DETERMINING FACTORS OF THEME PARK ATTENDANCE

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DETERMINING FACTORS OF THEME PARK ATTENDANCE

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Abstract

The purpose of this study is to explore the factors that affect theme park attendance. Some of these factors are theme park specific, such as the type of attractions offered. Other factors are geographic and locational, such as the population of the city and the weather. Through the study of 86 theme parks around the world, this paper presents a model that estimates the changes in attendance caused by a variety of factors.

KEYWORDS: (Theme Park, Amusement Park, Attendance)
I would like to thank my entire family, especially my mother Clara and my father Bjorn for raising me to be the person I am today and giving me the opportunity to continue studying.

Also I would like to thank my brother Diego for his continued friendship and support even through the tough weeks of Econometrics.

Finally, I would like to thank my girlfriend Elizabeth who has inspired to me to look at the world with different eyes and changed my life from the moment we met.
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This paper would not have been possible without the mentoring and help of Pedro de Araujo. Thank you for all your hard work and advice throughout this project.
CHAPTER I
INTRODUCTION

The tourism industry is no doubt a large part of most national economies and Amusement Parks are an important part of this industry. Over the last hundred years, Amusement Parks and more specifically theme parks, have become a top destination for many travelers. In the U.S alone theme parks were able to attract 341 million visitors in 2007\(^1\). Most of the research on the factors that make some theme parks more successful than others is qualitative in nature. Through quantitative research, this paper explores the many aspects that make theme parks a top destination for travelers around the world.

This paper follows Heo et al. (2009) definition of theme parks as “an aggregation of themed attractions, including architecture, landscape, rides, food services, costumed personnel, and retail shops\(^2\).” Amusement Parks have a long history that can be traced back to the medieval ages\(^3\). During that period of time, amusement parks took the form of traveling fairs. Today, the tradition of traveling fairs remains alive in state fairs, county fairs, and renaissance festivals. However, this paper focuses on Amusement parks that are established as destinations rather than traveling

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\(^3\) Ibid
attractions. This type of park, more commonly referred to as a theme park, developed in the U.S. in the late 1800’s. The first of its kind came into existence in 1893 as the Colombian exposition held in Chicago⁴. However, the first important theme park was developed by trolley operators aimed at attracting weekend visitors and was also opened in the late 1800’s at the beach resort of Coney Island in New York. Halfway through the 20th century, Walt Disney created the Disneyland theme park near Los Angeles, California and established the blueprint for what most successful theme parks look like today. The type of theme park of interest in this paper is the latter.

The purpose of this study is to determine which characteristics of theme parks have the greatest pull in attracting visitors. This translates directly to determining which theme parks are the most profitable as more costumers usually results in higher profits. In the U.S. alone, consumers spent $12 billion U.S. dollars in 2007 related to theme park visits⁵. As mentioned before, not much research has been done on what factors attract more visitors; therefore, it is important to create a model that explains how the different characteristics of theme parks affect attendance. Creating a successful theme park that attracts large numbers of visitors can have great benefits for the local economy. As an example, the theme park industry in the U.S. provides 500,000 jobs annually. Furthermore, local businesses may also profit from the tourists in need of hotel accommodations, food services, and other forms of entertainment. For entrepreneurs and businesses creating new theme parks, this paper will be a good reference when making decisions on the number and types of attractions to be housed

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by the new theme park. For current operators, this paper will also serve as a good reference point when making decisions regarding the construction of new attractions.

This paper hypothesizes that there are several important factors affecting theme park attendance. The factors fall into two categories: locational and theme park specific. It is the contention of this paper that theme park specific factors are the more important of the two categories. More specifically, the quality of the theme park and its attractions is expected to be of utmost importance. This is followed in importance by the type and number of attractions offered and the theme park’s relationship to a parent company. Locational factors may help to better understand the factors that attract more visitors. However, locational factors are not expected to have as much of an impact as theme park specific factors, because theme parks by definition create a themed world where visitors can escape their direct surroundings.

The rest of this paper is organized as follows. Chapter II reviews several prior studies relating to success factors of attendance. Chapter III provides insight into the data collected for this study. Chapter IV describes the model and the related theory. Chapter V postulates the estimated results along with a discussion of the results. In Chapter VI this paper draws the final conclusions and proposes suggestions for future research.
CHAPTER II
LITERATURE REVIEW

The majority of research on theme park attendance focuses mostly on exploratory or qualitative studies. Therefore, there exists a lack of empirical quantitative research on the factors that determine theme park attendance. However, there is a substantial amount of research on the determinants of attendance of other entertainment industries. Since theme parks offer a form of entertainment, other entertainment industries serve as an interesting substitute for the lack of quantitative research. This paper attempts to fill in the existing gap by contributing a quantitative study that provides insight into the factors that determine theme park attendance. In order to attain a better understanding of the factors that determine attendance, this section of the study is organized in the following way: a review of exploratory and qualitative theme park studies, then a review into the demand for sport that serves as a substitute for the lack of quantitative research on theme parks, and finally a review of other relevant studies.

Theme Park Studies

Although most theme park studies are qualitative and exploratory, they provide important insight into consumer preferences and, therefore, are important components of theme park research. Since it is consumer preferences that determine attendance, the results of the qualitative studies should be quite similar to the results of this paper.
McClung (1991) finds that the most important factors influencing attendance is the climate. In his survey, he found that inclement weather decreased consumers desire to attend theme parks. However, Pikkemaat et al. (2007) do not find climate to be as important in determining attendance. In ranking their success factors, Pikkemaat et al. (2007) find that the weather is the fifth most important factor and consider it of only average importance. Since the weather is a possible deterrent of attendance it is important to understand whether the effects are significant or not.

Not surprisingly McClung (1991) finds that consumers who had a strong preference for theme parks showed greater desire to attend theme parks. Furthermore, McClung (1991) found that children’s desire to attend theme parks was of great importance as was the cost of attending. Similarly, Ryan et al. (2010) finds that the third leading motive to attend theme parks was to spend time with the family and was within one standard deviation of the top motive, which is theme park safety. Children’s desire to attend and time spent with the family are very similar in nature. In order to model the influencing factors of theme park attendance, this paper uses family attractions as the variable that accounts for children’s desire to attend theme parks and the motive to spend time with the family. With regard to cost, Ryan et al. (2010) find that price is the seventh most important factor suggesting that theme park attendance is price inelastic.


In a study of theme parks located in Midwestern and Southeastern states of the U.S., McClung (1991) also produced interesting results on the type of attractions that consumers prefer\(^4\). The most important type of attraction was one that promoted learning. It was followed by variety of restaurants. The fourth most important factor was the availability of general shows and entertainment. Surprisingly, McClung (1991) found that roller coasters and thrill rides are not in the top five most important components of theme parks and that gift and souvenir shops were the least important components of theme parks in determining success. Other literature finds similar yet different results. Pikkemaat et al. (2007) find that the multivariate range of attractions is the second most important factor in determining theme park success\(^5\). These results support the claim that variety of restaurants and shows are an important factor in attracting visitors because these are attractions that give visitors a wide range of experiences. Furthermore, their results are consistent with the claim that spending time with the family and kids is also an important factor. Dining experiences and shows provide a great opportunity for families to spend time together. However, souvenir and gift shops are also part of achieving a multivariate range of attractions and also provide a good opportunity to spend time with the family and therefore Pikkemaat et al. (2007) consider it an important determinant of theme park success.

