

## Survey Analysis of Customer Satisfaction of Campus Express Based on SPSS Statistical Method

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### Abstract

Along with the rapid development of the "Internet+", shopping demands under the e-commerce are becoming greater and greater, the logistics and express industry which support steady progress of e-commerce change rapidly. The contents of the online shopping services mainly show "online" and "offline" two aspects, students as the main force of online shopping groups, their satisfaction evaluation for logistics determines the direction of future development of logistics and express company. This paper aims at the "offline" service, obtain data through the students' individual interviews, questionnaires and other means, the factor analysis, reliability analysis, regression analysis, variance analysis in the SPSS statistical analysis are used to do empirical analysis for customers' satisfaction of campus express logistics, and draw conclusions that consumers generally have low satisfaction for the quality factor, stability factors and convenience factors of the campus express industry, and proposes the suggestion that improve the terminal service team, integrate and standardize the terminal agent for the campus express industry, it has important practical significance for the development of modern express industry.

### Keywords

campus express; SPSS statistical method; customer satisfaction.

### 1. Introduction

With the rapid development of Internet, online shopping has become a popular trend, college students' living habits and economic ability make they become the main force of online shopping, especially the number of teachers and students can reach hundred thousand in some comprehensive universities, the daily express number cannot be underestimated, and there are long queue for teachers and students to pick up package. Express companies have seen huge potential opportunities of the campus market, many express companies move into the market of colleges and universities. Campus express delivery as the last part of online shopping, it directly contact with terminal customers, so the service level of campus express delivery will produce very big effect for customers online shopping satisfaction. According to the survey, the express enterprises enter the campus in addition to the traditional YUNDA, STO. Express, YTO EXPRESS, BEST EXPRESS, ZTO EXPRESS, S.F. Express, TTK Express and other express company, there are some proprietary express company, such as Jingdong, Pinjun (Vipshop), Dongjun (Jumei), amazon, etc. The value meanings of this research are mainly shown in the following two aspects:

- (1) Analyze the main factors affecting the customer's overall satisfaction for campus express, although there are many factors, the importance of the each influence factor is not the same, there are maybe several important factors in particular, directly reflecting index that customer's overall satisfaction for the campus express, the main influence factors will be refined through statistical analysis.
- (2) Application ideas of SPSS statistical methods. Through factor analysis, reliability analysis, regression analysis and mean comparison in SPSS, this paper finds existing problems. These methods are important means to analyze and find problems, and provide a research idea for research in other subject field questions.

## 2. Literature Review

Customer satisfaction is the satisfaction level that guest feels when consumes for a product or service. Customer satisfaction reflects whether the customer acknowledges the consumption, and also reflects the product or service of enterprise worth it. The Anderson and other [1] research show that customer satisfaction directly reflects the enterprise service quality of the customers, and it is also the best indicator of enterprise performance and profitability. Boulding and other [2] scholars have repeatedly expounded the strong relationship between customer satisfaction and customer loyalty through theoretical and empirical approaches. Westbrook, etc. [3] pointed out that due to the positive relationship between customer satisfaction and profit levels increased customer loyalty, this means that the enterprise will be able to get more profit. Customer satisfaction evaluation is of great significance for the enterprise. Eugene and Fornell [4] gives a Sweden Customer Satisfaction Barometer (SCSB), and analyze and the relationship among the customer satisfaction, the enterprise market share and profit level through data, points out that high customer satisfaction means high market share and profit level. Kang daqing and Zhang Xumei [5] put forward a layered product customer satisfaction rating system.

The existing research on the present situation of campus express service is given priority to empirical research, generally around operation mode and service satisfaction of campus express business, more adopt the way of questionnaire and on-the-spot investigation. There are small amounts of non-empirical research, for example, Wang Qilong [6] based on characteristics analysis of the express in colleges and universities, launch from market demand from of express the in colleges and universities, business operation mode and service content, analyze the current situation of campus express service. Zhao Jiangli [7] in the new mode of express terminal mode in university campus, it is concluded that there are several kinds of express terminal mode in university campus. Traditional couriers waiting patterns; the agency model carried out by the courier; "Smart express box" mode. Liang Dong [8] found that the frequency of using express of college students is high from research of campus express delivery satisfaction. Service attitudes and finding speed are key factors for students to choose express companies; bad attitudes of service staff often lead to customer dissatisfaction; Students think that express companies should start personalized service.

