, 112) = 42.42; p &lt;= 0.001; Adj. R² = 0.26</td>
</tr>
<tr>
<td>Tent</td>
<td>-13.444</td>
<td>-1.442</td>
<td>F (2, 147) = 20.63; p &lt;= 0.001; Adj. R² = 0.20</td>
</tr>
<tr>
<td>Private Room</td>
<td>0.000</td>
<td>9.482***</td>
<td>F (1, 518) = 203.14; p &lt;= 0.001; Adj. R² = 0.28</td>
</tr>
<tr>
<td>Others</td>
<td>27.333***</td>
<td>38.019***</td>
<td>F (2, 697) = 138.21; p &lt;= 0.001; Adj. R² = 0.28</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

Table 15 shows all the Reward scores were statistically significant (p <= 0.001) for all property types for the quality attribute Cleanliness except for Tents and B&Bs. Among the fourteen listed property types, more than half of the properties had only Reward scores, and the property type Condominiums received the highest significant score of 56.694 (p <= 0.001) for
Reward. On the other hand, the property type Tents received the lowest non-significant score -1.44 for Reward. In the Penalty column, the property type Condominiums also received the highest significant (p <= 0.001) score 47.379*** for Penalty; while eight of listed properties had a zero value for their penalty scores.

Table 15 shows the results of the regressions of overall scores on the high and low scores for the quality attribute Cleanliness by each property type. The Table shows that all the regressions were statistically significant at p <= 0.001. The Adj. $R^2$ for the regression models ranged from 0.39 (Bungalows) to 0.12 (Camper/RVs) indicating that the overall scores of the property types varied between 12% and 39% based on the high and low ratings of Cleanliness.

Table 16

Penalty-Reward Status Determination of the Six Quality Attributes by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>35.07</td>
<td>43.58</td>
<td>8.51</td>
<td>93.70</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-10.437</td>
<td>-1.48</td>
<td>8.95</td>
<td>98.57</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>5.974</td>
<td>5.97</td>
<td>65.78</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Cabin</td>
<td>0.000</td>
<td>8.714</td>
<td>8.71</td>
<td>95.95</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.000</td>
<td>4.25</td>
<td>4.25</td>
<td>46.80</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Condominium</td>
<td>47.379</td>
<td>56.694</td>
<td>9.32</td>
<td>102.57</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>0.000</td>
<td>6.375</td>
<td>6.38</td>
<td>70.19</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>7.701</td>
<td>7.70</td>
<td>84.79</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Loft</td>
<td>0.000</td>
<td>7.013</td>
<td>7.01</td>
<td>77.22</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Place</td>
<td>0.000</td>
<td>20.265</td>
<td>20.27</td>
<td>223.14</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Tent</td>
<td>-13.444</td>
<td>-1.442</td>
<td>12.00</td>
<td>132.15</td>
<td>H</td>
<td>Basic</td>
</tr>
</tbody>
</table>
Table 16 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Room</td>
<td>0.000</td>
<td>9.482</td>
<td>9.48</td>
<td>104.41</td>
<td>H</td>
<td>Excitement</td>
</tr>
</tbody>
</table>

Table 16 represents the status of Cleanliness attribute for each property type. Cleanliness was a Basic Factor for Tents while, the property types Private Rooms, Others, Places, and Condominiums determined it as an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the Differences column in the Table 16. Cleanliness was a Performance Factor for the rest of the property types - Apartments, B&Bs, Cabins, Bungalows, Camper/RVs, Guest Suites, Guesthouses, Houses, and Lofts. In the Status column, Table 16 also represents the number of property types that were Basic Factor was one (Tents), Excitement Factor was four (Private Rooms, Others, Places, and Condominiums), and, Performance Factor was nine (Apartments, B&Bs, Cabins, Bungalows, Camper/RVs, Guest Suites, Guesthouses, Houses, and Lofts).
Figure 16 shows that in the above-listed properties, twelve are dominated by the Reward; while, the remaining two (B& Bs and Tents) were dominated by the Penalty. The highest difference between the Penalty and the Reward was 20.26 and was found in the property type Places. On the contrary, the minimum difference between the Penalty and Reward was 4.25 and was found for the property type Campers/RVs. For Penalty, eight of the listed property types have zero scores for the quality attribute Cleanliness.
### Aggregate Penalty-Reward Regression Parameters by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>24.901***</td>
<td>35.745***</td>
<td>$F(2, 3704) = 588.50; p \leq 0.001; Adj. R^2 = 0.24$</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-14.642</td>
<td>-2.037</td>
<td>$F(2, 197) = 27.41; p \leq 0.001; Adj. R^2 = 0.21$</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>8.051***</td>
<td>$F(1, 254) = 51.34; p \leq 0.001; Adj. R^2 = 0.16$</td>
</tr>
<tr>
<td>Cabin</td>
<td>-0.950</td>
<td>11.013***</td>
<td>$F(2, 1979) = 282.98; p \leq 0.001; Adj. R^2 = 0.22$</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.000</td>
<td>7.539***</td>
<td>$F(1, 130) = 11.55; p \leq 0.001; Adj. R^2 = 0.07$</td>
</tr>
<tr>
<td>Condominium</td>
<td>30.785***</td>
<td>42.903***</td>
<td>$F(2, 915) = 175.28; p \leq 0.001; Adj. R^2 = 0.27$</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>0.000</td>
<td>5.994***</td>
<td>$F(1, 385) = 14.82; p \leq 0.001; Adj. R^2 = 0.03$</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>8.994***</td>
<td>$F(1, 266) = 23.90; p \leq 0.001; Adj. R^2 = 0.07$</td>
</tr>
<tr>
<td>House</td>
<td>-0.370</td>
<td>11.142***</td>
<td>$F(2, 9603) = 1362.38; p \leq 0.001; Adj. R^2 = 0.22$</td>
</tr>
<tr>
<td>Loft</td>
<td>0.000</td>
<td>9.720***</td>
<td>$F(1, 342) = 109.42; p \leq 0.001; Adj. R^2 = 0.24$</td>
</tr>
<tr>
<td>Place</td>
<td>0.000</td>
<td>23.508***</td>
<td>$F(1, 112) = 40.47; p \leq 0.001; Adj. R^2 = 0.25$</td>
</tr>
<tr>
<td>Tent</td>
<td>-19.111***</td>
<td>4.688</td>
<td>$F(2, 147) = 36.48; p \leq 0.001; Adj. R^2 = 0.32$</td>
</tr>
<tr>
<td>Private Room</td>
<td>-16.733</td>
<td>-2.639</td>
<td>$F(2, 517) = 109.43; p \leq 0.001; Adj. R^2 = 0.29$</td>
</tr>
<tr>
<td>Others</td>
<td>-17.440***</td>
<td>-3.252</td>
<td>$F(2, 697) = 91.74; p \leq 0.001; Adj. R^2 = 0.20$</td>
</tr>
</tbody>
</table>