Perhaps the most interesting factor in determining theme park success is the effects of branding. Branding results when a theme park incorporates established trademarks, images, and ideas into the entertainment provided at the theme park. The


classic example is Disneyland. Here the theme park uses established cartoon characters
from the Disney entertainment company and incorporates them into the attractions at
the theme park. Pikkemaat et al. (2007) find branding to be quite important and ranks it
as the fourth most important factor in determining theme park success. On the other
hand, McClung (1991) finds that cartoon character, movie based rides and
entertainment, and big name entertainment all rank near the bottom of types of
attractions having the greatest appeal.6

Sports Attendance Studies

Sports competitions, like theme parks, provide a form of entertainment where
consumers attend a venue for the day and enjoy the attractions. In the case of theme
parks, the attractions are the rides, shows, dining, and shopping; while in the case of
sporting events the attractions are the sporting competitions, the venue, shopping, and
dining. Although somewhat different types of entertainment theme parks and sporting
events are similar enough that sporting competition serve as a good substitute for the
lack of quantitative theme park research.

One of the most important traits in shaping the success of any product or service
is the quality of the product. Marburger (1997) finds this to be the case in the attendance
of baseball games. His paper finds that the quality of the team is one of the most
important factors in determining attendance.7 In other words, the quality of the sporting
event is based on the quality of the home team. Better home teams, teams with more

7 Daniel R. Marburger "Optimal ticket pricing for performance goods." Managerial and Decision
Economics - 18, no. 5 (- 1997): - 375-- 381.
wins, attract more attendance than worse teams. Similarly, in their study of NCAA division one football attendance, Price et al. (2003) find that their results “underline the primary importance of the home team’s past success on the field”\(^8\). Home teams which have been successful in the past attract more spectators, because they are more likely to have success again and therefore elevate the quality of the entertainment. Furthermore this also seems to be the case for European sports. Similar to U.S. studies, Schofield (1983) finds that for cricket attendance in the U.K., one of the most important factors is the quality of the home team measured by their previous success on the field\(^9\). However, Welki et al. (1994), find that whether a home team has been winning in the past or not is not a major determinant of game day attendance in the NFL\(^10\).

Almost every product or service available to consumers faces some sort of competition and shares the market with similar products. Price et al. (2003) finds that college football teams located near professional NFL football teams attract significantly less spectators than those not located near a professional franchise. The diminishing fan support is due to the fact that college teams and professional teams offer two very similar products and compete for the same share of consumers. Similarly, Marburger (1997) finds that two Major League Baseball teams located within the same standard metropolitan statistical area (SMSA) experience less attendance than teams not sharing


an SMSA$^{11}$. Although it is intuitive that theme parks are in a similar position, it is important to understand that theme parks are tourist destinations and therefore more options may attract more customers.

Most sporting events, like theme parks, are held outside; therefore, the experience of the entertainment is often influenced by weather conditions. Welki et al. (1994) find that weather conditions exert little influence on whether or not NFL fans attend a sporting event$^{12}$. Furthermore, Price et al. (2003) also find that the weather has no particular effect on college football attendance$^{13}$. As Welki et al (1994) note, football fans appear to be harder than other sporting fans. Furthermore, since the football season occurs in the fall and winter during colder months, “football fans may just accept the weather as part of the game”$^{11}$. This also seems to be the case for professional soccer attendance in the U.K. Bird (1982) finds that the weather had no significant effect on attendance for league football matches. However, Schofield (1983) finds that a cricket fan’s decision to attend a professional cricket match is negatively affected when there is inclement weather$^{14}$. Drever et al (1981) also find that for Australian league football the weather has a significant effect on whether spectators decide to attend a

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match or not. Our study provides results on weather effects for yet another entertainment industry.

Another interesting result that comes from the sports literature is the effect of branding. Most professional teams have been around for a longtime and have established a well-known brand name throughout the sports markets. However, because of budget constraints or lack of exposure, most college teams do not enjoy this advantage. Therefore, many college teams rely on their conferences to help them achieve a similar result as branding. Price et al (2003) find that attendance varies with the member conference of the college. Moreover, conferences with a tradition of good football teams such as the SEC, the Big 12, and the PAC 10 experience higher levels of support and fan attendance compared to the other conferences. Some theme parks are owned by parent companies that rely on branding to attract consumers and, therefore, branding may be the most important factor in determining attendance.

Other Relevant Studies

Theme parks encompass many different types of entertainment and, more often than not, include show attractions (live or films) and educational attractions such as live animal attractions and museum type attractions. Therefore, it is both important and relevant to include a discussion of similar entertainment services.

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Luksetich et al. (1997) find that consumers of museum services, including zoological exhibits and educational experiences, are very price inelastic\textsuperscript{17}. Luksetich et al (1997) attribute this to the fact that most consumers of museum services are tourists and therefore are less sensitive to prices. Theme parks are also in a similar position. They are established as tourist destinations and therefore consumers might also be price inelastic. Furthermore, Luksetich et al (1997) find that attendance is positively associated with quality. This is consistent with other entertainment industry findings. Products and services of higher quality are usually more coveted. Similarly, Cameron (1990) finds that consumers in the cinema industry are also price inelastic\textsuperscript{18}. Cameron (1990) attributes this to the fact that cinemas act like monopolies and, therefore, have no close substitutes. This is often the case in the theme park industry. Most theme parks exist in cities where they are the sole provider of this kind of entertainment. In some cases there exists more than one theme park in a city, but this results only in a small increase of available substitutes.

Perhaps the most interesting aspect of my paper is the effect of branding on theme parks. Theme parks that make use of established brand names and their trademarks consistently enjoy more success than those without branding. Sullivan (1998) studied the effects of branding on automobiles and finds that the only difference in sales between two identical automobiles was branding\textsuperscript{19}. Competing theme parks


offer very similar attractions and services. Therefore, it is important to understand the effects that attaching a brand name has on attendance.

