

# Development of Marathon Brand Element Scale

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## ABSTRACT

The purpose of this paper is to develop a scale of marathon event brand elements, which provides a quantitative tool for event brand building. And the methods are literature review, questionnaire survey and mathematical statistics. It is concluded that the scale consists of 42 items in five dimensions: marathon brand symbol, culture, service, marketing and influence. The results of confirmatory factor analysis show that the fitness between the assumed structure model and sample data is acceptable. The results of reliability and validity show that the scale has good reliability and validity, which can be used as a tool for brand building of marathon events, and can provide the organizing committee with the attitude of contestants and the specific path to start a marathon brand building. ( $\chi^2/df=3.668$ , RMSEA=0.082, IFI=0.791, CFI=0.790, PGFI=0.648, PNFI=0.694; Cronbach $\alpha$ =0.954 in the total questionnaire, and Cronbach $\alpha$  ranges from 0.839 to 0.944 in five dimensions).

**Keywords:** *Marathon brand elements, Scale, Exploratory factor analysis, Confirmatory factor analysis.*

## 1. INTRODUCTION

With the development of marathon events at home and abroad, the construction of marathon brand has been put on the agenda. However, most of the researches on marathon brand directly use brand related theories to describe a specific event qualitatively from brand positioning, brand identification, brand marketing, brand promotion or other aspects<sup>[1-8]</sup>. Practice has shown that was of little help to the marathon. The above research model avoids a common question, that is, what is the marathon brand and what are the specific elements? marathon event is different from the general material product brand, and the theory of directly applying the brand field shows its inapplicability. The brand element is the foundation of brand building. It is of great significance to study the brand elements of marathon for its brand building<sup>[9]</sup>. Therefore, this research attempts to explore the brand elements of marathon events and develop a marathon event brand element scale to provide a theoretical basis for marathon event brand building.

## 2. LITERATURE REVIEW

It can be seen from the relevant research that scholars have different views on the research of brand elements, but most of them think that the brand is composed of

some hard elements, such as brand name, slogan, slogan, theme and some soft elements, such as product quality, cultural concept, publicity and marketing. Regarding the brand elements of sports events, although there are not many literatures, it can be summarized that they generally include such elements as event brand symbols, event influence, event products, and event culture. Event brands are different from general product brands and should form a unique theory of event brands<sup>[10-23]</sup>. Event brand elements include event brand symbols, event brand culture and event products, and must be marketed. Marathon belongs to sports events, but also has its particularity. This paper compiles a marathon brand element scale from five dimensions of marathon brand symbol, culture, service, influence and marketing based on the above theory and the uniqueness of a marathon.

## 3. RESEARCH METHODS

An initial scale of 50 measurement items was drawn up from 5 dimensions and Likert's 5-level scoring method was used. The research took the participants of the Xiamen (Haicang) International Half Marathon as the survey subjects and was distributed on the scene of the event on December 8, 2019. A total of 865 questionnaires were retrieved and 798 valid questionnaires were collected with an effective rate of about 92%. The study

used IBM SPSS Statistics 25.0 and Amos 24.0 to analyze the questionnaire data, and tested the validity of the questionnaire through exploratory factor analysis and confirmatory factor analysis. The recovered 798 valid questionnaires were randomly divided into 2 equal parts, one (399 sheets) was used for exploratory factor analysis, and the other (399 sheets) was used for confirmatory factor analysis.

**4.RESULTS**

**4.1. Project analysis**

The project analysis adopts the extreme group test method, which aims to test the suitability or feasibility of the compiled scale or individual items of the test. And the data result of the item analysis shows the value of Sig. of all the items on the scale, that is,  $t < 0.01$ , indicating that the scale items in this study are distinguishable and all are retained.

**4.2. Exploratory factor analysis**

**4.2.1. KMO and Bartlett sphere inspection**

The study first conducted KMO and Bartlett sphere tests. The KMO value is equal to 0.936, which indicates that the factor analysis of the sample data is very appropriate; the significance probability value of the Bartlett sphere test is  $p < 0.01$ , reaching a significant level, which means that there were common factors among the 50 items in the marathon brand element scale, and the data was suitable for factor analysis.