*** Significant at $p \leq 0.001$

Table 17 shows that among the fourteen listed properties, some properties, such as Bungalows, Camper/RVs, Guesthouses, Guest Suites, Lofts and Places had only Reward scores for the quality attribute Communication while they zero scores for Penalty. The property type Apartments and Condominiums had statistically significant ($p \leq 0.001$) scores for both the
Penalty and Reward. The property type Condominiums received the highest Penalty score of (30.785***), followed by apartments (24.901***). The property type Condominiums also received the highest significant (p <= 0.001) score for Reward (42.903***); while, the B&Bs received the lowest non-significant score -2.03 for quality attribute Communication.

Table 17 shows the results of the regressions of overall scores on the high and low dummy variables for Communication for each property type. The Table shows that all the regressions were statistically significant (p <= 0.001). The Adj. $R^2$ for the regression models ranged from 0.03 (Guest Suites) to 0.32 (Tents). Therefore, the variance in the overall score could be explained by the high and low dummy variables for each property types by between 3% and 32%.

Table 18

*Penalty-Reward Status Determination of the Six Quality Attributes by Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>24.901</td>
<td>35.745</td>
<td>10.84</td>
<td>86.79</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-14.642</td>
<td>-2.037</td>
<td>12.61</td>
<td>100.88</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>8.051</td>
<td>8.05</td>
<td>64.43</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Cabin</td>
<td>-0.950</td>
<td>11.013</td>
<td>11.96</td>
<td>95.74</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>0.000</td>
<td>7.539</td>
<td>7.54</td>
<td>60.34</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Condominium</td>
<td>30.785</td>
<td>42.903</td>
<td>12.12</td>
<td>96.98</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>0.000</td>
<td>5.994</td>
<td>5.99</td>
<td>47.97</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>8.994</td>
<td>8.99</td>
<td>71.98</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td>House</td>
<td>-0.370</td>
<td>11.142</td>
<td>11.51</td>
<td>92.13</td>
<td>L</td>
<td>Performance</td>
</tr>
</tbody>
</table>

154
Table 18 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
<td>0.000</td>
<td>23.508</td>
<td>23.51</td>
<td>188.14</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Tent</td>
<td>-19.111</td>
<td>4.688</td>
<td>23.80</td>
<td>190.47</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Private Room</td>
<td>-16.733</td>
<td>-2.639</td>
<td>14.09</td>
<td>112.80</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Others</td>
<td>-17.440</td>
<td>-3.252</td>
<td>14.19</td>
<td>113.55</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Average =</td>
<td>12.49</td>
<td>100.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 18 shows that Communication was a Basic Factor for Tents, Private Rooms, Others, and B&Bs. The property type Places determined it to be an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the differences’ column in the Table 18. The quality attribute Communication was a Performance Factor for property types, Apartments, Cabins, Bungalows, Camper/RVs, Condominiums, Guest Suites, Guesthouses, Houses, and Lofts. Table 18 also shows the highest index score for the quality attribute Communication was 190.47 (Tents); whereas, the lowest index score was 47.97 (Guest Suites). In the status column, Table 18 also shows that for four of the property types, Communication was a Basic Factor, Excitement Factor was one, and Performance Factor for nine.
Figure 17. Relative Penalty and Reward values for the quality attribute Communication by property type

Figure 17 shows that among the fourteen listed property types, Penalty dominated five listed properties while, the remaining nine were dominated by the Reward for the quality attributes Communication. The highest score for Reward was 42.90 for the property type Condominiums whereas, the lowest score was 2.03 for B&Bs. The highest difference between the Penalty and Reward was 23.50 and was found in the property type Places. On the other hand, the minimum difference between the Penalty and Reward was 5.99 and was found for the property type Guest Suites for the quality attribute Communication.
Table 19