Hence, this paper uses some of the same variables as the studies discussed above to estimate the changes in attendance. *Price*, which was suggested as an important factor influencing desire to attend in theme park related studies is used as a proxy for quality. *Family Attractions*, will be used as it relates to the visitors desire to spend time with the family. *Thrill rides* are included as a variable because by definition theme parks are composed of exciting rides such as roller coasters and presumably this is an important reason why consumers choose to visit theme parks. *Shows* is an aspect of theme parks that is attractive to all visitors and adds to the diversity of attractions available to visitors which was also found to be an important factor in theme park studies for guests visiting theme parks. The weather was found as an important factor affecting attendance in sports studies; therefore, this paper uses the average temperature of a theme park’s location to measure weather. In college football studies it was found that nearby professional sporting events affected game day attendance; this paper uses *number of nearby theme parks* as a measurement of competition between amusement parks.
CHAPTER III

DATA

Estimation of this paper’s model uses data gathered from eighty six theme parks in North America, Latin America, Asia, and Europe. The theme parks of interest in this study are those of major popular interest such as the Six Flags theme parks and the Disney theme parks. These types of theme parks use a structure where consumers pay an admission price and are able to experience all the attractions for no additional cost (excluding dinning and souvenirs). This structure differs from other kinds of theme parks, such as, state fairs, where consumers pay an entrance fee and then have to pay an additional fee to experience each individual attraction. Although this price structure is most common among state fairs and smaller theme parks, some major theme parks also apply this price structure. Although data was available these types of theme parks are omitted from this study. This is due to the fact that it is not possible to determine the cost of visiting pay per ride theme parks. Following is a description of the data gathered on the variables of interest starting with the dependent variable, followed by the independent variables of interest, and ending with the independent control variables. Table 3.1 provides a description of each variable for which data were gathered and table 3.2 provides a summary of descriptive statistics of these variables.
### TABLE 3.1

#### VARIABLE DESCRIPTIONS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>Attendance for the year 2009</td>
</tr>
<tr>
<td>price</td>
<td>Gate price for adults</td>
</tr>
<tr>
<td>fam</td>
<td>Family attractions</td>
</tr>
<tr>
<td>thrill</td>
<td>Thrill rides available at the theme park</td>
</tr>
<tr>
<td>shows</td>
<td>Shows hosted by a theme park</td>
</tr>
<tr>
<td>shops</td>
<td>Number of souvenir shops</td>
</tr>
<tr>
<td>climate</td>
<td>Average yearly temperature of theme park’s location</td>
</tr>
<tr>
<td>ntheme parks</td>
<td>Number of theme parks in the city</td>
</tr>
<tr>
<td>popcity</td>
<td>City population of theme park’s location</td>
</tr>
<tr>
<td>brand</td>
<td>Dummy variable corresponding to 1 if theme park uses and established brand name or trade mark.</td>
</tr>
<tr>
<td>water</td>
<td>Dummy variable corresponding to 1 if theme park is a water park</td>
</tr>
<tr>
<td>europe</td>
<td>Dummy variable corresponding to 1 if theme park is located in Europe 0 otherwise</td>
</tr>
<tr>
<td>asia</td>
<td>Dummy variable corresponding to 1 if theme park is located in Asia 0 otherwise</td>
</tr>
<tr>
<td>latin america</td>
<td>Dummy variable corresponding to 1 if theme park is located in Latin America 0 otherwise</td>
</tr>
<tr>
<td>restaurants</td>
<td>Number of restaurants</td>
</tr>
</tbody>
</table>

#### Dependent Variable

The most obvious measurement of theme park success is revenue generated by visitors attending the theme parks. However, revenue statistics are a highly guarded secret by individual theme parks and, therefore, unavailable publicly for research purposes. Nevertheless, theme parks are more relaxed about attendance figures than revenue figures and, therefore, attendance statistics have better availability than revenue figures. Using attendance as a measurement of success is considered reasonable because theme parks with a high number of consumers are also likely to have a high amount of revenue and vice versa. Therefore, \( \text{Attendance} \) is the dependent variable by which success is measured and is represented by the attendance data for theme parks in the year 2009.
Head counts for attendance were gathered from the 2009 Theme Index Report supplemented by attendance figures published by online newspapers\(^1\). Average attendance was 3.16 million visitors per year with the highest attendance of 17.2 million at Disney World’s Magic Kingdom and the lowest attendance of 100 thousand.

**Independent Variables**

*Price* is the gate price for an adult for one full day of admission to one theme park. It is important to make the distinction that admission prices are for one-day admission at one theme park, because some theme parks offer bundle packages where for a premium attendance to more than one theme park is included. Price statistics were gathered from individual theme park websites and converted into 2010 U.S. dollars. The price statistics show an average price of $49.38 dollars with the highest price of $87.33 and lowest price of $15.61. Furthermore, the data suggests that price as a proxy of quality has a somewhat strong positive correlation of 0.65 with attendance.

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## Table 3.2
### DATA DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation With Attendance</th>
<th>Average</th>
<th>High</th>
<th>Low</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
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<td>3,155,8114</td>
<td>17,200,000</td>
<td>100,00</td>
<td>3566071</td>
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<td>price</td>
<td>0.649</td>
<td>$49.38</td>
<td>$87.33</td>
<td>15.61</td>
<td>17.87</td>
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<tr>
<td>fam</td>
<td>0.037</td>
<td>23.14</td>
<td>81</td>
<td>2</td>
<td>14.02</td>
</tr>
<tr>
<td>thrill</td>
<td>-0.175</td>
<td>8.67</td>
<td>26</td>
<td>0</td>
<td>5.61</td>
</tr>
<tr>
<td>shows</td>
<td>0.354</td>
<td>5.23</td>
<td>35</td>
<td>0</td>
<td>5.84</td>
</tr>
<tr>
<td>shops</td>
<td>0.588</td>
<td>13.24</td>
<td>60</td>
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<td>climate</td>
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<td>60.11</td>
<td>76</td>
<td>43</td>
<td>9.38</td>
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<td>10</td>
<td>1</td>
<td>2.34</td>
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<tr>
<td>popcity</td>
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<td>22,000,000</td>
<td>16</td>
<td>465368.26</td>
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<td>0.593</td>
<td>51</td>
<td>-</td>
<td>-</td>
</tr>
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<td>water</td>
<td>-</td>
<td>0.244</td>
<td>21</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>europe</td>
<td>-</td>
<td>0.209</td>
<td>18</td>
<td>-</td>
<td>-</td>
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<td>asia</td>
<td>-</td>
<td>0.151</td>
<td>13</td>
<td>-</td>
<td>-</td>
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<td>latin america</td>
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<td>0.058</td>
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<td>-</td>
</tr>
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<td>North America</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>size</td>
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<td>185.02</td>
<td>3459</td>
<td>18</td>
<td>377.7595</td>
</tr>
<tr>
<td>restaurants</td>
<td>0.4696</td>
<td>16.32</td>
<td>50</td>
<td>1</td>
<td>9.80</td>
</tr>
<tr>
<td>observations</td>
<td>86</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Fam* and *thrill* are family attractions and thrill ride attractions respectively.

