



Analysis on the Sports Cultural Industry Based on SWOT theory and Unary Linear Regression Model

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ABSTRACT

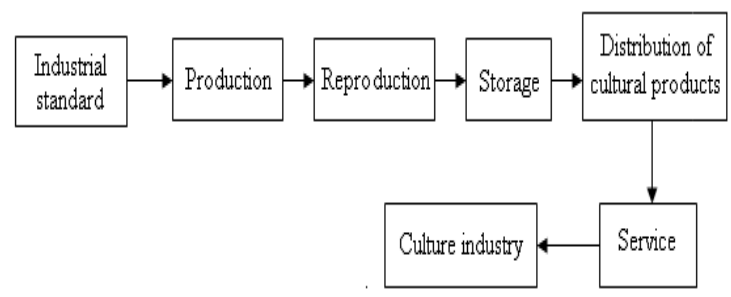
Sports culture industry is an important branch of cultural industry. With the combination of questionnaire survey, unary linear regression and other mathematical thought and research, this paper used the analysis technology of SWOT, and analyzed and studied the sports cultural industry, such as the advantage, disadvantage, opportunity, threaten and so on. Finally based on the theoretical analysis and integration. This paper provided a good platform for the sports culture research and made a theoretical basis for the development of the sports culture.

Keywords: SWOT model; Sports culture; Cultural industry; Unary linear regression model

1. INTRODUCTION

Athletics cultural industry is a branch of the whole cultural industry. For the sake of better research athletics cultural industry, we want to do an outline and analysis to cultural industry first. Cultural industry is a kind of appearance; it is after mankind's mental work but a kind of appearance of spirit consciousness of formation. It is society development, economy development, with humanities development of concentration embodiment. The development of cultural industry comes from a technical development of network and electronics information in the information society. Its development is the premise and basic power that pushes cultural industry development. Modern society because of computer technical development, people becomes the information to the modern society society, but information the social cultural corpus is cultural industry. Under the information technique of the cultural industry has his/her own characteristics: On being to have a very strong expression, two time being a record have long-last, three because Internet technical development, as a result it has to spread a speed quick property. In addition, the social development and the progress, the development and exaltation of economy, gradually pushes demanding increment of cultural, therefore this is the inside basic power of cultural

industry development. Social progress and one of the sign of development are cultural universality. But the cultural universality need information technique again to push its development. The innovation of the social system, operation and development of market economy are the system guarantee of the development of cultural industries, information technique continuation to turn the foundation of industry development. But cultural industry from a series of process integration but become. Is concrete such as figure 1 show.



Athletics cultural industry is a branch of the whole cultural industry, there are own cultural product and cultural spirit principle. In the whole cultural industry, athletics culture contains his/her own characteristics, like indeterminateness, extensive, characteristic with thought, concrete such as table 1 show.



Table 1 the Characteristic Contrast of Sports Culture

The characteristics of sports culture	
Uncertainty	The development of the sports culture to their physical and mental condition, environmental changes and other various objective factors.
Extensive	In the aspect of subject, the sports cultural industry demonstration due to individual differences and produce different forms of display
Individualization	The development of sports is the human spirit development result, its activities with a universal, some even is a common human values (such as the hard work, unity), aesthetic concepts (such as the superb artistry and freely flowing style of writing tactics with the embodiment etc.).
Thought Property	Sports culture has the cognition, education, aesthetic, entertainment and other functions, to meet people's spiritual needs, it can eliminate the fatigue, the rich people's sports and cultural knowledge, enhance the sports hobby, improve people's motor skills, this is a high level of consumption demand. In general, people's living standard is higher, the higher level of education, cultural consumption ability is stronger. Sport culture industry as the culture industry products with its spiritual nature or spiritual elements to meet the needs of the consumers, is different from the culture industry material products and material properties are an important essential characteristics

2. ANALYSIS MODEL

This paper analyzed a technique with SWTO, and combined a questionnaire; Mathematical Statistics etc. mathematics thought research, analyze the research athletics cultural industry, and do theory analysis and integration to the advantage, bad situation, opportunity

and threat. First, we teach through each individual of form of issuing the questionnaire the category is in athletics cultural industry have of percentage. Such as table 2 shows.

Table 2 the percentage of sports categories in the sports cultural industry

Project	Athletic type	The game class	Dance class	Performance class	Program type	Health category
Type	56	86	32	113	30	15
Percentage	16.9	25.9	9.6	34	9.1	4.5

We adopt mathematics model to carry on a t examination method to carry on Mathematical Statistics analysis to the statistics data that we get and verify its regression to show Zhao.