Aggregate Penalty-Reward Regression Parameters by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>8.348***</td>
<td>14.056***</td>
<td>F (2, 3704) = 222.39; p &lt;= 0.001; Adj. R^2 = 0.10</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-8.722</td>
<td>-1.644</td>
<td>F (2, 197) = 18.17; p &lt;= 0.001; Adj. R^2 = 0.14</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>4.057***</td>
<td>F (1, 254) = 78.46; p &lt;= 0.001; Adj. R^2 = 0.23</td>
</tr>
<tr>
<td>Cabin</td>
<td>-6.487</td>
<td>2.376</td>
<td>F (2, 1979) = 172.55; p &lt;= 0.001; Adj. R^2 = 0.14</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>-6.370</td>
<td>-2.077</td>
<td>F (2, 129) = 11.33; p &lt;= 0.001; Adj. R^2 = 0.13</td>
</tr>
<tr>
<td>Condominium</td>
<td>17.117***</td>
<td>23.627***</td>
<td>F (2, 915) = 68.18; p &lt;= 0.001; Adj. R^2 = 0.12</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>-4.137</td>
<td>-1.601</td>
<td>F (2, 384) = 21.91; p &lt;= 0.001; Adj. R^2 = 0.09</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>4.647***</td>
<td>F (1, 266) = 29.54; p &lt;= 0.001; Adj. R^2 = 0.09</td>
</tr>
<tr>
<td>House</td>
<td>0.509</td>
<td>4.757***</td>
<td>F (2, 9603) = 413.58; p &lt;= 0.001; Adj. R^2 = 0.07</td>
</tr>
<tr>
<td>Loft</td>
<td>-9.529</td>
<td>-2.945</td>
<td>F (2, 341) = 25.33; p &lt;= 0.001; Adj. R^2 = 0.12</td>
</tr>
<tr>
<td>Place</td>
<td>0.000</td>
<td>20.845***</td>
<td>F (1, 112) = 38.80; p &lt;= 0.001; Adj. R^2 = 0.25</td>
</tr>
<tr>
<td>Tent</td>
<td>-11.792***</td>
<td>1.081</td>
<td>F (2, 147) = 17.73; p &lt;= 0.001; Adj. R^2 = 0.18</td>
</tr>
<tr>
<td>Private Room</td>
<td>-8.742***</td>
<td>-2.091</td>
<td>F (2, 517) = 52.05; p &lt;= 0.001; Adj. R^2 = 0.16</td>
</tr>
<tr>
<td>Others</td>
<td>-11.170</td>
<td>-2.987</td>
<td>F (2, 697) = 49.57; p &lt;= 0.001; Adj. R^2 = 0.12</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

Table 19 shows that among the fourteen listed properties, three properties (Bungalows, Guesthouses, and Places) had only Reward scores for the quality attributes Location while they showed had zero Penalty scores. In the Penalty column, the property type Condominiums received the highest significant score, 17.117 (p <= 0.001) for the quality attributes Location and
the second highest significant score (11.792) was received by the property type Tents. For Reward, the property type Condominiums also received the highest significant score (23.627); whereas, Guest Suites received the lowest non-significant score (-1.601) for the quality attribute Location. One of the interesting findings noticed was that the property type Apartments and Condominiums received significant scores for both the Penalty and Reward.

Table 19 shows the results of the regressions of overall scores on the high and low scores for Location for each property type. The Table shows that all the regressions were statistically significant at $p \leq 0.001$. The Adj. $R^2$ for the regression models ranged from 0.07 (House) to 0.25 (Places) and the two-thirds of the Adj. $R^2$ ranged from 0.10 to 0.20.

Table 20

Penalty-Reward Status Determination of the Six Quality Attributes by Property Type

<table>
<thead>
<tr>
<th>Quality Attribute: Location</th>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apartments</td>
<td>8.348</td>
<td>14.056</td>
<td>5.71</td>
<td>77.53</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>B&amp;B</td>
<td>-8.722</td>
<td>-1.644</td>
<td>7.08</td>
<td>96.13</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Bungalow</td>
<td>0.000</td>
<td>4.057</td>
<td>4.06</td>
<td>55.10</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Cabin</td>
<td>-6.487</td>
<td>2.376</td>
<td>8.86</td>
<td>120.38</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>Camper/RV</td>
<td>-6.370</td>
<td>-2.077</td>
<td>4.29</td>
<td>58.31</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Condominium</td>
<td>17.117</td>
<td>23.627</td>
<td>6.51</td>
<td>88.42</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Guest Suite</td>
<td>-4.137</td>
<td>-1.601</td>
<td>2.54</td>
<td>34.44</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Guesthouse</td>
<td>0.000</td>
<td>4.647</td>
<td>4.65</td>
<td>63.12</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>House</td>
<td>0.509</td>
<td>4.757</td>
<td>4.25</td>
<td>57.70</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Loft</td>
<td>-9.529</td>
<td>-2.945</td>
<td>6.58</td>
<td>89.43</td>
<td>L</td>
<td>Performance</td>
</tr>
</tbody>
</table>
Table 20 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
<td>0.000</td>
<td>20.845</td>
<td>20.85</td>
<td>283.12</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td>Tent</td>
<td>-11.792</td>
<td>1.081</td>
<td>12.87</td>
<td>174.84</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Others</td>
<td>-11.170</td>
<td>-2.987</td>
<td>8.18</td>
<td>111.14</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td>7.36</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20 shows that Location was a Basic Factor for Others, Tents, and Cabins while, the property type Places determined it as an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the differences’ column in the table. Location was a Performance Factor for property types Apartments, B&Bs, Bungalows, Camper/RVs, Condominium, Guest Suites, Guesthouses, Houses, Lofts, and Private Rooms. In the status column, Table 20 shows that Location was a Basic Factor for three property types, Excitement Factor was one property type, and Performance Factor for ten property types. The property type Places received the highest index score 283.12; while, the property type Guest Suites received the lowest index score 34.44.
Figure 18. Relative Penalty and Reward values for the quality attribute Location by property type

Figure 18 shows that three of the listed property types have zero score for Penalty and the property type Condominiums received the highest score (-17.117) for Penalty. The Penalty dominated eight listed properties whereas, Reward dominated six listed properties. The highest difference between the Penalty and Reward was 20.84 and was found in the property type Places. On the other hand, the minimum difference between the Penalty and Reward was 4.05 and was found for the property type Bungalows for the quality attribute Location.
Table 21