There is a lot of literature on the SPSS statistical method, and there are a lot of subjects and fields, it does not describe here.

## 3. Research Design

### 3.1 The Extraction of Main Influencing Factors of Customer Satisfaction

Y University as representative in China colleges and universities, Y University was done an empirical analysis. Through the Y University students one-on-one interviews, let them express their views "what are the influencing factors of campus express satisfaction", their answers are classified to obtain ten main factors of campus express satisfaction, then the ten factors are made questionnaires, the questionnaires are randomly distributed to Y college students to investigate, until no new factors increase. There are controversies in two factors in recovered questionnaire: the accuracy of express packages and delivery price, and these two factors are hardly any to choose, most people think that almost no error has occurred in receive express packages (the small number of students' single mail, receive express and the improvement of data recognition technology and other reasons), the problem express fee is not determined by delivery networks (determined by the e-commerce and logistics company). The two factors were removed when the final factors were sorted out, and two additional factors were added. Therefore, from the initial individual interview to the questionnaire survey, ultimately the ten major factors influencing the campus express customer satisfaction are combed out, they are: (1)the integrity of the express packages; (2)the timeliness of notice after package arrive; (3)the service attitude of the courier; (4)The waiting time for taking delivery package; (5)The speed that couriers look for package; (6)The length of time that courier handles the package while receiving

the package; (7)the environment of taking delivery parcel; (8)the distance to pick up the parcel; (9) location change of parcels; (10)the communication effect between customers and couriers.

### 3.2 Questionnaire Design

The respondents were students from the Y University; this university is the domestic general undergraduate colleges, the number reach 20,000 people, with a representative. The questionnaire includes the title, greeting and text, and the greeting is a simple explanation of this survey activity. The text consists of two parts; the first part is the basic information of the respondent, including gender, grade, express company, the number of delivery, etc.; the second part is the main content of the questionnaire, which is mainly customers' recognition index. In order to make sure that the problem is easy to understand and not misleading, the modifiers are appropriately added in influencing factors, for example: general, very, the higher the recognition, the more satisfied. There are 10 questions in the topic content, all are question on affecting the customer satisfaction factors on campus express, and adopting the form the 4-level Likert scale, the "1" represent much recognition; "2" represent general recognition; "3" represent disapproval; "4" represent much disapproving.

## 4. Empirical Analyses

### 4.1 Sample and Data Collection

This research uses the questionnaire survey method for data collection, which is used for Y college students on campus express satisfaction research. A total of 359 questionnaires were given to respondents by random selection of classrooms and dormitories. A total of 49 online questionnaires made by Wenjuanxing directly were distributed and 49 papers were collected, A total of 336 were recovered, and 287 were retrieved, the questionnaire recovery rate was 93.6%, the valid questionnaires were 313, and the questionnaire efficiency was 93.2%. The results showed that the selected sample data were representative and could be analyzed empirically.

### 4.2 The Basic Situation of Survey Sample

#### 4.2.1 Gender Distribution

Among the randomly selected subjects, 196 were female students, which account for 62.6% of the total number of respondents. 117 boys, which account for 37.4% of the total number of students. The proportion of girls was significantly higher than boys. There may be two reasons: The number of students of Y University is more than the number of boys; boys online shopping are significantly lower than the number of girls.

#### 4.2.2 Grade Distribution

According to the grade distribution of the surveyed objects, there are 71 senior students, which account for 22.7% of the total; there are 114 junior students, which account for 36.4% of the total number; there are 69 sophomore students, which account for 22.0% of the total number; there are 59 freshman students, which account for 18.8% of the total number. It shows that the number of online shopping of high school students is more than low grade students.

#### 4.2.3distribution of Express Company

There are 12 express companies involved in the 313 valid questionnaires of the survey sample, The distribution status of the express companies are, 39 men are YUNDA, 36 men are STO, 39 men are YTO EXPRESS, 25 men are BEST EXPRESS, and 27 men are ZTO EXPRESS, 23 men are VIPSHOP, 26 men are S.F. Express, 17 men are Dangdang, 22 men are Jingdong, 22 men are Dongjun, 19 men are TTK Express, 18 men are ZJS EXPRESS. The corresponding proportion are 12.5%, 11.5%, 12.5%, 8.0%, 8.6%, 7.3%, 8.3%, 5.4%, 7.0%, 7.0%, 6.1% and 5.8%, respectively. It shows that the "four links and one up" occupy large proportion of online shopping in universities, they belong to a professional third-party logistics company; and proprietary Jingdong, Dangdang, Dongjun and so on need to be further increased business volume. University Express presents "princes separatist" situation, competition tends to white-hot, the future "who laugh at the end" is to see customer satisfaction.