For a set of value x to x_1, x_2, \dots, x_n , make an independent experiment, on Y that n observation results of y_1, y_2, \dots, y_n , get a sample the capacity is



$n : (x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$.

2.1 Unary Linear Regression Model

The representation of unary linear regression model:

$$Y = b_0 + b_1x + \epsilon, \quad \epsilon \sim N(0, \sigma^2), \tag{1}$$

where b_0, b_1 and σ^2 are independent of x . Equation (1) called Unary Linear Regression Model, Y and x in which Y is called explained (or contingent variable), x is called explanatory variable (or independent variable), ϵ is called error term, b_0 and b_1 are stand for constant term and regression coefficient, respectively.

Change of Y , b_0 and b_1 are called regression parameters, which are usually unknown, required to be estimated. t represents ordinal number. ϵ includes numerous micro-factors that influencing changes of Y expect x . The change of ϵ are uncontrollable. The above mentioned model can be divided into two parts: (1) $b_0 + b_1x$ refers to non-random part; (2) ϵ refers to random part.

2.2 Establishment and prediction of unary linear regression model of the sports cultural industry

If we plotted these points on an axis system, we could see the relationship:

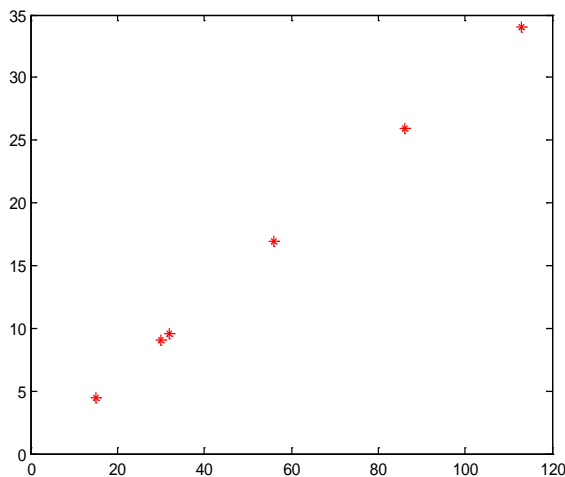


Fig.2 Scatter plot

Linear type change trend indicates the data of time series increase or reduces according the same quantity of each phase and shows up approximate linear rising or declining trends. Through observation and analysis of Fig.2, the distribution of 6 data of time series is like a linear approximately. Therefore, this article adopts unary linear regression model.

(1) Use diagram method to establish linear regression model

The result of established linear regression model is as show by the Fig.1, with analyzing the time series trend by using the data in the Table 2.

(2) Using analysis tool to establish linear regression model

The results of analysis of trend of the time series, regression result calculation and parameter test are shown by the table 2. The linear regression model from the Table 2:

By calculus of Matlab software, we have

```

b =
    0.0169
    0.3009
bint =
   -0.0768    0.1106
    0.2995    0.3023
r =
    0.0327
    0.0058
   -0.0457
   -0.0185
    0.0561
   -0.0304
rint =
   -0.0836    0.1491
   -0.1109    0.1224
   -0.1428    0.0514
   -0.0974    0.0604
   -0.0240    0.1363
   -0.1275    0.0667

```

```

stats =
1.0e+005 *
0.0000    3.3701    0.0000    0.0000

```



Where x , b and Y stand for

$$x = \begin{pmatrix} 1 & x_{11} \\ 1 & x_{21} \\ \vdots & \vdots \\ 1 & x_{n1} \end{pmatrix}, \quad Y = \begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{pmatrix}, \quad b = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix},$$

respectively. b and $bint$ are called regression system of point estimation and confidence interval, respectively. r and $rint$ are stand for residual and confidence interval, respectively. $stats$ is prove view value of unary linear regression model.

So, we have probability $p=0<0.05$, residual variance $s^2 = 0$.

