University Brand Asset Construction Based on Big Data and Meta-Analysis

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Abstract. Today’s education ecosystem is changing rapidly, and universities are facing high levels of competition and pressure. How to establish a brand to attract and retain students has become a top priority for colleges and universities. The concept of brand management sprang up in the 1980s. Establishing a brand in a university will be able to occupy a competitive advantage and be conducive to long-term management. Therefore, the concept of brand has gradually been valued and discussed by educational institutions. And the current research on education brand is booming. The purpose of this article is to study the construction of university brand assets based on big data and meta-analysis. This research will extensively collect academic papers on university brand equity over the years, collect relevant data to understand the effectiveness of university brand operations using survey methods, conduct meta-analysis, understand the influence of background variables and university brand equity, and explore the dimensions of university brand asset dimensions. The relativity of factors is analyzed by rigorous mathematical analysis to explore the effect of each observation variable. The latter is analyzed by SEM to find a better factor structure of university brand equity. This paper analyzes the correlation between the four factors and finds that the comprehensive test has a significant effect. The six correlation coefficients of the four related variables range from 0.60 to 0.74. Standard judgment is used, which has a practical value of medium or higher.

Keywords: Big Data, Meta-Analysis, University Brand, Asset Construction, Construction Research

1. Introduction

Previous researchers have conducted descriptive content analysis and induction of academic research on university brands. This method can be used to explain the development status of the issue at a specific time, but it cannot be used for a unified review. On the basis of excellence, this research will focus on the scope of the brand assets, and adopt a meta-analysis method to measure the overall results. The technology of meta-analysis has been quite mature after decades of development, and the theoretical test method combining structural equation model SEM has begun to flourish abroad, that is, to obtain the correlation matrix of variables using meta-analysis and then use this data to conduct SEM Model testing, this type of research is currently less, if you can combine the technical advantages of
the two, to view the dimensions of university brand assets from a macro perspective, and to find a better factor structure, this approach will have new value.

After planning and developing a brand, it is necessary to accurately measure its management effectiveness; and evaluate the brand value of colleges and universities and review brand management [1, 2]. Liangzhu is an important step in shaping the brand of universities, although there are many arguments for evaluating the effectiveness of brand management, including evaluating brand equity, brand value, and brand status [3]. But for educational organizations, brand equity will be a more appropriate point of view [4]. The specific research purposes of this study are as follows: through meta-analysis, to understand the influence of background variables of individuals and universities on university brand equity, and to explore the magnitude of their effects. Through meta-analysis methods, unify related sample papers, and explore the correlation between college brand equity factors. Combining the two techniques of post-analysis and structure equation model, to collect the correlation matrix between the factors obtained, and to seek the degree of adaptation of the brand equity of university model by SEM analysis.

Based on the above, this research will extensively collect academic papers on brand equity of universities over the years, collect relevant data to understand the effectiveness of university brand operations through survey methods, and conduct meta-analysis [5]. Understand the influence of background variables and university brand equity, and explore the correlation between factors in the dimensions of university brand equity, and use rigorous mathematical analysis to explore the effect of each observation variable. The latter is analyzed by SEM to find better university brand equity Factor structure. In the end, it is hoped that this research can combine multiple technologies on the existing basis to start a new era and create research and practical contributions.

2. Method

2.1 Big Data Analysis

Since the generation of big data, after the efforts of scientists, big data has formed its own set of processing procedures, which are as follows:

(1) Data acquisition

The acquisition of data is the first link of big data analysis technology, and it is the cornerstone of various big data analysis activities [6, 7]. Data must be available before any big data analysis can be performed. In modern society, the development of various terminal technologies and Internet technologies has generated a large amount of data, which has provided the possibility for the rise and wide application of big data. At present, there are various sources of data acquisition for big data, such as online behavior data, monitoring point monitoring data, business data, and enterprise data. The data collection systems are grouped into three categories: system log collection, network data collection, and database collection.

(2) Data integration

Data integration technology is to preprocess the raw data obtained in the data acquisition stage. Data integration includes data feature extraction, data denoising, filling, storage, and standardized operations. The original data obtained through data acquisition is called dirty data, which has the characteristics of large data volume, complex data, and low value density. Among a large amount of data, there may not be a lot of valid data. For certain scenarios, the data that was originally valuable may also become worthless. Therefore, data integration, such as data cleaning, denoising, and protocol operations, can ensure the quality of the data. Standardization of the data is also the basis for the next calculation of the data.

(3) Data analysis

Data analysis is the core of the entire big data analysis technology and the original intention of the invention of big data. In short, it is to analyze data and find value from a seemingly useless data, and this value is likely to be something we never thought of yes. The current data analysis has developed a complete set of specifications through the efforts of a large number of scientific researchers, and many
commonly used technologies have emerged, such as reorganizing data, predictive analysis, data expansion, stream analysis, data virtualization, and so on. Data analysis is more and more widely used in various industries.

(4) Data interpretation

Data interpretation refers to the technology of how to display data to users after obtaining valid data through big data analysis technology. The general display mode, that is, the way of data interpretation includes graphics, tables, charts, etc., is based on intuitive and easy to understand. in principle.

2.2 Brand Assets of Universities (Schools)

The dimensions of brand equity adopted by educational institutions and general enterprises are actually not much different, and they are still mainly focused on brand awareness, loyalty, brand association, and perceived quality. Other brand assets are next, and customer satisfaction only appears sporadically. The four dimensions are all important factors for measuring the effectiveness of school brand management and cannot be ignored [8, 9]. From this four dimensions, this study defines school brand equity as: “Schools can be fully known to stakeholders, and the education services provided by the school can give people a good sense of quality, generate positive comprehensive associations, and allow major education customer performance Follow-ups, recommendations, and other loyalty behaviors”. And these constructs are closely related to each other, and they must be comprehensive in order to achieve optimized brand equity [10].