Attraction data was gathered from the websites of individual theme parks and then sorted into family attraction or thrill attraction based on the theme parks description of the rides as thrill rides or family attractions. It is important to note that children’s attractions were grouped into family attractions because these are attractions more commonly experienced by the entire family. If one looks at different theme park websites, one can find that similar attractions at different theme parks are consistently grouped into thrill attractions or family attractions. The average theme park plays host to around 23 family attractions and 8 thrill rides. However, some theme parks are more
family oriented with Europa Park in Rust, Germany being the most family oriented, 81 family attractions. Other parks are more thrills oriented with Michigan Adventure having the most thrill rides and hosting 26 thrill attractions. Family attractions show very small positive correlation to attendance while thrill rides show a very weak negative correlation to attendance.

*Shows,* refers to the number of entertainment attractions that theme parks host. There are two kinds of entertainment attractions: live shows and films. Live shows are attractions where visitors experience live acting and live animal shows; while films are attractions like cinemas where 3D films are often the main focus. On average, the data shows that theme parks offer around five shows. The highest number of shows offered at one theme park was 35 at Port Aventura in Spain, while some theme parks choose not to offer any shows at all. These types of attractions are grouped into a different category, because they neither fall into family attractions, although the entire family often experiences them together, nor are they thrill rides; they are a unique type of attraction. Data for *shows* was gathered from individual websites and includes only shows that are performed or shown on a regular basis. Excluded from this study are shows, such as concerts or performance plays, which occur annually or have an irregular schedule, because irregularly scheduled shows are not part of the daily experience at theme parks. The data suggests that shows are weakly correlated to attendance.

*Dine* refers to the number of restaurants in a theme park. While restaurants differ based on fast food or a seated dining experience, both are grouped into *dine* for simplicity. The numbers for *dine* were also collected from individual theme park
websites. The results show that *dine* has a somewhat strong correlation with attendance. The average theme park offers around 16 dining venues. Some theme parks offer an extensive number of restaurants; of the 86 theme parks studied, Europa Park in Germany offers the highest number of restaurants at 50. An important note on dining is that candy shops are not considered restaurants but rather souvenir shops and therefore are included in the next variable.

*Shops* is a measurement of the number of souvenir shops located within the theme park. Included in this category are gift shops, camera shops, candy stores, face painting, caricature drawing, and souvenir shops. Excluded from this category are stroller rental shops and wheelchair rental shops, because they do not offer a theme park specific service and are experienced by a minority of costumers. The data collected from theme park websites suggests that there is a medium to strong positive correlation of 0.5873 between attendance and number of souvenir shops. The average theme park hosts around 13 souvenir shops. All theme parks studied offer souvenir shops, some offer a small number of shops with one theme park only offering one souvenir shop, while others offer an extensive number of souvenir shops. Of the theme parks included in our study, Silver Dollar City, in the United States, offered the most souvenir shops at 60 shops.

*Climate* is a measurement of the average yearly temperature of the city where the theme park is located. To control for consistency in climate measurements all temperature numbers were recorded from weatherbase.com\(^2\). In some cases weather data for the city in which the theme park is located was unavailable. In such cases the nearest city was chosen as a weather substitute. This is an acceptable substitute, because

most city substitutes were located within 20 miles of the theme park city and, therefore, have very similar if not identical weather patterns. The data suggests that attendance and climate are weakly correlated. The theme park located in the coldest weather was Canada’s Wonderland in Ontario, Canada and had an average yearly temperature of 42 degrees Fahrenheit. The theme park located in the warmest weather was Beto Carrera World in Brazil and had an average yearly temperature of 76 degrees Fahrenheit.

*Brand* is a dummy variable corresponding to 1 if the theme park uses established brand names or trademarks and 0 otherwise. This data was gathered by carefully analyzing the theme park websites and determining the presence of any trademarks integrated into the attractions. The most obvious example of theme parks using brand names and trademarks are the Disney theme parks. These parks use Mickey Mouse and other cartoon characters to enhance their attractions. Of the 86 theme parks studied 51 theme parks made explicit use of established brand names and trademarks.

**Independent Control Variables**

In order for the study to be as complete as possible, it is important to establish control variables so that the coefficients on the independent variables of interest are as accurate as possible. The first factor controlled for is number of theme parks in the city. *Nparks* is the total count of theme parks located in the same city. Most theme parks are located in cities where they are the sole theme park. Out of the 86 theme parks for which data were gathered, 45 were the only theme parks located in the city.

*Popcity* is a variable that controls for the population of the city in which the theme park is located. Attendance and *popcity* are weakly correlated with a correlation coefficient of 0.1977. The data on population of cities was collected from the official
government statistics for the respective countries in which the theme parks were located and from the official United States census estimates for 2009³. Most of the population numbers are from the year 2009; however, some countries did not have 2009 numbers available in which case the most recent numbers available were used. This may create a small inaccuracy in this paper’s results but the data that was not from 2009 is within one or two years of 2009; therefore, the inaccuracies that may arise from this data discrepancy are considered insignificant.

Another important variable to control for is the size of the theme park. Size is a variable corresponding to the size of the theme parks measured in acres. This data was gathered from theme park websites and from newspaper reports and travel guides on the theme parks. Park size and attendance show no significant correlation. The median of theme park size is 110 acres.

Europe, Asia, and Latin America are all dummy variables that refer to the geographical location of the theme park. Europe is a dummy variable corresponding to 1 if the theme park is located in Europe and 0 otherwise. Asia is a dummy variable corresponding to 1 if the theme park is in Asia and 0 otherwise. Latin America is a dummy variable corresponding to 1 for theme park in Latin America and 0 otherwise. The benchmark variable is North America. The one exception is Mexico, which is located in North America but is grouped into the Latin American countries. Of the 86 theme parks studied, 13 were located in Asia, 5 in Latin America, 18 in Europe, and 50 in North America.

Data were gathered on two types of theme parks: normal theme parks and water parks. Water parks differ from theme parks in that the types of attractions offered are mostly attractions where visitors are in bathing suits and expect to get wet. Therefore, *water* is used as a dummy variable corresponding to 1 if the park is a water park and 0 otherwise. The data came from a careful analysis of theme parks websites and theme parks were considered water parks based on the attractions that they offer. Of the 86 theme parks studied 21 are water parks.
CHAPTER IV
MODEL AND THEORY

Based on similar attendance studies and qualitative theme park studies, attendance is assumed to be a function of price, number and type of attractions, dining and shopping venues, location of the theme park, climate of the location, city population, the type of theme park, number of theme park in the same city, and whether the theme park has an established brand name. Equation 1 shows this relationship in its most basic form.

\[
Atten_i = \alpha_i + F(price_i, fam_i, thrill_i, shows_i, dine_i, shops_i, brand_i, climate_i, nparks_i, popcity_i, water_i, europe_i, asia_i, latinamerica_i) + \varepsilon_i
\]

