Wisdom City under the Perspective of Intelligent Factors of the Brand of Meta-analysis in Colleges and Universities to Explore

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Abstract. Smart city is a hot topic in today's urban construction. Smart city construction is an effective way to solve the inherent problems of traditional urban construction. As an indispensable part of the city, colleges and universities urgently need to seek new ways of development to promote their own development. The construction of smart city will lead the construction of colleges and universities into a new stage of smart campus construction, which is the further deepening of digital campus and will provide new vitality for the development of colleges and universities. The research of this paper points out that the brand of colleges and universities is the embodiment of the popularity and reputation of colleges and universities, the symbol of the teaching quality of colleges and universities, and in essence it is an intangible asset, containing huge material and spiritual wealth. The purpose of this paper is to explore how to build the brand characteristics and enhance the brand value of colleges and universities with the help of intelligent schemes in the context of smart cities. This study widely collected over the years the academic papers about brand assets in colleges and universities, the related data of university brand effectiveness meta-analysis, and explore the correlation factors between the dimension of brand equity, adopt rigorous mathematical analysis to investigate the effect of each observed variable amount, which then through SEM analysis, to seek better factors of brand assets in institutions of higher education structure. It is believed that the research results of this paper will be able to combine a number of technologies on the existing basis to create research and practical contributions.

Keywords: Smart City, University Brand Building, Postulate Analysis, Brand Equity

1. Introduction
Since the beginning of the new century, China's economic construction has made great strides forward, and the development of education has entered a fast lane. With the increase of the number of colleges and universities in recent years, the competition in enrollment quality, student employment and teacher matching among colleges and universities has become increasingly fierce. The public's demand for high-quality education has become more urgent, and the competition in higher education has entered the era of brand competition. Brand has become the most important asset of colleges and
universities, reflecting the core competitiveness of colleges and universities. With the rapid change of education ecology, all colleges and universities are facing high competition and pressure. How to establish a brand to attract and retain students has become an urgent task for colleges and universities.

The concept of brand management emerged in the 1980s, and the establishment of a brand in colleges and universities will give them a competitive advantage and facilitate long-term operation. Therefore, the concept of "brand" has been gradually valued and discussed by educational institutions, and the relevant research on educational brands is also booming [1]. If an institution of higher learning is compared to an enterprise, its educational output is the talents cultivated by the university and a series of teaching and scientific research achievements [2]. After the planning and brand development of educational output, it is necessary to accurately measure its management effectiveness, and the evaluation of university brand value and the inspection of university brand management are important steps to build university brand [3, 4]. Although there are many arguments to evaluate the effectiveness of brand management, including the assessment of brand equity, brand value and brand status, brand equity will be a more appropriate perspective for educational organizations [5].

In the previous descriptive research on university brands, researchers used the method of content analysis and induction, which can be used to explain the state of the development of the issue in a specific time, but it cannot be used to examine the unity [6]. In order to improve this problem and keep improving on the existing basis, this study narrowed down the scope and focused on brand equity, and adopted a meta-analysis method to measure the total results [7]. Meta-analysis technology after decades of development has quite mature, and the method of combining the theory of structural equation modeling (SEM) to test in foreign countries began to sprout, i.e. using meta-analysis again the correlation matrix of the data on the pattern of SEM inspection, this type of study is less, this paper combined with the technical advantages of both, to examine the dimensions of brand assets in institutions of higher education macro point of view, and find out better factor structure, the deep innovative value [8]. This study also widely collected over the years the academic papers about brand assets in colleges and universities, colleges and universities for brand operation results of meta-analysis of the related data and understand the background variables and the influence of brand assets in colleges and universities, and explore the correlation factors between the dimension of brand equity, the rigorous mathematical analysis to investigate the effect of each observed variable amount, then through SEM analysis, seek out the better factors of brand assets in institutions of higher education structure [9, 10].

2. Method

2.1 Overview of Core Concepts

(1) Brand equity of colleges and universities

Education institutions and enterprises in the brand assets commonly use the dimension of difference is not big, actually still mainly focus on brand awareness and loyalty, brand association and perceived quality level, other times brand equity, customer satisfaction is only sporadic, showed first four dimensions to measure the effect of the most important factors in brand management, cannot be ignored. From the four dimensions, this study defines the brand equity of the university as: "the university can fully let the stakeholders know, and the education service provided by the university can give people a good feeling of quality, generate positive comprehensive association, and let the main education customers show loyalty behavior such as continuation or recommendation. These constructs are closely related to each other, and an optimized brand equity can only be achieved if all aspects are covered.

