



Analysis of the ways to improve the teaching effect of live marketing courses

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Abstract. Based on the current situation of live broadcast marketing course, this study takes teachers and students in vocational colleges as the survey object, and uses principal component analysis (PCA) method to analyze the key factors affecting the satisfaction of live courses in higher vocational colleges to explore the ways to improve the teaching effect of live broadcast marketing course. This study provides a reference for improving the teaching effect of live broadcast marketing courses and helps innovating the training mode of e-commerce, marketing and other related majors in the future.

Keywords: Live broadcast marketing course, Questionnaire, Principal component analysis, Spsspro

1 Introduction

Marketing communication has entered the era of e-commerce marketing 5.0, and the traditional single curriculum system is difficult to adapt to the internal needs of enterprises' live marketing and the integration of industry and education[3]. The research on live broadcast marketing courses has gradually become a hot issue[4]. The existing research mainly emphasizes the importance of live broadcasting courses on talent training in theory, and points out that it is necessary to build a teaching effect system of live broadcasting marketing that meets the needs of society. Some authors proposed that live-streaming marketing courses can make rational use of various information resources and information technology to improve teaching activities[1],[2],[6]. Liu puts forward theoretically suitable teaching modes and paths for live marketing courses[8], but not conduct a practical investigation. Existing studies have pointed out the importance and shortcomings of live marketing courses and the theoretical promotion path, but no data investigation and analysis have been carried out. Therefore, this study uses questionnaire to collect data to quantify teachers and students' evaluations and suggestions on the teaching effect of live marketing. Based on SPSSPRO statistical software and principal component analysis method, the quantitative data is analyzed to

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G. Guan et al. (eds.), *Proceedings of the 2023 3rd International Conference on Education, Information Management and Service Science (EIMSS 2023)*, Atlantis Highlights in Computer Sciences 16, https://doi.org/10.2991/978-94-6463-264-4_86

explore specific methods and approaches suitable for the teaching effect of live marketing[5].

2 Methods

2.1 Questionnaire design

In order to analyze the main influencing factors of the effect of live marketing courses in higher vocational colleges in Maanshan City, we established a four-level index system based on the China Customer Satisfaction Index Model (CCSI) (see Table 1)[9].A questionnaire was developed based on six dimensions of education and teaching ability, teaching facilities, teaching model, teaching value, classroom atmosphere, and students' overall satisfaction, and 18 detailed indicators to investigate the satisfaction of live courses. The six dimensions are refined into the 18 specific indicators in the table, and the corresponding questionnaire questions are set according to the 18 indicators. Each question contains very satisfied, satisfied, general, dissatisfied and very dissatisfied.

Table 1. Index system structure

| Level 1 Index | Level 2 Index | Level3 Index | Level 4 Index | |
|--|------------------------------|--|---|----------------------------------|
| Satisfaction with live marketing courses | Teaching ability | Teaching demonstration ability | Specific scale questions in the questionnaire(1-18) | |
| | | encouragement | | |
| | | Teacher's competence | | |
| | | Teacher's personal image | | |
| | | Teaching facilities | | Live teaching hardware equipment |
| | | | | Live teaching training software |
| | Teaching mode | Live teaching venue | | |
| | | Sense of engagement | | |
| | | Whether live broadcasting is actually applied in class | | |
| | | Whether the exercise is professional | | |
| | Teaching value | Reasonableness of assessment | | |
| | | Whether it has practical value | | |
| | Class atmosphere | Whether it opens up new ideas | | |
| | | Work and life practical applications | | |
| | | Collegiality of classmates | | |
| | Overall student satisfaction | Friendliness of classmates | | |
| | | The warmth of the group discussion | | |
| | | Satisfaction compared to expectations | | |

A total of 1125 questionnaires were randomly distributed to higher vocational college in Ma 'anshan through online and offline, of which 982 were valid, and the effective recovery rate reached 87.29%, which met the required number of questionnaires.