#### 4.2.4, Fixed Agent Point Distribution

Among the surveyed questionnaires, there were 190 fixed agents, accounting for 60.7% of the total; there were 123 without fixed agents, accounting for 39.3% of the total. It shows that most express companies have chosen a the terminal mode with fixed agent point in Y universities, a few express companies have not adopted a fixed agent point terminal mode; most students do not want to arbitrarily change the location of taking package, selecting the fixed agent point is an important choice to improve customer satisfaction.

### 4.3 Data Analysis

#### 4.3.1, Factor Analysis

Factor analysis is to aggregate more factors into fewer representative factors, so there is a strong correlation among the original factors. In order to verify whether the correlation among the original variables can be used Bartlett Sphere test and KMO test method. If the observed value of the statistic is relatively large, and the corresponding probability P is less than the given significance level  $\alpha$  ( $\alpha = 0.05$ ), then original variable is suitable for factor analysis, otherwise it is not suitable for factor analysis. It can be seen from the table that the observed value of the Bartlett sphere statistic is 1490.835, the corresponding probability P is close to zero, which is less than the significance level  $\alpha$  ( $\alpha = 0.05$ ), the null hypothesis should be rejected, there are significant differences between the correlation coefficient matrix and the unit matrix. At the same time, KMO value is 0.894, it is greater than 0.7, according to KMO measurement given by Kaiser, the original variable is suitable for factor analysis.

Table 1. Bartlett sphere test and KMO test

|                                |                        |          |
|--------------------------------|------------------------|----------|
| Kaiser-Meyer-Olkin measurement |                        | .894     |
| Bartlett sphere test           | approximate chi-square | 1490.835 |
|                                | df                     | 55       |
|                                | Sig.                   | .000     |

The principal component analysis can achieve the decreasing dimension of variable by linear combination of the original variables and the solution of the every principal component, and can provide the initial solution for the factor analysis. The naming explanation can be obtained by factor rotation. In this paper, the principal component analysis method is used to extract the factors, and the varimax is used to carry out the orthogonal rotation for the factor load matrix, so that the factor has the naming explanation.

Table 2 component matrix after orthogonal rotation of varimax

| component   | quality factor | stability factor | Convenience factor |
|---|----------------|------------------|--------------------|
| integrity of package                              | .843           |                  |                    |
| courier' service attitude                         | .837           |                  |                    |
| The queues waiting time of customer               | .825           |                  |                    |
| speed that courier look for package               | .812           |                  |                    |
| The time that courier handles the package         | .806           |                  |                    |
| communication effect between customer and courier | .802           |                  |                    |
| timeliness of notice arrival                      |                | .793             |                    |
| change of express outlets                         |                | .682             |                    |
| distance to take the delivery                     |                |                  | .647               |
| site environment of express network               |                |                  | .566               |

The above table is component matrix after rotation, it can be seen that the package integrity, service attitude, waiting time, the speed of finding package, processing time, the value of communication effects in component belong to the same component, it can be explained as a quality factor; timely notification of component, the value of express network change belong to same components, it can be interpreted as a stability factor; pickup distance of component and the value of the site environment are obviously the same component, it can be explained as a convenience factor.

#### 4.3.2 Reliability Analysis

The SPSS is used to do cronbach's  $\alpha$  coefficient analysis for questionnaire of customer satisfaction of campus express. The cronbach's coefficient  $\alpha=0.759$  are obtained, and the reliability coefficient are more than 0.7, which indicated that the questionnaire are reasonable and can pass reliability test.

Table 3. cronbach's  $\alpha$  coefficient in questionnaire

| cronbach's $\alpha$ coefficient | standardized cronbach's $\alpha$ coefficient | number of items |
|---------------------------------|--|-----------------|
| .759                            | .760   | 3               |

#### 4.3.3 Regression Analysis

In order to study the influence of quality factors, stability factors and convenience factors on the overall satisfaction of the campus express, the linear regression method is used to analyze. The regression equation is made significance test with a forced entry strategy, and the result is shown in the table below.

