



Linear Regression Method Based on Structural Equation Model Analysis of The Interrelationship Between Destination Image and Marathon Event Image

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ABSTRACT

In this paper, data of marathon event image and destination image were from 2019 Disney Princess Half Marathon are taken as samples, and the linear regression method is used to establish the model and observe the multivariate linear regression interrelationship. The results show that the linear model with destination image and event image has a positive effect on each factor.

Keywords: *Linear Regression; Marathon; Sports Event Image; Destination Image; Sports Tourism*

1. INTRODUCTION

Run Disney, which started in 1994, is not only one of the largest and most famous marathon events in the United States, but also the most popular and popular IP event among sports events hosted by Disney, attracting the participation of marathon enthusiasts from all over the world. The Disney Princess Half Marathon is precisely the female-themed road running event launched by Disney Sports keenly aware of the increase in female participation in the marathon event. Today, the Disney Princess Half Marathon is one of the most states. From February 21st to February 24th, 2019, the Disney Princess Half Marathon Weekend, hosted by Children's Miracle Network Hospitals, was successfully held at Disney World Orlando, and received warm praise from all participants and audiences. More than 56,000 "Princesses and Princes" from all over the country and around the world gathered here to do their favorite princess costumes for a fantastic marathon with Disney princesses.

2. RESEARCH DESIGN

Starting from the study of existing academic literature, this paper uses literature analysis, field investigation, data statistical analysis and other research methods to establish a perception evaluation system scale for marathon image and destination image, and constructs

the two At the same time, taking the 2019 Disney Princess Half Marathon as an empirical case. Taken as the main tourist destination by a group of sports tourists who participated in the 2019 Disney Princess Marathon, tested the hypothesis of the relationship between the two, providing scientific suggestions and countermeasures for the holding of sports events in China.

3. RELATED THEORIES & MODEL

3.1 Linear Regression

Regression analysis, which is divided into linear and non-linear, is the most commonly used mathematical method in experimental data analysis. On the other hand, univariate linear regression analysis is composed of single dependent variable and single independent variable in linear regression. While in multivariate statistical regression, the most widely used method is multivariate linear regression. A regression model is established in the purpose of discovering the linear mathematical relationship between multiple independent variables and dependent variables. A tested, F tested and t tested are the components of the established regression.

3.2 Sporting Event Image

The concept of sporting event image lacks a clear definition [4], and most studies link sporting event

imagery to sponsor imagery and mainly use brand personality scales to measure this concept [8]. These scales include attitudinal semantic difference items such as good-bad and unpleasant-pleasure [8]. Keller proposes to conceptualize the brand image of sports events as a brand image with attitude components, and proposes a theoretical framework that this brand image includes attitudes, attributes, benefits and costs to entities. Therefore, some scholars propose that sports event images may have different constituents than destination images [8]. For example, marketing images of sporting events tend to include elements such as subcultural associations between participants and components of the sporting event [2], while marketing destination images tend to lean towards material or cultural settings [1].

3.3 Destination Image

For tourist destinations, image building is ultimately to achieve the purpose of building a brand. Therefore, many scholars associate the tourism destination image with the destination brand image [3]. Destination brand image is some views, images, attitudes and perceptions formed in the minds of tourists which are able to be divided brand image into two categories: organic image and induced image [7]. Scholars such as Gartner have conducted a detailed study on the composition of the tourist destination image, and believe that the building of a brand image consists of four modules, namely, image components, image construction, media and characteristics. Baloglu and McCleary believed that a particular tourist destination's overall image is mainly composed of cognitive evaluation and emotional evaluation. Combining the views of predecessors, Gartner believed that three different but intertwined elements, namely cognitive components, affective components, and purpose components constituted the image of a tourist destination. Li Yingzhou and others regarded tourist attractions, tourist services, tourist facilities and tourist accessibility as the four basic elements that constitute tourist destinations. Lu Peng divided the brand image of tourism destination into three dimensions: cognitive image, unique image, and emotional image.

3.4 Model and Hypothesis

3.4.1 Model Establishment

Depending on the size and nature of the sporting event, the impact of the event on the image of the destination may vary. Previous studies have shown that when the image of the event is considered to match the image of the destination, the image of the event will deepen the influence of consumers on the perception of the image of the destination [5] [9]. At present, studies on the influence of destination image on the image of sports events are rare, but related studies basically believe that destinations can affect the image of sports events because they are the providers of experience related to events and the main environment in which events take place. To create a positive and successful destination brand, destination marketers must better understand how the image of the destination affects the image of the event being hosted. Establishment of linear regression model:

$$Y_1 = \beta_0 + \beta_1 X_i + \varepsilon \quad (1)$$

$$Y_2 = \beta_0 + \beta_2 X_i + \varepsilon \quad (2)$$

X_i ($i=1, 2$) is factors of the destination image and event image, and β_i ($i=1, 2$) is the corresponding coefficient, $\varepsilon \sim N(0, \sigma^2)$ which represents the random error, and the control variance are ages, gender, alumni, hometown, monthly income, and marital status.