*Aggregate Penalty-Reward Regression Parameters by Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Regression Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>7.311***</td>
<td>15.661***</td>
<td>F (2, 3704) = 621.45; p &lt;= 0.001; Adj. $R^2$ = 0.25</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>-11.229</td>
<td>-1.152</td>
<td>F (2, 197) = 43.83; p &lt;= 0.001; Adj. $R^2$ = 0.30</td>
</tr>
<tr>
<td>Bungalow</td>
<td>0.000</td>
<td>6.314***</td>
<td>F (1, 254) = 159.22; p &lt;= 0.001; Adj. $R^2$ = 0.38</td>
</tr>
<tr>
<td>Cabin</td>
<td>-7.338***</td>
<td>3.390</td>
<td>F (2, 1979) = 334.73; p &lt;= 0.001; Adj. $R^2$ = 0.25</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>-6.586</td>
<td>-1.931</td>
<td>F (2, 129) = 14.57; p &lt;= 0.001; Adj. $R^2$ = 0.17</td>
</tr>
<tr>
<td>Condominium</td>
<td>13.144***</td>
<td>22.704***</td>
<td>F (2, 915) = 139.89; p &lt;= 0.001; Adj. $R^2$ = 0.23</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>-8.333***</td>
<td>-1.611</td>
<td>F (2, 384) = 81.92; p &lt;= 0.001; Adj. $R^2$ = 0.29</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>0.000</td>
<td>5.594***</td>
<td>F (1, 266) = 43.52; p &lt;= 0.001; Adj. $R^2$ = 0.13</td>
</tr>
<tr>
<td>House</td>
<td>-3.458***</td>
<td>5.222***</td>
<td>F (2, 9603) = 1653.07; p &lt;= 0.001; Adj. $R^2$ = 0.25</td>
</tr>
<tr>
<td>Loft</td>
<td>-8.314</td>
<td>-1.987</td>
<td>F (2, 341) = 42.59; p &lt;= 0.001; Adj. $R^2$ = 0.19</td>
</tr>
<tr>
<td>Place</td>
<td>-21.914</td>
<td>-2.782</td>
<td>F (2, 111) = 18.50; p &lt;= 0.001; Adj. $R^2$ = 0.23</td>
</tr>
<tr>
<td>Tent</td>
<td>-10.309***</td>
<td>1.223</td>
<td>F (2, 147) = 16.22; p &lt;= 0.001; Adj. $R^2$ = 0.17</td>
</tr>
<tr>
<td>Private Room</td>
<td>-11.598***</td>
<td>-1.758</td>
<td>F (2, 517) = 117.28; p &lt;= 0.001; Adj. $R^2$ = 0.30</td>
</tr>
<tr>
<td>Others</td>
<td>2.962</td>
<td>13.747***</td>
<td>F (2, 697) = 101.81; p &lt;= 0.001; Adj. $R^2$ = 0.22</td>
</tr>
</tbody>
</table>

*** Significant at p <= 0.001

Table 21 shows that among the fourteen listed properties, Bungalows and Guesthouses had Reward scores for the quality attributes Value; while they showed no Penalty scores. The property type Apartments, Condominiums, and Houses had statistically significant scores for both the Penalty and Reward. On the other hand, the property type B&Bs, Camper/RVS, Lofts
and Places had non-significant scores for both the Penalty and Reward. In the Penalty column, the property type Places received the highest non-significant score (-21.914). In the Reward column, the property type Condominiums received the highest significant (p = 0.001) score (22.704***); while, B&Bs received the lowest non-significant score (-1.152) for Reward.

Table 21 shows the results of the regressions of overall scores on the high and low dummy variables for Value for each property type. The table shows that all the regressions were statistically significant. The Adj. R² for the regression models ranged from 0.13 (Guesthouses) to 0.38 (Bungalows).

Table 22

**Penalty-Reward Status Determination of the Six Quality Attributes by Property Type**

<table>
<thead>
<tr>
<th>Quality Attribute: Value</th>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apartments</td>
<td>7.311</td>
<td>15.661</td>
<td>8.35</td>
<td>91.12</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>B&amp;B</td>
<td>-11.229</td>
<td>-1.152</td>
<td>10.077</td>
<td>109.96</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>Bungalow</td>
<td>0</td>
<td>6.314</td>
<td>6.314</td>
<td>68.90</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Cabin</td>
<td>-7.338</td>
<td>3.39</td>
<td>10.728</td>
<td>117.07</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>Camper/RV</td>
<td>-6.586</td>
<td>-1.931</td>
<td>4.655</td>
<td>50.80</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Condominium</td>
<td>13.144</td>
<td>22.704</td>
<td>9.56</td>
<td>104.32</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td></td>
<td>Guest Suite</td>
<td>-8.333</td>
<td>-1.611</td>
<td>6.722</td>
<td>73.35</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Guesthouse</td>
<td>0</td>
<td>5.594</td>
<td>5.594</td>
<td>61.04</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>House</td>
<td>-3.458</td>
<td>5.222</td>
<td>8.68</td>
<td>94.72</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Loft</td>
<td>-8.314</td>
<td>-1.987</td>
<td>6.327</td>
<td>69.04</td>
<td>L</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Place</td>
<td>-21.914</td>
<td>-2.782</td>
<td>19.132</td>
<td>208.77</td>
<td>H</td>
<td>Basic</td>
</tr>
</tbody>
</table>
Table 22 shows for attribute Accuracy was a Basic Factor for B&Bs, Bungalows, Places, Tents, and Private Rooms; while, the property types Condominiums, and Others determined it to be an Excitement Factor based on the differences between the Penalty and Reward scores as shown in the differences’ column in the table. Accuracy was a Performance Factor for property types Apartments, Bungalows, Camper/RVs, Guest Suites, Guesthouses, Houses, and Lofts. In the status column, Table 22 also represents that Value was a Basic Factor for five property types, Excitement Factor for two property types, and Performance Factor for seven property types. The highest index score was 208.77 and was received by the property type Places; whereas, the lowest index score was 50.80 was received by the Camper/RVs.