(2) Postsuppose analysis

Postulate analysis can synthesize an integrated result from the completed research, and it can integrate the empirical results of the same research topic, measure the total result, and understand the influence of the moderating variables on the effect size. In social science research, meta-analysis is not only an important statistical technique, but also an important research method. Mainly because it
adopts statistical methods, rather than subjectively commenting on a large number of research results by impression, it can get strong conclusions.

2.2 Research Objectives and Methods
The specific purposes of this study are as follows:

(1) To understand the influence of individual and university background variables on university brand equity through the posterior analysis method, and to explore its effect.

(2) Through the posterior analysis method, the thesis integrates the relevant sample papers to explore the correlation between the factors of brand equity in colleges and universities.

(3) Combining the two techniques of "meta-analysis" and "structural equation model", the correlation matrix between the factors collected is used to search for the suitability degree of "university brand equity" model through SEM analysis.

This study is divided into two phases. In the first stage, the researchers collected data from the sample papers that met the default conditions, and then analyzed the correlation between the dimensions of university assets, and analyzed the influence of background variables on the overall university assets.

Postulate analysis is to make a deeper and objective exploration of a certain phenomenon or problem, and collect the previous research results for analysis, that is, to make a conclusion after unifying the research on the same topic. Most theorists believe that the meta-analysis is suitable for quantitative research and leads to the integration of statistical results, which can be used for the reanalysis of statistical data to obtain the results of systematic integration. Therefore, this study adopts a verifiable research design to explore the influence of university assets and background variables, as well as the correlation between brand equity dimensions, in order to verify whether it has an effect, and to know the magnitude of its effect.

3. Experiment
The characteristics of posthypothesis analysis determine that a large number of qualified quantitative data is needed to carry out the experiment. Samples selected in this study, therefore, is based on the theory of a total of 25 academic theses, sample paper USES the brand awareness, brand association, perceived quality, brand loyalty and degree and other 7 piece of five dimensions, brand equity increase other dimensions have five articles, delete the "other" brand assets to form 12 piece of four dimensions, and then give "perceived quality" as three dimension four articles.

The sample of this study for the calendar year to date with brand assets in colleges and universities as the theme of academic papers one by one review basic information after login, screening criteria should be based on questionnaire survey research methods, first and second theme focused on brand equity, to feel its performance or operation situation, meta-analysis to collect enough "number", such as sample, mean, standard deviation, or correlation coefficient to calculate the effect, so did not have full information of the paper must be abandoned. After screening by the above criteria, there were 19 sample papers in China.

4. Discuss

4.1 Model Analysis of University Brand Equity Structure Equation
(1) Correlation coefficient matrix and harmonic mean

After the post-hypothesis analysis, six correlation coefficients among the four observation variables in this study were completed, and the correlation matrix of four dimensions of brand equity in colleges and universities was obtained as shown in table 1.
Table 1. Correlation matrix of four dimensions of brand equity in colleges and universities

| Dimension/r   | Brand awareness | Brand loyalty | Perceptual quality |
|---------------|-----------------|---------------|-------------------|
| Brand loyalty | 0.6             | -             | -                 |
| Brand perception | 0.63           | 0.67          | -                 |
| Brand association | 0.67         | 0.68          | 0.74              |

Note: the values are weighted by r

In order to verify the model at this stage, the correlation coefficient among variables was constructed into a correlation matrix by using the weighted r average, and the number of research samples among variables was taken as the overall sample number of the model by referring to the number of people and the harmonic average of the observed variables in each dimension. Input the correlation coefficient matrix and harmonic average into Amos for the number of people for pattern validation and to view the results of their adaptation.

(2) Results analysis of model fitness

The 2 value was 1.51 (df = 2, p = 0.470), indicating that the default theoretical model was consistent with the observed data.

After observing the absolute fitness index, the fitness index [GFI] is 0.999, which is better than the 0.9 fitness standard, that is, the percentage of covariables that can be explained by the model exceeds 99%. The standardized root mean square residual [SRMR] is 0.005, which is less than the threshold value of 0.05, indicating that the residual of the model is still in the acceptable range. RMSEA is 0.00; The PNFI and 2/df were 0.333 and 0.756 respectively, indicating that the brand equity measurement model of colleges and universities has a good adaptability after considering the overall index performance.