3.4.2 Hypothesis

Based on the above theoretical basis and literature references, the following research hypotheses are proposed.

Hypothesis 1 (H1): There is a significant positive impact on destination image (DI) from Marathon image (MI);

Hypothesis 2 (H2): There is a significant positive impact on Marathon image (MI) from destination image (DI).

Based on the above assumptions, the hypothetical model of this paper is constructed (see Figure 1).

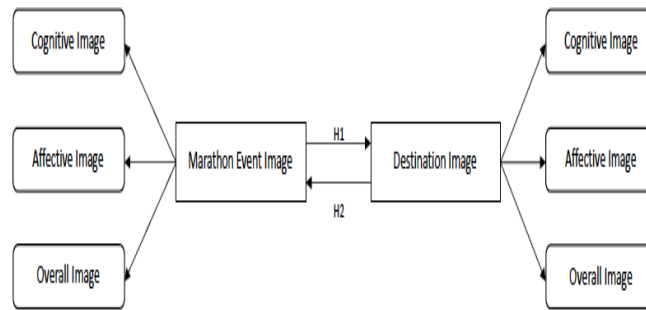


Figure 1 Theoretical Model

4. DATA COLLECTION & ANALYSIS

4.1 Data Collection

The questionnaire collection was conducted from May 22nd to May 30th (8 days), 2022, among the running groups that participated in the 2019 Disney Princess Marathon, using an online questionnaire survey. In the process of the questionnaire survey, the respondents were selected to conduct necessary conversations and interviews, so as to better understand the participants' perception of the destination image and the marathon image. In this questionnaire, a total of 100 questionnaires were distributed, 95 questionnaires were returned, and the recovery rate was 95%. There were 91 valid questionnaires, and the rate of effectiveness was 95.8%. The confidence level is 95%, the maximum allowable error is less than 7%, and the number of valid questionnaires reaches the minimum sample size required for simple random sampling. The questionnaire adopts the method of random sampling, covering a wide range of people, involving the information of contestants of all ages, cultural levels and income levels, and the data is true.

Based on the past destination image formation and measurement research and various promotional materials (Disney) of the destination (including destination travel guides, related websites, brochures, etc.) [10] [11], the tourist destination image scale of this paper is formed. These target image scales include a total of 20 cognitive dimensions, 6 affective dimensions, and 1 overall dimension item, and use a seven-point Likert scale and a seven-point semantic difference scale table to measure. A scale of 1 to 7 represents "little" to "a lot" and "very bad" to "very good", respectively.

Taking the image formation and measurement research of marathon events in the past and various publicity materials of marathon events (Disney Marathon) as reference points [7], the marathon event image scale for this study is formed. These target image

scales include a total of 26 cognitive dimensions, 14 affective dimensions, and 1 overall dimension item =, and use a seven-point Likert scale and a seven-point semantic difference scale table to measure. A scale of 1 to 7 represents "little" to "a lot" and "very bad" to "very good", respectively.

4.2 Data Analysis

SPSS was used to analyze and process the collected valid data. Descriptive statistical analysis, structural model fitting degree analysis, and research hypothesis testing of the scale were carried out in turn.

5. RESULTS

5.1 Sample Structure

In this study, the main purpose of the sample group for this trip is to participate in the marathon, so the selected sample object is the runners of the marathon, rather than spectators or ordinary tourists. Among the total valid samples collected (n=91), men accounted for 14.29% and women accounted for 85.71%; the average age of sample respondents was 34.2 years old. Most of the respondents (65.9%) are from Florida, where the event is held, 28.6% of the respondents are from other states in the United States, and only 5.5% of the respondents are from other countries. Almost all (98.9%) respondents have a monthly household income above the average (\$3,000), of which 25.3% are above \$6,000, 37.4% are \$5,000-\$6,000, and 24.2% are \$4,000-\$5,000, 3,000-4,000 US dollars accounted for 12.1% and less than 3,000 US dollars accounted for only 1.1%. Most of the respondents were not single, accounting for 75.8% of the total.

Table 1 Sample Structure

Items	Category	Overall Distribution (%)
Gender	Male	14.29
	Female	85.71
Alumni	College	48.4
	Others	51.6
Hometown	Florida	65.9
	Other States	28.6
	Foreigner	5.5
Monthly Income (\$)	Below 3000	25.3
	3001~4000	37.4
	4001~5000	24.2
	5001~6000	12.1
	Above 6000	1.1
Marital Status	Single & Others	24.2
	Married	75.8

5.2 Hypothesis analysis

5.2.1 Analysis of Model Summary

Table 2 Model Summary (H1)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimated
1	0.788	0.621	0.617	0.059
Independent Variable: MI				

According to table 2, the compound relation number is 0.788, and the correlation coefficient is 0.621, which indicates that the fitting degree of the equation is and the regression equation is significant. Details are given in table 4.