Where \( Atten \) is theme park attendance; \( price \) is the price of entry; \( fam \) is family attractions; \( thrill \) is thrill rides such as roller coaster; \( shows \) is live shows or film attractions; \( dining \) is available restaurants in theme park, \( shops \) is the number of souvenir shops in the theme park; \( brand \) is whether the theme park makes use of an established name brand; \( climate \) is the average weather of the theme park location; \( nparks \) is number of theme park in the city; \( popcity \) is the population of the city where the theme park is located; \( water \) refers to the type of theme park, water park or traditional; and \( Europe, Asia, and Latin America \) refer to the geographical location of the theme park. \( \varepsilon \) refers to an unknown error term, which is assumed to be normal and not correlated with the independent variables.
Borland et al. (2003) suggest that consumer theory puts forward five main categories\(^1\): (i) consumer preferences; (ii) characteristics of the theme park, types of attractions and available experiences; (iii) economic, such as costs, income, and number of consumers; (iv) quality of the good or service; and (v) supply capacity. This paper groups the variables previously mentioned into these categories except for consumer preferences, which are not included in the model. Following is a more in depth discussion of these categories. Hence, equation 2 incorporates these categories as they pertain to the model.

\[
\text{Atten}_i = \alpha_i + X'_{1i} \Omega + X'_{2i} \Psi + X'_{3i} K + X'_{4i} \Gamma + \varepsilon_i
\]  

(2)

Where Atten, \( \alpha \), and \( \varepsilon \) remain as described and the variables are column vectors composed of variables related to the categories discussed above. \( X'_{1i} \) is theme park characteristics; \( X'_{2i} \) is types of attractions; \( X'_{3i} \) is economic variables; and \( X'_{4i} \) is supply capacity. The parameters are measured by \( \Omega, \Psi, K, \) and \( \Gamma \).

**Theme Park Characteristics**

Theme parks are comprised of family attractions, thrill rides, shows, souvenir shops and dining venues. Based on the assumption of non-satiation where consumers always prefer more to less; thrill, shows, dine, and shops are all expected to be positively related to attendance. This is a logical expectation because holding everything else constant increasing the number of attractions at a theme park should result in more people wanting to attend a particular theme park. However, which specific factor increases attendance the most is uncertain. Ryan et al. (2010) and

McClung (1991) find that spending time with the family is of utmost importance for consumers visiting theme parks\(^2\). Therefore, our expectation is that family attractions have the most influence in attracting attendance.

Another important characteristic of a theme park is its affiliation to an established brand name. Consumers are more likely to purchases a product affiliated with a brand that has an established reputation because consumers are comfortable and trust the brand name. Sullivan (1998) studied the effects of brand names on twin automobiles. Twin automobiles are physically identical cars that are sold by different companies. Sullivan (1998) found that although the cars were physically identical, the demand for the cars was different depending on the brand affiliation of the car\(^4\). This paper suspects that branding on theme parks will have a similar effect. When all other things are held constant, the expectation is that theme parks associated with established brands will have a higher rate of attendance than those not associated with a brand name. Table 4.1 summarizes the expectations for all of the variables used in this paper’s model.


Table 4.1

Expected Variable Signs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>?</td>
</tr>
<tr>
<td>Size</td>
<td>+</td>
</tr>
<tr>
<td>Fam</td>
<td>+</td>
</tr>
<tr>
<td>thrill</td>
<td>+</td>
</tr>
<tr>
<td>shows</td>
<td>+</td>
</tr>
<tr>
<td>shops</td>
<td>+</td>
</tr>
<tr>
<td>climate</td>
<td>?</td>
</tr>
<tr>
<td>Ntheme parks</td>
<td>-</td>
</tr>
<tr>
<td>Popcity</td>
<td>+</td>
</tr>
<tr>
<td>Brand</td>
<td>+</td>
</tr>
<tr>
<td>Water</td>
<td>?</td>
</tr>
<tr>
<td>Europe</td>
<td>?</td>
</tr>
<tr>
<td>Asia</td>
<td>?</td>
</tr>
<tr>
<td>Latin America</td>
<td>?</td>
</tr>
<tr>
<td>Popcity</td>
<td>+</td>
</tr>
</tbody>
</table>

Economic Variables

Economic variables are an important part of any attendance study and, therefore, are included in this paper’s model. Often the types of economic variables included in attendance studies are demographical in nature such as, ethnic composition and average income. However, as mentioned before most theme park visitors are tourists and, therefore, do not form part of the population where the theme park is located. Therefore, these types of variables are left out as they provide little or no information about theme park visitors.

However, there are other important economic variables that affect attendance that are included in our study. Although most visitors are tourists, some visitors come from the city where the theme park is located. Therefore, it is important to control for
city population as theme parks located in larger cities are more likely to attract more consumers. This is simply due to the fact that theme parks located in larger cities have a larger number of consumers to purchase their product. Therefore, \( \text{popcity} \) is expected to have a positive relationship to attendance. As Borland et al. (2003) note, another important economic factor affecting attendance is the availability of substitutes\(^5\). When substitutes are available, similar products have to share the market and, therefore, capture a much smaller share of the market. However, when no substitutes exist, the product or service can capture the entire market. Therefore, the obvious hypothesis is that \( \text{nparks} \) will have a negative relationship to attendance, as theme parks located in the same city will have to share the market while singular theme parks will not experience competition for the same consumers. Nevertheless, it is important to consider that there are cases where having similar venues selling the same product attracts more consumers. This is the case in shopping malls where there are many shops in the same location or downtown areas where bars and restaurants are located near one and other. Therefore, the relationship between attendance and number of theme parks is unclear.

It is important to note that consumers around the world have different tastes and preferences and that these often vary by location. Since this paper studies theme park attendance worldwide, it is important to understand how these preferences vary by region. Although, it is widely known that theme parks in North America are very popular, the popularity of theme parks around the world as compared to North America is unknown. Therefore, the relationship between geographical location and attendance is unclear.

Quality

The overall quality of the experience is composed of the quality of attractions; quality of the service, based on staff friendliness, cleanliness of the venue, and quality of dining services; and the weather. In order to estimate the effect of the quality of attractions and the quality of the services this paper uses the gate price as proxy for quality. The assumption is that products and services of higher quality have a higher price than those of lesser quality. Furthermore, consumers are willing to pay a higher price for products and services of higher quality. Marburger (1997)\(^6\), Welki et al. (1994)\(^7\), and Price et al. (2003)\(^8\) all find that an increase in perceived quality at sporting events lead to an increase in attendance. Therefore, the obvious expectation is that price, as a proxy of quality, will have a positive association with attendance. However, the same sports studies found that higher prices resulted in a decrease of attendance. Therefore, which effect will dominate is unclear and no expectations of the direction of the relationship between price and attendance have been formed.

Since theme parks are outdoor attractions, the quality of the visit is affected by the weather. Inclement weather is likely to decrease the consumer’s desire to attend. Data on past and current weather conditions is easily available to consumers and

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therefore consumers can plan to attend or not attend depending on weather conditions. Weather forecasts are also easily available and fairly accurate and, therefore, consumers could easily change their plans of attendance based on future weather predictions. Rough weather conditions are therefore expected to decrease attendance. However, as Welki et al. (1994) note, pleasant weather conditions should attract larger crowds; nevertheless, these same weather conditions expand the set of outdoor activities which compete with theme parks for consumers’ leisure time. It is unclear which of the two effects dominates and, therefore, better weather may not necessarily increase attendance.