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tent</td>
<td>-10.309</td>
<td>1.223</td>
<td>11.532</td>
<td>125.84</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Others</td>
<td>2.962</td>
<td>13.747</td>
<td>10.785</td>
<td>117.69</td>
<td>H</td>
<td>Excitement</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>9.164</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 22 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Penalty</th>
<th>Reward</th>
<th>Differences</th>
<th>Index</th>
<th>High/Low</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tent</td>
<td>-10.309</td>
<td>1.223</td>
<td>11.532</td>
<td>125.84</td>
<td>H</td>
<td>Basic</td>
</tr>
<tr>
<td>Others</td>
<td>2.962</td>
<td>13.747</td>
<td>10.785</td>
<td>117.69</td>
<td>H</td>
<td>Excitement</td>
</tr>
</tbody>
</table>

|               | Average | 9.164  | 100         |       |          |            |
Figure 19. Relative Penalty and Reward values for the quality attribute Value by property type

Figure 19 represents the differences between the Penalty and Reward scores for each property type considering only the quality attribute, Value. Figure 19 also shows that among the fourteen listed properties, eight properties were dominated by the Penalty while the rest of the six were dominated by the Reward. The highest difference between the Penalty and Reward was -19.13 and was found in the property type Places. In contrast, the minimum difference between the Penalty and Reward was 1.76 and was found for the property type Houses.
Conclusions

This chapter summarizes the results, presents the conclusions and the limitations faced in this research. As a recap, this research was broadly focused on the relationship between the overall quality ratings and the six quality attribute ratings of Airbnb properties in Tennessee and the resulting status of the quality attribute ratings as Basic, Performance and Excitement factors. The methodology used Penalty-Reward Contrast Analysis to statistically determine the differences between the penalty and the rewards associated with the six quality attributes. This analysis was performed for the fourteen property types that were evaluated by the four hypotheses tested in this study.

During the initial analysis, the overall quality ratings for each of the six attributes was recalibrated as illustrated in Figure 20 below. The results show that the average scores for the six quality attributes ranged between 9.22 and 10.00 based on a 10-point scale where 1 = Poor and 10 = Excellent. The results also show that the Airbnb properties in Tennessee, on an average were receiving a very high ratings of 90% or more for their quality attributes. This extraordinary level of quality ratings by the customers of Airbnb of 97.36% is unusually high compared to other similar hospitality sectors in the U.S. economy. A recent Gallup poll showed that as a sector, the restaurant industry is one of the highest rated with about 58% viewing the sector positively (Saad, 2018). The same survey found the travel sector being viewed positively by 50% of the respondents. The overall positive ratings for all the U.S. economic sectors was found to be 43% in 2018 compared to 49% the previous year (Saad, 2018). The J.D. Power’s 2018 survey found that the average overall ratings for the hotel industry in the U.S. was 82.5% (Effler, 2018). Given the review, it is extraordinary for Airbnb properties to receive such high ratings. Chenga and Jinb (2018) in their research of Airbnb properties in Sydney, Australia also found that most
of the Airbnb reviews are positively biased with the average review scores being extraordinarily higher than ratings for service entities in other industries such as banking, hotels, etc.

There seems to be an inherent bias in the quality ratings by the Airbnb customers that would lead to such high scores (Jude, 2016). Airbnb uses a dual-rating strategy where not only do the customer rate the property they rent, but the host/hostess also has an opportunity to rate the renter based on their behavior during their stay (Airbnb, 2019; Airbnb, 2017). There have been reports of renters being banned by Airbnb platform based on the low ratings of the hosts (Cunningham, 2018, “Airbnb banned host”, 2016). Such a dual-rating system may subtly be making the guests give such high-quality ratings to Airbnb properties compared to other hospitality sectors as they fear that they would be restricted or banned from the platform they like. Such a situation may require the rest of the industry to take Airbnb’s customer ratings with a pinch of salt.

Figure 20. Quality attributes scores by property types
Hypothesis 1

Hypothesis stated that higher quality attribute ratings will lead to higher overall satisfaction ratings without any consideration to the type of property. To test this hypothesis, six separate regressions, one for each of the quality attributes, were performed with the overall scores as the dependent variable and the quality attribute score as the dependent variable. Table 23 below summarizes the main results for such an analysis.

Table 23

*Summary Regression Results of Overall Ratings and Quality Attribute Ratings*

<table>
<thead>
<tr>
<th>Quality Attribute</th>
<th>Collinearity</th>
<th>Coefficient</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.624</td>
<td>7.261</td>
<td>0.624</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.733</td>
<td>7.473</td>
<td>0.733</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>0.702</td>
<td>6.475</td>
<td>0.702</td>
</tr>
<tr>
<td>Check-in</td>
<td>0.567</td>
<td>6.897</td>
<td>0.567</td>
</tr>
<tr>
<td>Location</td>
<td>0.497</td>
<td>5.094</td>
<td>0.497</td>
</tr>
<tr>
<td>Value</td>
<td>0.749</td>
<td>7.03</td>
<td>0.749</td>
</tr>
</tbody>
</table>

Table 23 shows that the correlations between the overall scores and the six quality attributes are all positive indicating an increase in one lead to an increase in the other. The table shows that for every unit increase in the overall score, the quality ratings for the six quality attributes also increases between 5.09 to 7.47 points on a 1-10 scale with 1= poor and 10= excellent. The results show that there is an impressive increase in the quality ratings of the attributes with the increase in overall quality ratings – ranging from 5.09% for Location to 7.47%
for Accuracy. Overall, it seems that Accuracy is the most influential in terms of increasing
overall quality ratings followed by Value. The least important attribute seems to be Location.