2.2 Data

In this paper, 1125 questionnaires were randomly distributed to higher vocational colleges in Maanshan City by online and offline methods, and 982 effective questionnaires were issued, with an effective recovery rate of 87.29%, which reached the required number of questionnaires. SPSSPRO(Online Data Processing and Statistical Analysis Platform) was used to sort out and analyze the collected questionnaire data. Firstly, the answers to all questions were coded. Then, SPSSpro was used to calculate and summarize the average scores corresponding to each dimension of education and teaching ability (questions 1-4), teaching facilities (questions 5-7), teaching mode (questions 8-11), teaching value (questions 12-14), classroom atmosphere (questions 15-17), and overall student satisfaction (question 18). The score of each dimension of each survey object was obtained as the original data of 6 indicators, and 982 sets of data were obtained after data collation.

2.3 Data analysis

In order to evaluate the relative importance of each indicator in the overall satisfaction of live marketing courses, we used principal component analysis (PCA) to determine the weight of each indicator. The index with large weight has high importance, and the other indicator has low importance. The weight is confirmed by principal component analysis, and the specific process is referred to the results section (Results 4) of this paper. The six indicators are integrated into five principal components, and then the importance of the indicators is judged according to the variance contribution rate of the principal components, so as to determine the key factors affecting the overall satisfaction of live broadcasting courses, and analyze the direction and ways to improve the teaching effect of live broadcasting courses.

3 Validation of Instrument

The questionnaire used in this study has scale questions, so the reliability and validity analysis are carried out.

3.1 Reliability test

This paper uses the SPSSPRO software to calculate the Cronbach's α coefficient as shown in table2:

Table 2. Cronbach coefficient table of questionnaire

| Cronbach's α | Number of items | Number of samples |
|---------------------|-----------------|-------------------|
| 0.936 | 24 | 982 |

As shown in table2, the Cronbach's α is greater than 0.9, so this questionnaire has high credibility in studying

3.2 Validity test

we use KMO value and B test to judge the validity of the questionnaire. The results are in table 3:

Table 3. KMO and Bartlett's test

| | | |
|-------------------------------|------------------------|-----------|
| KMO value | | 0.92 |
| Bartlett's test of sphericity | Approximate chi-square | 51211.896 |
| | df | 3160 |
| | P | 0.000*** |

Note: ***, ** and * represent the significance level of 1%, 5% and 10%, respectively

As can be seen from the above table, the KMO value is 0.92 and the p-value of Bartlett's test is significant at the 1% level. Therefore, the questionnaire has high validity and can effectively measure the survey objects.

4 Results

This section shows the process and results of calculating index weights using principal component analysis(PCA).

4.1 KMO value and Bartlett's test

KMO value and Bartlett test were used to test the correlation between the indicators to judge the applicability of principal component analysis. The results are shown inTable 4 .

Table 4. Table 4 KMO test and Bartlett's test

| | | |
|-------------------------------|------------------------|----------|
| KMO value | | 0.752 |
| Bartlett's test of sphericity | Approximate chi-square | 593.607 |
| | df | 15 |
| | P | 0.000*** |

Note: ***, ** and * represent the significance level of 1%, 5% and 10%, respectively

The results of KMO test in table 4 show that the value of KMO is 0.752, and the P value of Bartlett test was significant at the level of 0.01. The results show that the weight can be obtained by principal component analysis.

4.2 Judging the number of principal components.

We use the variance explanation rate to judge the number of principal components. The results were shown in table5:

Table 5. Results of of variance explanation rate

| Components | Characteristic roots | Variance explained rate (%) | Cumulative variance explained rate (%) |
|------------|----------------------|-----------------------------|--|
| 1 | 2.144 | 35.735 | 35.735 |
| 2 | 0.986 | 16.427 | 52.162 |
| 3 | 0.843 | 14.057 | 66.22 |
| 4 | 0.735 | 12.252 | 78.471 |
| 5 | 0.68 | 11.329 | 89.8 |
| 6 | 0.612 | 10.2 | 100 |

It can be seen from table5, the cumulative variance contribution rate of the first five components is greater than 80%, so the first five principal components are selected.