**Supply Capacity**

Theme parks occupy an amount of land that cannot be changed in the short run and offer a number of attraction that also remain fixed in the short run. Given these constraints, theme parks capacity is determined by the size of the park and the number of attractions. Naturally, holding all else constant, larger theme parks are expected to have more attendance than a smaller theme park. However, as Borland et al. (2003) note, when desired attendance is less than capacity no constraint exists on theme parks. On the other hand, when desired attendance is more than capacity rationing occurs and theme parks lose potential consumers. Therefore, larger theme parks should be able to attract more consumers than smaller theme parks, ceteris paribus, and experience higher rates of attendance.

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CHAPTER V
RESULTS AND DISCUSSION

The first approach taken in evaluating the proposed model was using an ordinary least-squared (OLS) regression to estimate the coefficients from equation 2. The results for the OLS model are shown in table 5.1. In the OLS model, the results show price, theme park size, number of shows, climate, shops, nttheme parks, Asia, and Europe as statistically significant factors at a 5% significance level. The dependent variable $\ln(\text{attendance})$ was used in order to better understand the changes in attendance as a percentage. Furthermore, the variables size, fam, shows, and restaurants were found to have a curvilinear relationship to attendance. (See figures A.2, A.3, A.4, and A.5 in appendix A.) Therefore, squared terms of these variables were used to capture the relationship. When testing for heteroskedasticity using the White test, it was found that there was not enough evidence to reject the null hypothesis that there is homoskedasticity. However, this test does not ensure that the model is homoscedastic and in order to correct for any heteroskedasticity problem the OLS model was also estimated using robust standard errors and the results are shown in table 5.1. After further investigation of the residuals variance of the OLS model it was found that the residuals most likely vary as a function of the independent variable popcity. (See figure A.1 in appendix A). Furthermore, there does not appear to be a multicollinearity problem as none of the independent variable show a strong correlation to each other. (See table C.1).
## Table 5.1

**Determinants of Success**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>OLS Model</th>
<th>WLS Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>0.0205(^a) 0.0055</td>
<td>0.0205(^a) 0.0059</td>
</tr>
<tr>
<td>Size</td>
<td>0.0016(^a) 0.0006</td>
<td>0.0016(^a) 0.0006</td>
</tr>
<tr>
<td>Size Squared</td>
<td>-7.06e-07(^a) 1.64e-07</td>
<td>-7.06e-07(^a) 1.49e-07</td>
</tr>
<tr>
<td>Fam</td>
<td>0.0167 0.0126</td>
<td>0.0167(^d) 0.0112</td>
</tr>
<tr>
<td>Fam Squared</td>
<td>-0.0002 0.0002</td>
<td>-0.0002(^c) 0.0001</td>
</tr>
<tr>
<td>Thrill</td>
<td>0.0016 0.0114</td>
<td>0.0016 0.0104</td>
</tr>
<tr>
<td>Shows</td>
<td>0.0464(^b) 0.0217</td>
<td>0.0464(^b) 0.0200</td>
</tr>
<tr>
<td>Shows squared</td>
<td>-0.0017(^b) 0.0007</td>
<td>-0.0017(^a) 0.0006</td>
</tr>
<tr>
<td>Restaurants</td>
<td>0.0165 0.0192</td>
<td>0.0165 0.0183</td>
</tr>
<tr>
<td>Rest. Squared</td>
<td>0.00005 0.0004</td>
<td>0.00005 0.0004</td>
</tr>
<tr>
<td>Climate</td>
<td>0.0167(^b) 0.0074</td>
<td>0.0167(^b) 0.0069</td>
</tr>
<tr>
<td>Brand</td>
<td>0.2548(^c) 0.1345</td>
<td>0.2548(^c) 0.1346</td>
</tr>
<tr>
<td>Shops</td>
<td>0.0137(^b) 0.0067</td>
<td>0.0137(^a) 0.0052</td>
</tr>
<tr>
<td>Ntheme Parks</td>
<td>0.0848(^a) 0.0280</td>
<td>0.0848(^b) 0.0330</td>
</tr>
<tr>
<td>Waterpark</td>
<td>-0.1864 0.2518</td>
<td>-0.1864 0.1701</td>
</tr>
<tr>
<td>Asia</td>
<td>1.1110(^a) 0.2172</td>
<td>1.1110(^a) 0.3203</td>
</tr>
<tr>
<td>Latin America</td>
<td>0.2401 0.2951</td>
<td>0.2401 0.3173</td>
</tr>
<tr>
<td>Europe</td>
<td>0.4974(^a) 0.1508</td>
<td>0.4974(^a) 0.1553</td>
</tr>
<tr>
<td>Popcity</td>
<td>-2.27e-08 2.11e-08</td>
<td>-2.27e-08 3.52e-08</td>
</tr>
<tr>
<td>Intercept</td>
<td>10.8613(^a) 0.6411</td>
<td>10.8613(^a) 0.5722</td>
</tr>
<tr>
<td>F-Stat. Prob.</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.88 0.88</td>
<td>0.95 0.95</td>
</tr>
</tbody>
</table>

Superscripts: \(^a\) significant at 1%, \(^b\) significant at 5%, \(^c\) significant at 10%, \(^d\) significant at 15%
A weighted least-squares regression (WLS) was used as an alternative approach to estimate the model. As mentioned above, the residuals of the OLS model seem to vary with \textit{popcity}; therefore, the variance of the OLS model is most likely a function of \textit{popcity}. In order to create a constant variance, every variable is divided by \sqrt{\textit{popcity}}. Table 5.1 shows the results of the WLS model along with the results of the OLS model. It is important to understand that while the WLS model corrects for a heteroskedasticity problem, the true variance may be misspecified. In order to protect the model against this possibility, the WLS model was also estimated using robust standard errors. Appendix C shows the STATA commands used to obtain the results. The WLS model with the robust standard errors is the preferred model because it reflects the estimated coefficients of equation 2 most accurately. The following discussion of the results is therefore based on the WLS model with robust standard errors.

Overall the results of the model are consistent with the hypothesized relationships. Three variables – \textit{climate}, \textit{price}, and \textit{brand} – isolate different factors attributed to the quality of the visit. Of all the variables estimated in the model, \textit{climate} was the most debated among attendance studies in sports and the qualitative theme park studies. The estimation results indicate a statistically significant positive relationship between the average yearly temperature and attendance. Holding all else constant, a 1 degree Fahrenheit increase in average temperature suggests a 3.7\% increase in attendance. This relationship suggests that theme park visitors are quite sensitive to the weather and are more likely to attend theme parks located in places with comfortable weather conditions. These findings are consistent with McClung (1991), which found
that people rate the weather as the most important factor influencing attendance\(^1\).

Although there is strong evidence that the relationship between climate and attendance is significant, it is worth noting that some theme parks close during the winter months and this was not controlled for in the study and may be a source of bias in our model.