For above results, regression model is hold. Thus, equation as follow:

$$Y = 0.016 + 0.3009x \tag{2}$$

Next, we will continuous plot residual case order graph as follow:

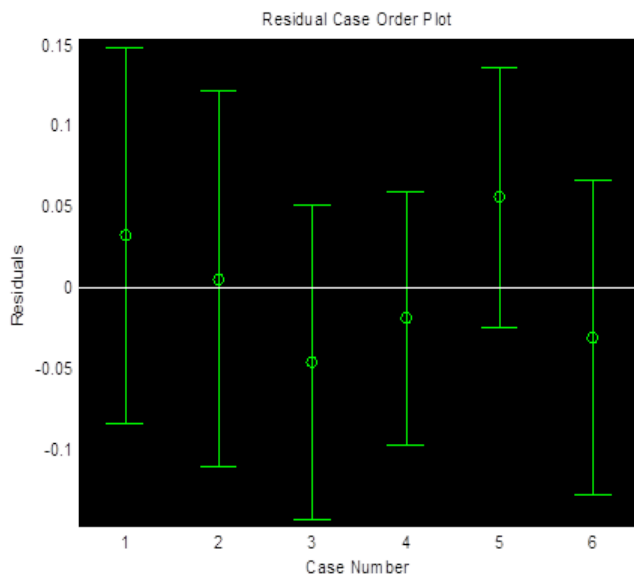


Fig.3 Residual Case Order Plot

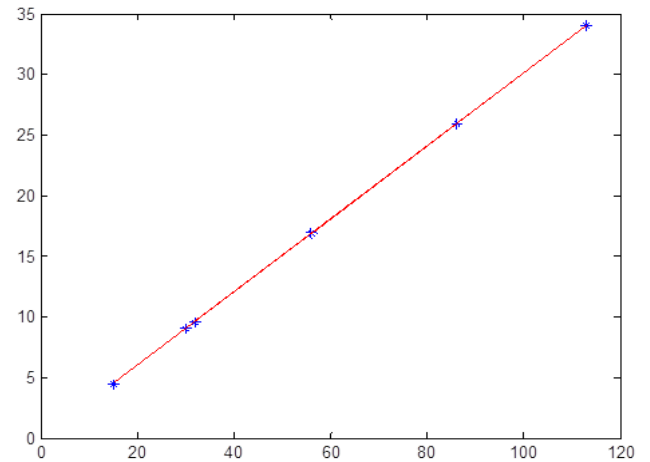


Fig.4 Point of data and regression equation

Thus, verify its regression.

The results of the analysis technology of SWTO

The SWOT method includes an advantage factor, bad situation factor, opportunity factor and threaten a factor to constitute.(Namely:Strengths and Weaknesse, Oportunities and Threats).The mutual Ou of athletics cultural industry matches to include a lot of advantage factors and mainly has already produced a power technique, creative product and good management, generally accepted profession leading.The bad situation factor mainly has equipments cost Gao, product line the scope is long, marketing ability weak etc..The opportunity factor mainly has lengthways integral whole to turn, market quick growth, appear new customers, may get into a new market and can increase to repair a product with each other.Threaten a factor to mainly have competition pressure aggrandizement, government the policy is disadvantageous, the customer's need transfer, the new product publish.

- **Analysis on the advantage factor**

The social development provides essential condition and good environment for athletics cultural industry.The economic system reform provides a good space for the development of athletics culture.The reform opens to provide a good opportunity for the development of athletics cultural industry.



• Analysis on the disadvantage factor

The obstacle of development existence a series of athletics cultural industry, these obstacles mainly have and have obstacle, the obstacle on the talented person of obstacle, the obstacle on the policy and product of the obstacle, physical endowment of obstacle, structure of idea. These stumbling existence severity the influence athletics cultural industries develop.

• Analysis on the opportunity factor

Exist some opportunity factors again in the development of modern information social athletics culture, such as Internet technical development, people can spread athletics culture through an information platform, exist another mechanism in the socialism market of integrity and there is the leadership of good athletics cultural brand.

• Analysis on the threaten factor

Threaten a factor to mainly have competition pressure aggrandizement, government the policy is disadvantageous, the customer's need transfer, the new product publish.

3. CONCLUSION

The SWOT method includes an advantage factor, bad situation factor, opportunity factor and threaten a factor to constitute. (Namely: Strengths and Weaknesses, Opportunities and Threats). The athletics cultural industry of athletics cultural industry has cognition, educate, appreciate beauty, amusement etc. function, can satisfy people's spirit need, it can get rid of the person's fatigue and enrich people's athletics cultural knowledge and strengthen a fondness for that exercises to the athletics and raise people's sport technical ability to wait a series of characteristics. This text is analyzed

a technique with SWTO, and combined a questionnaire, Mathematical Statistics etc. mathematics thought research, analyze the research athletics cultural industry, and do theory analysis and integration to the advantage, bad situation, opportunity and threat. This paper made a theory basis for the athletics cultural research, and provided a good platform for the development of athletics culture.

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