**Hypothesis 2**

In Hypothesis 2, it was surmised that the relationship between overall quality rating and
the attribute rating will dependent on the type of property being considered. Table 24
summarizes the results for such an analysis by presenting the relative importance of the six
quality attributes for each of the fourteen property types. The table shows that the importance of
the six quality attributes varies by the type of property. Quality attributes Cleanliness, Accuracy
and Value are the three most dominant factors for the customers of Airbnb in Tennessee. On the
other hand, Check-in, Communication and Location were rated the least important by many of
the guests staying at the fourteen property types.

From the results, it seems that the traditional accommodation types such as Guest House,
Apartment, Private Rooms, Condominiums, Bungalows, and House rated Cleanliness as the most
important attribute. However, non-traditional property types such as Camper/RV and Cabin rated
Value as the most important. On the other hand, some unusual rentals such as Loft, Tent, Place,
Others rated Accuracy as being the most important. Since no demographic data was available, it
would be very hard to make any conclusions on the relationship between the property type and
the quality attributes very accurately. However, one can surmise that the traditional rentals also
seem to entice the customers to look for a common quality attribute, Cleanliness, as a measure of
the stay, maybe because of their familiarity with the lodging industry. On the other hand, the
customers renting unusual property types may depend on the Accuracy of the information
presented because of the newness of the rental. This generalized approach will need to be tested
with additional research.


Table 24

*Regression Beta Values and the Order of Relative Importance of Each Quality Attribute by Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Most Important Attribute</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Least Important Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td>Cleanliness rating</td>
<td>Accuracy Rating</td>
<td>Value Rating</td>
<td>Communication Rating</td>
<td>Location Rating</td>
<td>Check-in Rating</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>Check-in Rating</td>
<td>Accuracy Rating</td>
<td>Value Rating</td>
<td>Location Rating</td>
<td>Cleanliness rating</td>
<td>Communication Rating</td>
</tr>
<tr>
<td>Bungalow</td>
<td>Cleanliness rating</td>
<td>Location Rating</td>
<td>Value Rating</td>
<td>Accuracy Rating</td>
<td>Check-in Rating</td>
<td>Communication Rating</td>
</tr>
<tr>
<td>Cabin</td>
<td>Value Rating</td>
<td>Accuracy Rating</td>
<td>Cleanliness rating</td>
<td>Communication Rating</td>
<td>Location Rating</td>
<td>Check-in Rating</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>Value Rating</td>
<td>Cleanliness rating</td>
<td>Location Rating</td>
<td>Accuracy Rating</td>
<td>Communication Rating</td>
<td>Check-in Rating</td>
</tr>
<tr>
<td>Condominium</td>
<td>Cleanliness rating</td>
<td>Communication Rating</td>
<td>Accuracy Rating</td>
<td>Value Rating</td>
<td>Location Rating</td>
<td>Check-in Rating</td>
</tr>
<tr>
<td>Property Type</td>
<td>Most Important Attribute</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Least Important Attributes</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>Accuracy Rating</td>
<td>0.339</td>
<td>0.245</td>
<td>0.216</td>
<td>0.189</td>
<td>0.077</td>
</tr>
<tr>
<td></td>
<td>Cleanliness rating</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Guesthouse</td>
<td>Cleanliness rating</td>
<td>0.486</td>
<td>0.211</td>
<td>0.209</td>
<td>0.127</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>Value Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House</td>
<td>Cleanliness rating</td>
<td>0.534</td>
<td>0.318</td>
<td>0.210</td>
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<td>-0.053</td>
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<tr>
<td></td>
<td>Value Rating</td>
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<td></td>
<td>Accuracy Rating</td>
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<td></td>
</tr>
<tr>
<td>Loft</td>
<td>Accuracy Rating</td>
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<td>0.146</td>
<td>0.070</td>
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<tr>
<td></td>
<td>Cleanliness rating</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place</td>
<td>Accuracy Rating</td>
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<td>0.310</td>
<td>0.276</td>
<td>0.128</td>
<td>0.050</td>
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<tr>
<td></td>
<td>Cleanliness rating</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tent</td>
<td>Accuracy Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>
Table 24 (Continued)

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Most Important Attribute</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Least Important Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Room</td>
<td>Cleanliness rating</td>
<td>0.412</td>
<td>0.410</td>
<td>0.266</td>
<td>0.085</td>
<td>0.084</td>
</tr>
<tr>
<td></td>
<td>Accuracy Rating</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check-in Rating</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Accuracy Rating</td>
<td>0.329</td>
<td>0.235</td>
<td>0.175</td>
<td>0.164</td>
<td>0.125</td>
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<tr>
<td></td>
<td>Cleanliness rating</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check-in Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location Rating</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>0.404</td>
<td>0.241</td>
<td>0.201</td>
<td>0.128</td>
<td>0.081</td>
</tr>
</tbody>
</table>
Hypothesis 3

Hypothesis 3 tested the pre-notion about the status of the six quality attributes based on the Penalty-Reward Contrast Analysis model. Considering all types of accommodations offered by Airbnb, the six quality attributes were thought to be categorized as follows: Cleanliness and Communication will be Basic Factors; Accuracy and Check-in will be Performance Factors, and Location and Value will be Excitement Factors. Table 25 below summarizes the results of this analysis. The results show that none of the pre-notions of the researcher were proven to be correct. All six of the hypotheses were rejected through this analysis.