The overall quality of the theme park was measured by the ticket price. The estimation results do not find price to be statistically significant in the preferred model. Nevertheless, across specifications of the other three models, price does appear to be a significant. This does not mean that quality is not an important factor affecting attendance as suggested by Pikkemaat et al (2007); it may be that price is not a good proxy for quality in the preferred model and therefore price is not capturing the relationship between quality and attendance\(^2\).

Another point about the quality of the visit is worth noting. Holding everything else constant, a theme parks association to a brand name appears to affect the number of visitors. The coefficient on the dummy variable brand suggests that theme parks associated with established brand names and trademarks attract more customers. The coefficient on brand is significant at an 11\% percent level. People who argue that theme parks such as the Disney parks have an advantage over theme parks lacking a brand name will find evidence from this analysis as the results show branding as an important factor influencing attendance. The results are also consistent with Pikkemaat et al.


(2007), who find branding to be the 4th most important factor in determining attendance.  

Controlling for all other factors family attractions show a significant positive relationship with attendance. However, the results suggest that the relationship is parabolic in shape and, ceteris paribus, an additional family attraction will result in a smaller increase in attendance than the previous addition. Similarly, shows and restaurants also display the same parabolic relationship to attendance as family attractions and are both statistically significant. This is consistent with the concept of diminishing marginal returns and may be the result of land constraints on theme parks.

It appears that there is delicate balance between the type of attraction and the number of attractions. Therefore, theme park managers should carefully study the composition of the theme park when deciding what type of attraction will result in the highest increase in number of visitors.

Theme parks with a greater number of shops appear to have a greater number of visitors. Holding all else constant, an additional souvenir shop appears to bring in an additional 1.4% visitors. Although certainly not as significant in magnitude as climate or brand, shops is another important determinant of attendance as it provides yet another form of entertainment.

Perhaps the most interesting result from the estimation of the model is the effects of thrill rides on attendance. The results indicate that thrill rides are not a significant factor in determining attendance to theme parks. These results are counter

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intuitive because most theme parks spend a large amount of time, money, and land, constructing these attractions. However, as Ryan et al (2010) note, spending time with the family is of great importance\(^4\). Therefore, people may not consider the number of thrill rides when making the decision to attend because they do not provide an opportunity to spend time with the family. The results differ from the original hypothesis which expected thrill rides to be a major factor determining increases in attendance.

The size of the theme park, measured in acres, appears to have relatively small effect on attendance. The estimated effect also follows an inverse parabolic shape. Increasing acreage seems to increase attendance; however, each additional unit of size increases attendance by a smaller percentage than the previous. Nevertheless, the difference is almost negligible, and the results suggest that theme parks can use size to increase attendance. However, this may not be the best use of resources as the increase is minimal.

Two types of theme parks were studied in this paper: traditional theme parks and water parks. When all factors are controlled for, it does not appear that visitors have a preference between water parks and traditional theme parks. These results may be due to the fact that water parks and traditional theme parks offer very similar services but in a different setting. Nevertheless, consumers seem to have no difference in preference between the two settings.

The variable *nthemepark* served as a measure of the extent to which a theme park experienced competition within the same city limits. The expectation was that as competition increased theme parks would lose attendance to competing theme parks. However, the results indicate the opposite. The estimated relationship between number of theme parks and attendance is positive and significant at the 1% level. As mentioned before, theme parks are tourist destinations. It appears that locating a theme park near another theme park increases attendance. This may be due to the fact that tourists vacationing near theme park venues have a wider range of options available and choose to vacation in places that offer multiple attractions. Therefore, theme park owners who operate the lone theme park in a city may benefit from attracting another theme park or creating another theme park themselves. This relationship also indicates part of the reason why cities like Orlando, Florida and Los Angeles, California are popular destinations for theme park visitors. These cities offer a variety of theme park attractions and other entertainment venues.

This paper encompasses a broad study of theme parks around the world. Dummy variables were used to capture differences in tastes and preferences that arise in different areas of the world. All else constant, theme parks in *Asia* and *Europe* are more popular than theme parks in North America. The results on *Latin America* are not statistically significant; therefore, there is not enough evidence to form a conclusion. Nevertheless, the results on *Europe* and *Asia* are interesting since North America, and the U.S.A. in particular, is considered the mecca and birth place of modern theme parks. These results also may suggest that perhaps the future of the theme park industry may shift to the European and Asian markets.
One last control variable, \textit{popcity}, showed no significant relationship to attendance. Again, this may be due to the fact that theme parks are tourist destinations and therefore people within the city limits are not the primary visitors. These results are congruent to Welki et al. (1994)’s study which find that a “variable measuring population proved to be highly insignificant” in their attendance study for NFL football\textsuperscript{5}.

CHAPTER VI
CONCLUSION AND INDICATIONS FOR FUTURE STUDIES

The results outlined in this paper suggest that theme park attendance is affected by a broad range of theme park specific factors and locational factors. Among the attraction specific factors, the results indicate restaurants as the most influential attraction. This is followed in importance by family attractions, then shows, and finally souvenir shops. The results also suggest that thrill attractions are not a significant component affecting theme park attendance. This result is counter intuitive, as most theme parks spend a great amount of effort advertising this type of attraction. An interesting future study may want to focus on the importance of thrill rides as a publicity factor rather than as a determinant of attendance. Furthermore, this paper grouped roller coasters into thrill rides. It is important to note that while all roller coasters are considered thrill rides, not all thrill rides are roller coasters. Therefore, a continuation of this paper may include a separate category for roller coasters, as this type of attraction may be significant in attracting more visitors. Another type of attraction not discriminated by this paper is animal attractions. Theme parks possessing this type of attraction were not given different considerations than normal theme parks. In order to deepen the understanding of factors affecting attendance, future research can build on this paper and capture the difference between traditional theme parks and those that offer zoological attractions.
Ryan et al. (2010)\textsuperscript{1}, Pikkemaat et al (2007)\textsuperscript{2}, and McClung (1991)\textsuperscript{3} all find the quality of the theme park among the most important factors influencing attendance. However, the use of price in this paper as a proxy for quality may not be a good substitute. Nevertheless, quality may be an important factor in determining attendance and price is not an efficient proxy for quality. Therefore, future studies may focus on merging qualitative data with quantitative data in order to capture the true relationship between quality and attendance. Branding, a factor that may reflect quality, did show a significant positive relationship to attendance. From this paper’s results it clear that theme parks with well established brand names and trademarks possess an advantage in attracting visitors. However, the specific branding factors attributed to the positive relationship are unclear. It would be interesting to break down branding into different factors such as the use of movie and TV character and merchandising brands such as Busch Beer and Coca Cola. This relationship would show the importance of each factor individually and is left for future research.