The error variation of all observed variables in the measurement model was positive and reached a significant level, the standardized parameter estimation of all observed variables was significant (p < 0.001), the observed variables under the administration of brand equity in colleges and universities could effectively reflect the corresponding potential variables, and all error variations were positive and reached a significant level. Its combination reliability is 0.89, greater than 0.70, which means that the combination reliability is higher than the standard and has a good combination reliability. The average variation was 0.67, which reached the preset ideal value of 0.5, indicating a good internal structural fitness. The factor structure of college brand equity variables is shown in figure 1 below. These indicators represent constructs such as brand awareness, brand loyalty, brand association and awareness quality, which are the core factors of college brand equity.

![Factor structure of university brand equity variable](image)

**Figure 1.** The factor structure of brand equity variables in colleges and universities
4.2 Factor Structure Analysis of University Brand Equity

(1) Comprehensive test

With Stouffer method comprehensive test, brand awareness and brand loyalty, for example, get Zc value of 32.23, reached the significant level of 0.01 above, said the five studies the overall effect is zero probability of less than one percent on average, can accept brand awareness and brand loyalty on opposite hypothesis, worth it on to the next stage of variable correlation effect analysis. According to the above methods, the six Zc values of the four dimensions of school brand equity are between 32.23 and 48.14, and all of them reach the significance level of 0.01, which can be used for the analysis of effect quantity in the next stage.

(2) Correlation effect quantity analysis

Taking brand awareness and brand loyalty as an example, there are 10 valid data related to the two variables. The original correlation coefficients of all Numbers are positive, ranging from 0.39 to 0.78, the weighted average effect quantity r value is 0.60, and the 95% confidence interval of Zr average is 0.60 to 0.78, which does not contain 0. It can be seen that the average effect value of Zr is significantly different from 0, indicating that the two variables are related.

If the six effect quantities of the four dimensions of brand equity of colleges and universities are calculated, the original correlation coefficients of all the four dimensions are positive. After statistical processing, it is found that the weighted correlation of each dimension is 0.60 ~ 0.74. According to the comprehensive test and effect summary scale of brand equity dimension in table 2, the effect is above medium. Moreover, none of the 95% confidence intervals of all Zr averages contained 0, so it can be said that the average effect value of Zr was significantly different from 0, indicating that there was a correlation between the two variables. It means that the brand equity of colleges and universities is closely related to each other at all levels, and the brand equity of colleges and universities is not a separate dimensional combination.

Table 2. College brand equity dimension comprehensive test and effect summary scale

| Related variable names | Compare article number | Average sample size | R, on average | Zr, on average | Zr average 95% CI | Stouffer Zc |
|------------------------|------------------------|---------------------|--------------|---------------|------------------|------------|
| Brand awareness × brand loyalty | 10 | 581.4 | 0.58 | 0.69 | 0.60~0.78 | 32.23 |
| Brand awareness × perceived quality | 9 | 650.6 | 0.64 | 0.75 | 0.67~0.83 | 42.76 |
| Brand awareness × brand association | 10 | 581.4 | 0.65 | 0.78 | 0.69~0.87 | 41.93 |
| Brand loyalty × perceived quality | 8 | 647 | 0.68 | 0.85 | 0.77~0.93 | 41.97 |
| Brand loyalty × brand association | 10 | 581.4 | 0.68 | 0.83 | 0.74~0.92 | 43.84 |
| Perceived quality × brand association | 8 | 647 | 0.73 | 0.95 | 0.87~1.03 | 48.14 |

5. Conclusion

Based on the background of smart city, this paper discusses the factor correlation between brand equity dimensions of colleges and universities by using intelligent schemes. The specific method adopted in this study is posthypothesis analysis combined with SEM treatment, so the dimension of latent variables reaches a certain number in the sample and is adopted, and strong support is obtained. In this paper, through a large number of references found brand loyalty and awareness, quality...
awareness and brand association that the maximum number of four dimensions as the basis of the article, so this four factors to carry on the correlation analysis between variables, found that the comprehensive test has significant effect, four associated variables of six correlation coefficient between 0.60 to 0.74, shows that the four factors of college assets measurement model of the overall adaptation degree good, can be established as the core dimension. The SEM test shows that their internal and external structural fitness degree is good, and the overall fitness degree is also good, so it can be confirmed that brand loyalty, visibility, quality awareness and brand association and other four factors belong to the core dimension of college assets. Effect summary scale.

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