2.3 Meta-Analysis

Meta-analysis can synthesize an integrated result for the research that has been completed so far. It can unify the relevant empirical research results of the same research theme, measure the overall results, and clarify the effect of the adjustment variables on the effect size [11, 12]. In social science research, meta-analysis is not only an important statistical technique, but also an important research method. It is mainly because it uses a statistical method instead of using subjective impressions to comment on a large number of research results, so it is better to obtain strong conclusions.

2.4 Subject Background Variables

This study explores the related variables that affect the brand equity of colleges and universities. Because of the need for post-study research, it can meet the research dimensions adopted by a certain number of sample papers as the analysis object, so as to obtain strong and powerful support. After the induction, there are two major categories: individual-level variables and college-level variables. Individual-level variables include gender, age, length of service, highest education, and position.

3. Experiment

3.1 Research Framework

This research is divided into two major phases. In the first stage, the researchers collected data on sample papers that met the default conditions, and later set up an analysis to explore the relationship between the dimensions of university assets, and analyze the impact of background variables on overall university assets. This section includes personal background variables (gender, Age, seniority, education, and position) and college background variables (scale, history, location, and nature).

3.2 Experimental Methods

Meta-analysis is a more in-depth and objective inquiry into a certain phenomenon or problem, and the analysis of the previous research results is collected, that is, the research on the same topic is summarized. Most commentators believe that meta-analysis is suitable for quantitative research and guides the integration results after statistics. It can re-analyze statistical data to obtain the results of systematic integration. Therefore, this research adopts a qualitative research design to explore the
impact of university assets and background variables, and the relationship between brand equity dimensions.

3.3 Subject
The sample of this research is the academic papers with the theme of “University Brand Equity” over the years. After reviewing the basic information one by one, the screening criteria must first use questionnaires as the research method, and the second topic focuses on brand equity, especially brand awareness and other dimensions. And the purpose is to feel its performance or operation situation. The third reason is that after the analysis, sufficient “numbers” must be collected, such as the number of samples, averages, standard deviations or correlation coefficients to obtain the effect amount. Therefore, for papers without sufficient information, Must be discarded. After screening based on the above criteria, there are 19 sample papers included in the country.

4. Discussion
4.1 Experimental Results and Analysis
The personal-level variables discussed in the study are mainly gender, age, years of service, highest education, and position. The test results of each variable are observed. The majority of those who have no significant difference in gender are age, years of service, highest education, and There are many who have significant differences in positions and other projects. The university-level variables discussed in each study are mainly institution size, founding history, geographical location, and the nature of institutions. The test results of each variable are observed. Most of the geographical areas and the nature of colleges are not significantly different. Institutional scale and history of establishment. There are many significant differences in projects. The experimental results are shown in Table 1 and Figure 1:

| Variable                  | Value(%) |
|---------------------------|----------|
| Sex men                  | 43       |
| Age <40                  | 57       |
| Years of service <10 years | 59     |
| highest education University or below | 56 |
| Hold a post Hold a post | 43       |
| Institution size Less than 24 classes | 67 |
| School history Less than 20 years | 56 |
| Institutional nature Public agency | 54 |

Figure 1. Experimental results
The influence of different personal background variables and university background variables on
the overall school brand equity was discussed. The results of the post-analysis showed that each of the variables had significant differences. Personal background variables are generally that male teachers have higher college asset perceptions than females, older seniors experience higher levels than younger ones, senior seniors experience higher levels than less-skilled ones, and higher education levels are better than those with undergraduate qualifications. Those in office feel higher than those who are not part-time executives. On high background variables: those with larger institutions are better than those with smaller history, those with a long history and higher than those who were established recently, and those who are located in urban areas are higher than those who are located in townships.

4.2 Suggestions for University Brand Asset Construction
(1) Aspects of brand establishment in universities
The study found that the four factors of brand loyalty, popularity, quality awareness and brand association belong to the core dimensions of university assets. As a result, for university managers, this is an important basis and direction to guide universities to actively establish brand equity. In the course of university marketing, supervisors should actively use marketing strategies for these four goals in order to effectively enhance brand equity and allow teachers and parents and other internal and external customers to feel the existence of school brand equity.

(2) Impact of background variables
In addition, the impact of personal background variables and university background variables on university assets is low-level effects except that the size of the university is close to a medium effect amount, and the size of the university is difficult to change in a short period of time. Sexuality is not high, which means that universities can not be restricted by the above background conditions, and supervisors can still exert their influence through leadership and management.

(3) University asset measurement mode selection
The four-factor measurement model of university assets proposed by this research, the correlation coefficient matrix obtained after analysis is set as empirical data, and tested by SEM, it shows that their internal and external structural adaptation degrees are good, and the overall adaptation is also good. It is a good degree, which confirms that the four factors of brand loyalty, popularity, quality awareness and brand association belong to the core dimensions of college assets.

5. Conclusion
In the current research design, due to the limitation of the amount of data available, college assets only select four important dimensions; if more effective papers can be collected in the future, they will be included in the fifth dimension for model testing. Compare with a view to establishing a more comprehensive factor structure. When the number of articles is enough, you can also use each dimension of brand equity to carry out detailed discussions to obtain more detailed information. Furthermore, this study does not explore the association between university assets and other endogenous or exogenous variables. In future studies, the number of variables (such as satisfaction or marketing) that can be added to the data may be included in the discussion. Construct a more complete structural model and then test, and explore the influence of the background variable’s regulating effect, so as to explore the more precise influence relationship between internal and external derived variables.

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