Locational factors also play an important role in attracting visitors. Of the locational factors the results indicate the weather to be the most significant in magnitude. Theme parks located in warmer climates appear to have an advantage over those located in more frigid climates. Furthermore, theme parks located in Asia and Europe seem to be more popular than theme parks in North America. The difference is

\begin{itemize}
  \item 1 Chris Ryan, Shuo Yeh Shih, and Huan Tzung-Cheng. "Theme parks and a structural equation model of determinants of visitor satisfaction -- Janfusan Fancyworld, Taiwan." \textit{Journal of Vacation Marketing} 16, no. 3 (2010): 185.
\end{itemize}
popularity between continents is unclear. The difference may be due to locational differences in macroeconomic factors such as the rate of unemployment, income, and Gross Domestic Product. A future study may build on this paper’s results and explore the relationship between attendance and locational macroeconomic variables. Furthermore, while this study is a cross-sectional snapshot of theme park attendance in 2009, there is a lack of quantitative studies related to time series analysis of theme park attendance. Thus, a potential area for future study is to build on the results of this paper and analyze longitudinal factors that affect theme park attendance.
APENDIX A

RELATED FIGURES

FIGURE A.1

RESIDUALS VS. POPCITY
FIGURE A.2
THEME PARK SIZE VS. LN(ATTENDANCE)

FIGURE A.3
FAMILY ATTRACTIONS VS. LN(ATTENDANCE)
FIGURE A.4
SHOWS VS. LN(ATTENDANCE)

FIGURE A.5
RESTAURANTS VS. LN(ATTENDANCE)
APENDIX B

THEME PARKS INCLUDED IN THE STUDY

U.S. Theme Parks

Alabama Adventure, Bessemer, Alabama
Magic Springs and Crystal Falls, Hot Springs, Arizona
Disney California Adventure Park, Anaheim, California
Disneyland, Anaheim, California
Knott's Berry Farm, Buena Park, California
Legoland California, Carlsbad, California
SeaWorld San Diego, San Diego, California
Six Flags Magic Mountain, Valencia, California
Universal Studios Hollywood, Universal City, California
Lake Compounce, Bristol, Connecticut
Busch Gardens Tampa Bay, Tampa, Florida
Disney's Animal Kingdom, Lake Buena Vista, Florida
Disney's Hollywood Studios, Lake Buena Vista, Florida
Epcot, Lake Buena Vista, Florida
Magic Kingdom, Lake Buena Vista
SeaWorld Orlando, Orlando, Florida
Silver Springs Nature Theme Park, Ocala, Florida
Universal Studios Florida, Orlando, Florida
Universal's Islands of Adventure, Orlando, Florida
Wild Adventures, Valdosta, Georgia
Silverwood Theme Park, Athol, Idaho
Six Flags Great America, Gurnee, Illinois
Holiday World & Splashin' Safari, Santa Claus, Indiana
Adventureland, Altoona, Indiana
Michigan's Adventure, Muskegon, Michigan
Silver Dollar City, Branson, Missouri
Six Flags Great Adventure, Jackson, Mississippi
Cedar Point, Sandusky, Ohio
Kings Island, Kings Mills, Ohio
Busch Gardens Williamsburg, Williamsburg, Virginia

**International Theme Parks**

Canada's Wonderland, Maple, ON, Canada
Disneyland Park, Disneyland Paris Marne-la-Velle, France
Europa Park Rust, Germany
Phantasialand Bruhl, Germany
Heide Park Soltau, Germany
De Efteling Kaatsheuvel, Netherlands
Duinrell/ Attraktiepark Wassenaar, Netherlands
Port Aventura Salou, Spain
Parque De Atracciones Madrid, Spain
Gardaland Castelnuovo del Garda, Italy
Mirabilandia Savio Italy
Alton Towers Staffordshire, UK
Legoland Windsor Windsor, UK
Thorpe Park Chertsey, UK
Walt Disney Studios Park at Disneyland Paris
Chessington World of Adventures Chessington, UK
Legoland Billund Denmark
Parc Asterix Plailly, France
Futuroscope Potiers, France
Tokyo Disneyland Tokyo, Japan
Tokyo Disney Sea Tokyo, Japan
Universal Studios Japan Osaka Japan
Yokohama Hakkeijima Sea Paradise
Everland Seoul, South Korea
Lotte World Seoul, South Korea
Ocean Park Hong Kong
Hong Kong Disneyland Hong Kong
Happy Valley Shenzhen, China
Happy Valley Chendu, China
Happy Valley Beijing, China
Chimelong Paradise Guangzhou, China
Six Flags Mexico Mexico City
Playcenter Sao Paulo, Brazil
Hopi Hari Sao Paulo Brazil
Beto Carrera World Santa Catarina, Brazil
Plaza Sesamo Monterrey, Mexico

Water Parks
Typhoon Lagoon Lake Buena Vista, Florida
Blizzard Beach Lake Buena Vista, Florida
Aquatica Orlando, Florida
Wet 'N Wild Orlando, Florida
Schlitterbahn New Braunfels, Texas
Water Country USA Williamsburg, Virginia
Adventure Island Tampa, Florida
Schlitterbahn Galveston, Texas
Hyland Hills Water World Denver, Colorado
Splish Splash Riverhead, New York
Noah's Ark Wisconsin Dells, Wisconsin
Raging Waters San Dimas, California
Six Flags White Water Marieta, Georgia
Six Flags Hurricane Harbor Arlington, Texas
Dollywood's Splash Country Pigeon Forge, Tenesse
Wet 'N Wild Emerald City Greensboro, North Carolina
Soak City Cedar Point Sandusky, Ohio
Six Flags Hurricane Harbor Jackson, New Jersey
ZooMezi Bay Powell, Ohio
Caribbean Bay Gyeonggi-Do, South Korea
APENDIX C

STATA .do FILE COMMANDS

*OLS Regression*

reg  latten  price size size2 fam fam2 thrill shows shows2 restaurants rest2 climate shops brand nthemeprks waterpark asia latinamerica europe popcity
predict residuals
jb6 residuals
*Jarque-Bera normality test: .0495 Chi(2) .9755
*Jarque-Bera test for Ho: normality: (residuals)
imtest, white
*White's test for Ho: homoskedasticity
  * against Ha: unrestricted heteroskedasticity

  *chi2(85) = 86.00
  *Prob > chi2 = 0.4493

*OLS Regression with Robust Standard Errors*
reg  latten  price size size2 fam fam2 thrill shows shows2 restaurants rest2 climate shops brand nthemeprks waterpark asia latinamerica europe popcity, robust
*WLS Regression*

reg latten price size size2 fam fam2 thrill shows shows2 restaurants rest2 climate brand shops nthemeprks waterpark asia latinamerica europe popcity [ aw=1/popcity]

*WLS Regression with Robust Standard Errors*

reg latten price size size2 fam fam2 thrill shows shows2 restaurants rest2 climate brand shops nthemeprks waterpark asia latinamerica europe popcity [ aw=1/popcity], robust

**TABLE C.1**

INDEPENDENT VARIABLE CORRELATIONS

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