**4.2.2. Item selection and common factor extraction**

The study adopts the method of limited extraction factors. After extracting 5 common factors, the cumulative explained variance is 54.694%, and the result of factor analysis is acceptable. In the rotated factor load matrix of the first exploration, there are 9 items lower than 0.5, which are event record, high-tech application, convenient registration, regional human history, competition package design, city competition positioning, exquisite medals, medical security and post competition recovery. Finally, 8 items were eliminated and 42 items were retained. In exploratory factor analysis, if the user deletes a certain item, an explanation of the factor structure is found even more difficult, the original deleted item variables can be re-incorporated<sup>[24]</sup>. After removing the "individual completion video" in this study, it is found that the factor structure is chaotic. Therefore, the "individual completion video" is retained.

**4.2.3. Factor naming**

In the factor loading diagram after rotation, the items present a ladder-like distribution into 5 dimensions. As it is shown in Table 1. Factor 1, including 18 items, is mainly related to marathon marketing, so it is named as marathon brand marketing. Factor 2, is named as marathon brand symbol. Factor 3, is named as marathon brand service. In addition, "volunteer service" in factor 1 obviously belongs to the service of marathon, so it is included in factor 3. Factor 4, is named as marathon brand culture. Factor 5, is named as marathon brand influence.

**Table 1.** Rotated component matrix

Rotated component matrix A <sup>a</sup>					
	component				
	1	2	3	4	5
supporting activities	.747				
press conference	.747				
marathon Forum	.716				
sponsor visibility	.708				
media publicity	.701				
hotel accommodation	.699				
star marketing	.693				
fans	.685				

Rotated component matrix A <sup>a</sup>					
	component				
	1	2	3	4	5
travel recommendation	.682				
marathon Expo	.678				
bonus setting	.671				
public welfare activities	.641				
event information platform	.632				
urban development concept	.632				
exclusive photo service	.595				
consultation and guidance	.593				
construction of official website	.536				
volunteer service	.511				
individual completion video	.484				
event logo		.782			
event mascot		.769			
event song		.735			
event name		.729			
main colors of event		.711			
event slogan		.558			
event theme		.527			
mobile toilet configuration			.754		
package access			.734		
bus feeder service			.732		
supplies			.723		
sign guide			.617		
clothing quality			.614		
keepsake			.572		
fair and just				.762	

Rotated component matrix A <sup>a</sup>					
	component				
	1	2	3	4	5
venue atmosphere				.704	
track environment				.689	
crisis handling capability				.636	
code of conduct for employees				.608	
marathon spirit				.593	
event level					.840
event scale					.791
event record					.612

Extraction method: principal component analysis.

Rotation method: Caesar normal maximum variance method.

The rotation converges after 7 iterations.

**4.3. confirmatory factor analysis**

The initial model is first set as a secondary-order confirmatory model, and the secondary-order structure can explain all the first-order factor constructs<sup>[25]</sup>. The 42 items are divided into 5 dimensions. The other data (n = 399) used for validation group was imported into Amos

25.0 for calculation, and the model estimated various fitting indexes are shown in Table 2. In the output report indicators, we usually refer to the chi square degree of freedom ratio, RMR, RMSEA, IFI, CFI, PGFI and PNFI. The results show that the theoretical model of the marathon brand factor scale in this study has a good fit with the actual sample data, and it is more reasonable.

**Table 2.** List of confirmatory factor analysis of marathon brand constituent elements scale

Fitting index:	X2	DF	X2/DF	RMR	RMSEA	IFI	CFI	PGFI	PNFI
Reference standard	-	-	<5	<0.05	<0.1	>0.8	>0.8	>0.5	>0.5
Fitting index value	2985.928	814	3.668	0.051	0.082	0.791	0.790	0.648	0.694
Is it in line with			yes	close	yes	close	close	yes	yes

**4.4. reliability and validity test**

In this study, Cronbach's alpha coefficient method is used to test the internal reliability of Marathon brand

element scale. If the  $\alpha$  coefficient is above 0.8, it indicates that the scale has high reliability<sup>[26]</sup>. The reliability test values of the various levels of the scale and the total scale in this study are shown in Table 3. The Cronbach $\alpha$  of the total questionnaire is 0.954, and the Cronbach $\alpha$  of the five

dimensions ranges from 0.839 to 0.944. So, the scale has good reliability.