4.3 Component coefficient matrix

In order to determine the coefficients in linear combinations of principal components for the subsequent weight analysis , a matrix of components is given based on PCA, as shown in table6.

Table 6. Component matrix

| variables | Component1 | Component2 | Component3 | Component4 | Component5 |
|------------------------------|------------|------------|------------|------------|------------|
| Teaching ability | 0.119 | 0.936 | 0.286 | 0.157 | 0.157 |
| Teaching facilities | 0.273 | 0.193 | 0.631 | 0.741 | 0.185 |
| Class atmosphere | 0.511 | 0.088 | 0.497 | 0.282 | 0.505 |
| Teaching value | 0.291 | 0.018 | 0.433 | 0.837 | 0.463 |
| Teaching mode | 0.318 | 0.156 | 0.141 | 0.085 | 0.970 |
| Overall student satisfaction | 0.309 | 0.263 | 0.501 | 0.003 | 0.051 |

As can be seen from the component matrix Table 6, principal component 1 reflects the class atmosphere index, principal component 2 reflects the teaching ability index, principal component 3 reflects the teaching facilities index, and principal component 4 reflects the teaching value index. Principal component 5 has a large load value on the teaching mode, which can reflect the teaching mode index. Therefore, principal components 1, 2, 3, 4 and 5 correspond to classroom atmosphere, teaching ability, teaching facilities, teaching value and teaching mode respectively

4.4 Index weight analysis

The weight of each index is calculated using the component matrix data obtained from the above principal component analysis, as shown in table7.

Table 7. Principal component factor weight table

| Name | Variance explained rate (%) | Cumulative variance explained rate (%) | Weight (%) |
|-------------|-----------------------------|--|------------|
| Component 1 | 0.113 | 11.3 | 12.584 |
| Component 2 | 0.164 | 27.7 | 18.263 |
| Component 3 | 0.123 | 40.0 | 13.697 |
| Component 4 | 0.141 | 54.1 | 15.702 |
| Component 5 | 0.357 | 89.8 | 39.755 |

It can be seen from the analysis of weight results in the table, the weight of teaching mode and students' satisfaction with live broadcast marketing teaching in higher vocational colleges in Ma 'anshan City is 39.755%, indicating that it has the greatest influence on the satisfaction of live broadcast marketing teaching. Therefore, the innovativeness of teaching model has an important impact on improving satisfaction of live broadcast teaching. The second is teaching ability which weighs 18.263%, which shows that teaching ability is also a very important factor affecting the teaching satisfaction of live broadcast courses in Ma 'anshan city. In addition, the weight of teaching value is 15.702%. The weight of the overall satisfaction of students is 13.697%. Finally, the class atmosphere, which has a smaller weight of 12.584%

5 Conclusions

The results showed that innovating teaching mode and improving teaching ability were the two main ways to improve the effect of live broadcast marketing course. Higher vocational colleges should establish live broadcast course system, redesign course standards, keep pace with the development, integrate excellent industry resources, further explore teaching mode, and construct new talent training programs[7]. Live marketing courses in higher vocational colleges should introduce chatGPT, artificial intelligence and other technologies, cooperate with enterprises, innovate teaching models, stimulate students' interest in learning, and improve social adaptability[10]. To improve education and teaching ability, higher vocational colleges should introduce part-time teachers for entrepreneurship and innovation, set up a high-level double-tutor teaching innovation team, and form a mechanism for high-skilled part-time teachers to teach practical courses by hiring live broadcast experts to teach part-time in schools.

Acknowledgment

This work was supported by Key Project of Anhui Province Education and Teaching Research Planning (2021AZCJ052), Academic Support Program for Top Talents of Anhui Province (gxbjZD2020042) and Key Social Science Research Project of Anhui Province(2022AH052832).

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