The quality attributes, Cleanliness and Communication were found to be Performance and Excitement factors respectively instead of Basic Factors. The quality attributes, Accuracy and Check-in were found to be Excitement Factor and Basic Factor respectively instead of Performance Factor. Similarly, the quality attributes, Location and Value were found to be Performance factors instead of Excitement factors. Sthapit and Jiménez-Barreto (2018) state some recommendations in their research for improving guests’ positive experience, such as the hosts’ providing intense Communication with guests; maintaining a friendly relation with guests during the stay and providing related information to guests regarding local area and tourist attraction. Wang and Jeong (2018) state that people are patronizing Airbnb services at a higher rate because of its user-friendly website and secure financial transactions.

Without consideration of the type of property, quality factors, Cleanliness, Location and Values were found to be Performance factors indicating that a higher level of the quality
attributes leads to higher overall quality ratings. Previous research as asserted that the Cleanliness, Location and value of a lodging facility is a critical gauge for assessing the overall quality (Siercks, 2015; Valentin & O’Neill, 2019). This research found that Check-in is a Basic Factor instead of a Performance Factor. The result shows that Airbnb customers do not perceive the value of overperformed in this area as the overall rating plateaus with increasing Performance in the quality attribute Check-in. With a variety of check in processes being used by the different property types at Airbnb, it may be difficult to assess the overall result in this area without more information about the property’s operations. Without consideration of the type of property, the quality factors Communication and Accuracy were found to be Excitement Factors in this study. Given the Airbnb model, where customers rent a facility without any previous knowledge about the host/hostess or the quality of the facility other than what is advertised, it seems prudent that both Communication and Accuracy would be Excitement factors. The Basic premise that the renters may be making is that they are not expecting the host/hostess to be as communicative or the advertisement to be as accurate as stated. In such a case, any efforts in that regard may elevate the overall satisfaction of the guest making them an Excitement Factor.

Table 25

Summary Results of Tests for Hypothesis Three

<table>
<thead>
<tr>
<th>Quality Attribute</th>
<th>Ho (Null Hypothesis)</th>
<th>Actual Findings</th>
<th>Ho Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness</td>
<td>Basic Factor</td>
<td>Performance Factor</td>
<td>Rejected</td>
</tr>
<tr>
<td>Communication</td>
<td>Basic Factor</td>
<td>Excitement Factor</td>
<td>Rejected</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Performance Factor</td>
<td>Excitement Factor</td>
<td>Rejected</td>
</tr>
<tr>
<td>Check-in</td>
<td>Performance Factor</td>
<td>Basic Factor</td>
<td>Rejected</td>
</tr>
</tbody>
</table>
Table 25 (Continued)

<table>
<thead>
<tr>
<th>Quality Attribute</th>
<th>Ho (Null Hypothesis)</th>
<th>Actual Findings</th>
<th>Ho Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Excitement Factor</td>
<td>Performance Factor</td>
<td>Rejected</td>
</tr>
<tr>
<td>Value</td>
<td>Excitement Factor</td>
<td>Performance Factor</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**Hypothesis 4**

Hypothesis 4 surmised that that type of property will have an influence on the quality attributes’ status as a Basic or Performance or an Exciting Factor. Table 25 summarizes the results of such an analysis where each of the six quality attributes is categorized for the fourteen property types. The results show that there is a variation in the status of the quality attributes based on the type of property. Generally, most of the quality attributes were found to be Performance facts for the fourteen types of properties which is a more refined result obtained in hypothesis 3. This indicates that for most of the properties, higher Performance in the six quality attributes will generally lead to higher overall ratings.

Communication was found to be a Basic Factor for Tent, Private Rooms, Others and B&Bs. The fact that such specialized rentals require more information for renting and therefore implies an expectation of such, it seems logical that over-Performance in this area will not lead to higher overall scores. Accuracy and Cleanliness were found to be an Excitement Factor for Condominiums, Cabins, Place, Private Room, and Others. Such rentals depend on the accurate representation of the property and a clean premise to enhance the satisfaction of the customers. If the level of Accuracy and Cleanliness is great, it would lead to a more wholesome experience and therefore be Excitement factors. Research conducted by Lutz & Newlands, (2018), found that customer segmentation is an important factor for using Airbnb’s properties. The “shared
room” user guests are totally different from “entire home” users and factors such as: gender, income, education, and tour types are responsible for the differences. After analyzing survey data and Airbnb listed properties, the researchers found that demographic and behavioral criteria are mainly responsible for customer segmentation for using Airbnb’s property.

Check-in was found to be Basic Factor for Guest Suites, Private Rooms, Tent and Others. In all such properties, the requirement for a specialized Check-in process is expected by the customers. Therefore, an over-Performance in this area will not lead to higher levels of overall quality ratings. Location was found to be a Basic Factor for Tents, Cabins and Others. The guests willing to rent such type of properties that are expecting a unique Location and therefore a wonderfully unique Location is not expected to enhance their overall quality ratings. Value was found to be a Basic Factor for B&Bs, Cabins, Place, Private Room and Tents. Such property rentals imply a higher rental fee because of the personalization, privacy or Location and therefore any attempts to enhance the Value would be negated by the higher price already paid. Therefore, an increase in value has a limit in increasing the customers’ overall quality ratings.
Table 26