Table 4. significance test results 1

| modle      | SS      | df  | MS     | F      | Sig. |
|------------|---------|-----|--------|--------|------|
| regression | 273.201 | 3   | 91.067 | 82.736 | .000 |
| residual   | 340.115 | 309 | 1.101  |        |      |
| overall    | 613.316 | 312 |        |        |      |

It can be seen from Table 4 that the total dispersion quadratic sum of the explanatory variables is 613.316, the observed value of the F test statistic is 82.736, and the corresponding probability P is close to 0, significance test of regression equation can be done in accordance with this table.

Table 5. significance test results 2

| model              | unstandardized coefficients |                | standardized coefficients | t     | Sig. |
|--------------------|-----------------------------|----------------|---------------------------|-------|------|
|                    | B                           | standard error |                           |       |      |
| constant           | .589                        | .268           |                           | 2.200 | .029 |
| quality factor     | .449                        | .067           | .374                      | 3.856 | .000 |
| stability factor   | .223                        | .058           | .218                      | 6.706 | .000 |
| convenience factor | .236                        | .056           | .208                      | 4.236 | .000 |

It can be seen from Table 5 that the probability P of the regression coefficients significance t test of all variables are less than significance level  $\alpha(\alpha=0.05)$ . Therefore, the null hypothesis should be rejected; it shows that their linear correlation with the explanatory variables is significant. We can get quality factors, stability factors and convenience factors and campus express customer satisfaction regression equation: campus express customer satisfaction= $0.589+0.449*\text{quality factor}+0.223*\text{stability factor}+0.236*\text{convenience factors}$ . This shows that quality factors, stability factors, convenience factors and campus express customer satisfaction are significantly correlated.

#### 4.3.4 Variance Analysis

The independent sample t test by SPSS statistical analysis is used to detect there are a significant difference between the two overall mean values whether fixed agent point. The overall evaluation as a test variable, with or without fixed proxy point as a group variable, and then do two independent samples t test, the results are shown in the table below.

Table 6. the satisfaction mean with or without fixed agent points

|                    | mean with fixed agent point | mean without fixed agent point |
|--------------------|-----------------------------|--------------------------------|
| general evaluation | 4.88                        | 4.54                           |

In Table 6, the mean satisfaction with fixed agent is 4.88, and the mean satisfaction without the fixed agent is 4.54. There is a certain difference between the two, it need to do F test analysis for the overall variance, then obtain whether there is a significant difference in the overall mean of overall evaluation or not.

Table 7. test results two samples with or without fixed agent points

| overall evaluation         | Levene test of variance equation |      | T test of mean equation |     |      |
|----------------------------|----------------------------------|------|-------------------------|-----|------|
|                            | F                                | Sig. | t                       | df  | Sig. |
| assumes the equation equal | 908                              | .341 | 1.446                   | 311 | .015 |
| assume equation not equal  |                                  |      | 1.440                   | 257 | .015 |

Two steps are tested in accordance with Table 7. The first step is the F test of two overall variances. The observed value of F statistic of overall evaluation is 0.908, and the corresponding probability p is 0.341. If the significance level  $\alpha$  is 0.05, and the probability P is greater than 0.05, there is no significant difference in the overall variance of the factor. The second step is the t-test of the two mean values. In the first step, since there is no significant difference in the overall variance, the t test result of the first row should be taken. The observed t statistic of the overall evaluation of t statistic is 1.446; the corresponding p value is 0.015. If the significance level  $\alpha$  is 0.05, the probability p of the overall evaluation is less than 0.05, it shows that there is a significant difference in the mean value of the overall evaluation with or without fixed agent point.

## 5. Conclusion

Through the survey and analysis of the customer satisfaction of campus express, the main factors that influence the express service level of colleges and universities are found, and the service level of quality factor, stability factor and convenience factor are still very low. The current express presents "lack of coordination, princes separatist," competitive situation, it will not go far away to rely on low-cost competition, only to improve customer satisfaction before laughing in the end.

It can be seen from the SPSS statistical analysis method that integrate the express terminal resources in colleges and universities through the search for third-party professional service team, and provide customers with a stable fixed point service, which is a good choice, hope to provide decision basis for the university express and e-commerce platform.

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