**Table 3.** Reliability test value of scale Cronbach’s alpha coefficient method

Dimension	Cronbachα	Based on Standardization	Number of items
		Project	
		Cronbachα	
marathon brand marketing	0.944	0.944	18
marathon brand symbol	0.897	0.897	7
marathon brand service	0.861	0.863	8
marathon brand culture	0.839	0.843	6
marathon brand influence	0.859	0.859	3
overall	0.954	0.953	42

This study combs the measurement items of the marathon brand building scale from five dimensions based on the theory, then through exploratory factor analysis, it proves that the construction validity of the scale is good. finally, another set of data is used for confirmatory factor analysis to further verify the appropriateness and authenticity of the construction validity of the scale. The results are in line with the

standard, so the structure validity of marathon brand element scale is good.

**5.FORMAL SCALE OF BRAND ELEMENTS OF MARATHON EVENTS**

The formal scale of marathon brand elements was developed after a rigorous scale compilation procedure, which consists of 5 dimensions and 42 items, like table 4.

**Table 4.** Formal Scale of marathon brand constituent elements scale

Formal scale of Marathon brand elements			
class a	second level	Level 3	Serial number
Brand elements of Marathon	Symbol	event name	1
		event logo	2
		event theme	3
		event slogan	4
		event song	5
	service	main colors of the event	6
		event mascot	7
		sign guide	8
		bus feeder service	9
		volunteer service	10

Formal scale of Marathon brand elements			
class a	second level	Level 3	Serial number
		supplies	11
		package access	12
		keepsake	13
		mobile toilet configuration	14
		clothing quality	15
		marathon spirit	16
		fair and just	17
	Culture	crisis handling ability	18
		code of conduct for employees	19
		venue atmosphere	20
		track environment	21
		marathon expo	22
		supporting activities	23
		marathon forum	24
		press conference	25
		fans	26
		media publicity	27
		sponsor visibility	28
		urban development concept	29
	Marketing	public welfare activities	30
		star marketing	31
		official website construction	32
		tourism recommendation	33
		event information platform	34
		consultation and guidance	35
		exclusive photo service	36
		hotel accommodation	37
		Individual completion video	38
	bonus setting	39	

Formal scale of Marathon brand elements			
class a	second level	Level 3	Serial number
		event level	40
	influence	event scale	41
		event record	42

## 6. DISCUSSION

The research is a preliminary exploration for the development of the marathon brand element scale. As a unique type of brand, marathon brand not only has the common characteristics of general material product brand elements, but also has the particularity of its events. Previous studies on marathon event brands have mostly directly adopted theories in the brand field, ignoring the particularity of their events. However, the difference between this paper and previous studies is that it is distinguished marathon event brands from general material product brands, and based on the particularity of the event, a scale of the elements of the marathon event brand has been developed, which enriches the marathon event brand theory and solves the problem of which elements constitute the marathon event brand.

Marathon organizers can build their brand based on the content of the scale when organizing the event. For example, the symbol dimension includes 7 items, event name, event logo, event theme, event slogan, event song, event main color, and event mascot. The service dimension includes bus connection service, volunteer service, material supply, and parcel access, mobile toilet configuration, souvenirs, and clothing quality. Which can be used as a theoretical reference, and start from these aspects when building the event brand.

## 7. CONCLUSION

The main conclusions drawn from this study are:

Empirical analysis of related concepts. Through combing the relevant theories and the characteristics of marathon events, this study developed a scale from five elements and verified it by AMOS software. The results have shown that the brand of marathon events includes five elements: symbol element, culture element, service element, influence element and marketing element.

The reliability and validity of the scale are proved to be good by exploratory factor and confirmatory factor tests. It can be used as a tool for brand building of marathon events, and can provide competitors' attitudes and specific ways to start brand building for the event organizing committee ( $\chi^2 / DF = 3.668$ ,  $RMSEA = 0.082$ ,  $IFI = 0.791$ ,  $CFI = 0.790$ ,  $PGFI = 0.648$ ,  $PNFI = 0.694$ , The

Cronbach  $\alpha$  of the total questionnaire was 0.954, and the Cronbach  $\alpha$  of the five dimensions ranged from 0.839 to 0.944).

Scale dimensions and item composition. The marathon brand element scale consists of 5 dimensions and 42 items, which are marathon brand symbol (7), marathon brand culture (6), marathon brand service (8), marathon brand influence (3) and brand marketing of marathon events (18).

## AUTHORS' CONTRIBUTIONS

Meng-meng Huang collected data, analyzed data and drafted the article. Yao-Chuan Chang checked the structure and views of the article. Chuan-ming Cai made substantial contributions to the conception and design of the article.

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