*Quality Attribute Status by Property Type*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Communication</th>
<th>Accuracy</th>
<th>Cleanliness</th>
<th>Check-in</th>
<th>Location</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>B&amp;B</td>
<td>Basic</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Basic</td>
</tr>
<tr>
<td>Bungalow</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>Cabin</td>
<td>Performance</td>
<td>Excitement</td>
<td>Performance</td>
<td>Performance</td>
<td>Basic</td>
<td>Basic</td>
</tr>
<tr>
<td>Camper/RV</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>Condominium</td>
<td>Performance</td>
<td>Excitement</td>
<td>Excitement</td>
<td>Performance</td>
<td>Performance</td>
<td>Excitement</td>
</tr>
<tr>
<td>Guest Suite</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Basic</td>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>Guesthouse</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>House</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
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<td>Loft</td>
<td>Performance</td>
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<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
<td>Performance</td>
</tr>
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<td>Place</td>
<td>Excitement</td>
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<td>Excitement</td>
<td>Excitement</td>
<td>Excitement</td>
<td>Basic</td>
</tr>
<tr>
<td>Tent</td>
<td>Basic</td>
<td>Basic</td>
<td>Basic</td>
<td>Basic</td>
<td>Basic</td>
<td>Basic</td>
</tr>
<tr>
<td>Private Room</td>
<td>Basic</td>
<td>Excitement</td>
<td>Excitement</td>
<td>Basic</td>
<td>Performance</td>
<td>Basic</td>
</tr>
<tr>
<td>Others</td>
<td>Basic</td>
<td>Excitement</td>
<td>Excitement</td>
<td>Basic</td>
<td>Basic</td>
<td>Excitement</td>
</tr>
</tbody>
</table>
Practical Implications

The overall conclusion that can be made from this research is that Airbnb owners/providers should be confident about their Performance in terms of the overall satisfaction of their customers. The customers have generally rated the properties over 90% overall and for all the six quality attributes. While this high rating is commendable, it also implies a highly competitive market were minute variations in the ratings may lead to loss or gain of customers. When considering the six attributes independently, it seems that Cleanliness is the most influential in terms of increasing overall satisfaction followed by Value. The least important attribute seems to be Location. It would behoove the owners irrespective of the type of property owned in Tennessee to pay close attentions to the most important factors to enhance customer ratings.

Traditional accommodation types such as Guest House, Apartment, Private Rooms, Condominiums, Bungalows, and House rated Cleanliness as the most important attribute identifying the focus areas for such properties. Some unusual rentals such as Loft, Tent, Place, and Others rated Accuracy as being the most important and such owners must place a greater emphasis on ensuring the truth in the advertising marketing functions they perform. Cleanliness stands out as the common attribute in ratings the overall quality at Airbnb and hotels. The customer’s familiarity with this attribute from their usual travel and rental at hotels implies that Airbnb owners should continue to emphasize Cleanliness.

The quality attributes, Cleanliness and Communication were found to be Performance and Excitement factors respective. The quality attributes, Accuracy and Check-in were found to be Excitement Factor and Basic Factor respectively. The quality attributes, Location and Value were found to be Performance factors. At the aggregate level, without consideration of the type
of property, this research shows that there is an opportunity for Airbnb owners to increase their overall ratings by exceeding the expectations of their customers through better Performance in Communication and Accuracy. This may mean faster and better-quality Communication with guests and ensuring that all promises made are kept.

When considering the type of property, most of the quality attributes were determined to be Performance factors implying that a higher Performance is those attributes would lead to higher overall ratings. It would behoove most types of properties to consider the six factors as the bases for enhancing their overall ratings with some exceptions. For example, Communication was found to be a Basic Factor for Tent, Private Rooms, Others and B&Bs. In that regard, the owners of such properties may not want to overperform in Communication since it may not enhance the overall ratings. Similarly, Accuracy and Cleanliness were found to be an Excitement Factor for Condominiums, Cabins, Place, Private Room, and Others. Such rentals that engage in more personalized rental will gain a lot in overall ratings just by reaching the threshold expectations of their customers for Accuracy and Cleanliness.

Limitations

The high property quality ratings with very low variance available in the data used for this research required the use of an index methodology for distinguishing between high- and low-quality ratings among the customers. This variation may have influenced the classification of the properties into the categories.

The lack of demographic information of the customers in this purchased database makes it very hard to make conclusions on the relationship between the property type and the quality attributes.
**Future Research**

The current research could not obtain any related demographical information of Airbnb’s guests and hosts in Tennessee. For example, it would have been interesting to assess which age groups are renting the traditional type accommodation such as Apartment, Guesthouse, Private Rooms, and Hose or nontraditional accommodation such as Tent, Camper/RV, and loft. Relating such data to the quality ratings are suggested for future research.

The research only considered the six-quality attribute (Accuracy, Cleanliness, Check-in, Communication, Location, and Value) for quality ratings and these six quality attributes were available through Airbnb. There are other important factors such as safety, security, and relative price that can be considered by future studies.

Tourists have many reasons for renting Airbnb’s properties. Guests can rent Airbnb’s properties for business purposes, recreation purposes, or social activities. The current research did not get any information regarding the guests’ purposes for renting the Airbnb’s listed properties. Future research can consider the renting purpose of Airbnb’s properties for a better understanding of why guests are diverting to Airbnb’s properties compared to hotels.
References


Richardson, J. (2013). The real sharing economy is booming (and it’s not the one venture capitalists are cashing in on). Retrieved from https://www.alternet.org/2013/11/real-sharing-economy-booming-and-its-not-one-venture-capitalists-are-cashing/


Sundararajan, A. (2016). The sharing economy: The end of employment and the rise of crowd-based capitalism Mit Press. Retrieved from https://books.google.com/books?hl=en&lr=&id=2Zz2CwAAQBAJ&oi=fnd&pg=PR7&q=The+sharing+economy:+The+end+of+employment+and+the+rise+of+crowd-based+capitalism&ots=sJo9SeN-0d&sig=8GetCJyaYptasuooM5jhHnx7yI#v=onepage&q=The%20sharing%20economy%A%20The%20end%20of%20employment%20and%20the%20rise%20of%20crowd-based%20capitalism&f=false


Tag archives: Airbnb banned host