Table 3 Model Summary (H2)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimated
2	0.788	0.621	0.617	0.072
Independent Variable: DI				

According to table 3, the compound relation number is 0.788, and the correlation coefficient is 0.621, which indicates that the fitting degree of the equation is and the regression equation is significant. Details are given in table 5.

5.2.2 Analysis of ANOVA and coefficient

Table 4 ANOVA ad Coefficient (H1)

		Constant	MI
Unstandardized Coefficients	B	1.390	0.718
Standardized Coefficients	Beta	-	0.788
t		4.249	12.079
p		0.000**	0.000**
f		145.908(0.000**)	
Independent Variable: MI			
D-W: 1.797			
* p<0.05 ** p<0.01			

The linear regression analysis is performed with MI as the independent variable and DI as the dependent variable can be seen from the above table. It can be seen from the above table that the model R-squared value is 0.621, which means that MI can explain 62.1% of the changes in DI. When the F test was performed on the model, it was found that the model passed the F test (F=145.908, P<0.05), which means MI must have an influence on DI, and the model formula is: $DI=1.390 + 0.718*MI$. The regression coefficient value of MI is 0.718 (t=12.079, P=0.000<0.01) is showed in the final specific analysis, which means that MI will have a significant positive impact on DI. The summary analysis indicates that all MIs will have a significant positive impact on DI. Positively affects the relationship, and this result supports the null hypothesis (H1).

Table 5 ANOVA ad Coefficient (H2)

		Constant	DI
Unstandardized Coefficients	B	0.854	0.866
Standardized Coefficients	Beta	-	0.788
t		2.226	12.079
p		0.029*	0.000**
f		145.908(0.000**)	
Independent Variable: DI			
D-W: 1.799			
* p<0.05 ** p<0.01			

The linear regression analysis is performed with DI as the independent variable and MI as the dependent variable can be seen from the above table. It can be seen

from the above table that the model R-squared value is 0.621, which means that DI can explain 62.1% of the changes in MI. When the F-test was performed on the model, it was found that the model passed the F-test ($F=145.908$, $P<0.05$), which means that DI must have an impact on MI, and the model formula is: $MI=0.854 + 0.866*DI$. The regression coefficient value of DI is 0.866 ($t=12.079$, $P=0.000<0.01$) is showed in the final specific analysis, which means that DI will have a significant positive impact on MI. The summary analysis indicates that all DIs have a significant positive impact on MI, which supports the null hypothesis (H2).

6. FINDINGS

Through the test of the research hypothesis and the analysis of the research model, it is concluded that there is a significant positive relationship between the image of the marathon event and the image of the destination. Although this result is in line with the expected hypothesis, it is different from some previous research results. The author analysis the reasons, which are closely related to the characteristics of the competition itself and the specific research cases. In this study, the Disney Marathon is selected as a specific research case, which has certain particularities. First of all, the Disney Marathon has Disney's unique IP application, which makes the Disney Marathon highly unique and branding, which differentiates it from other marathon events and improves the irreplaceability of the event itself. Secondly, thanks to the strong influence and appeal of the Disney brand itself, and at the same time choosing the venue for the event in Disneyland, which directly converts some of the loyal consumers of Disneyland into fans of the Disney Marathon, the Disney Marathon has been very popular from the very beginning. Has a large mass base. Finally, unlike the competition and professionalism that other marathon events emphasize, the Disney Marathon is more about entertainment and leisure, allowing family and friends to spend a happy "running vacation" through the Disney Marathon. These characteristics will directly affect the image of the event, thereby affecting the relationship between the image of the event and the image of the destination.

7. CONCLUSIONS

Through the review of relevant literature and the analysis of existing research, combined with the author's own point of view, the future research on marathon tourism can be carried out in the following aspects: First, the research on the interaction between marathon events and destination development. For example, study the perceptions and perceptions of a specific group such as professional athletes about sports event images and tourist destination images, and how these images affect their sports performance and their intentions and behaviors to revisit destinations. The second is the

research on the social network structure of marathon organizers. It is possible to study the social network structure of stakeholders such as local governments, tourism destination managers and operators, participating tourist groups, and tourist groups watching the race, so that they can not only clarify the scientific cooperation mechanism of marathon event organization, but also help marathon events [6]. The organization and operation of the event provides useful real-world guidance. The third is the study of spectators and companions on the tourism demand side of marathon events. The marathon spectators and companions should be regarded as the same important tourism demand subjects as the participants, and their personal characteristics, travel attitudes, intentions and behaviors should be studied in order to better play the role of marathon events in promoting the tourism industry.

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