**Supporting Information**

Supporting Information A - Semi-structured interview

**Table 2 Participants’ information**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Gender | Age | Educational | Occupation |
| 1 | F | 30-45 | Undergraduate | Public servant |
| 2 | F | 46-60 | High School | Worker |
| 3 | F | 18-29 | Undergraduate | Student |
| 4 | M | 18-29 | Undergraduate | Designer |
| 5 | F | 60 above | Undergraduate | retired |
| 6 | F | 30-45 | Postgraduate | College teacher |
| 7 | F | 46-60 | Undergraduate | Housewife |
| 8 | F | 30-45 | Undergraduate | Clerk |
| 9 | M | 46-60 | Undergraduate | Public servant |
| 10 | M | 30-45 | Postgraduate | Ground crew |
| 11 | F | 30-45 | Postgraduate | Doctor |
| 12 | F | 30-45 | Undergraduate | Woodcraftsman |
| 13 | M | 18-29 | Undergraduate | Interior designer |
| 14 | F | 46-60 | Undergraduate | Salesman |
| 15 | M | 30-45 | Undergraduate | Public servant |
| 16 | F | 60 above | High School | retired |
| 17 | M | 18-29 | Postgraduate | Student |
| 18 | M | 30-45 | PHD | College teacher |

The interview information of 18 participants was coded by NVivo12.0, and the results of coding data were as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Raw words:** | **Concept  (demand point)** | **Categories** | **Overarching theme** |
| F1: Yesterday, I watched artisans make lacquerware on the spot. The craftsmanship is fantastic. It is very important to inherit this intangible skill.  F5: I bought a paint bowl yesterday. The craftsman's painter is really great. It looks very beautiful. I like it very much.  M4: I studied lacquerware making for some time in college. The craft is very complicated and takes several months to complete. | Craft | Visuality | **Appearance Demands** |
| F2: I bought a lacquer jewelry box when I came to travel in 2020; this time, I purchased two lacquer paintings. I like all kinds of materials used in lacquer painting very much. M1: I saw many lacquerware carcasses in the Tang Dou Direct Store. Besides wood, there are various kinds, such as ceramics, wood, and metal. It is very novel. | Materials |
| F1: I saw that most lacquerware was made of square jewelry boxes. I visited many stores and didn't see anything else. F6: When traveling in Fujian, I saw various lacquerware shapes, but there are fewer lacquerware shapes here. M3: I prefer lacquerware with unique shapes. F9: Most kinds of lacquerware in every store are jewelry boxes, and the shapes are very simple, which I think could be better. M7: They are all exquisite, but they are all similar in shape and have no features. | Shape | Design |
| F3: The pattern can be a little more modern. Too traditional patterns make me feel like I was in ancient times, and I don't know where to put it at home. F4: Most of the patterns are animals and plants, and the patterns of lacquerware in different shops are very similar. F7: Its pattern design should be more diversified and aesthetic. | Pattern |
| M2: Its colors attract me, and black is calm. They often have specific symbolic significance in culture. M5: Lacquer bodies are primarily black and red, which is too monotonous. There should be more color matching. M6: I prefer those lacquerwares with bold colors and rich layers. They are beautiful to me visually. F11: Pingyao lacquerware can explore a broader range of color combinations and be more modern. | Color |
| F4: I like jewelry boxes and some jewelry accessories very much. It's not very expensive. F8: In the buying process, I found that jewelry box prices vary greatly. Some are thousands, and some are only one or two hundred dollars. M5: The price is a bit expensive. I want to buy it only if it's reasonable. F10: You get what you pay for. I'm willing to buy it if it's good and expensive. | Price | Conveniences | **Production Demands** |
| M2: I saw that many lacquerware pieces of furniture were exquisite. My house was decorated in Chinese style, and I wanted to buy a cabinet when I left. Although it is huge, the boss said it would be delivered. F4: I like jewelry boxes and some jewelry accessories very much. It's not expensive and easy to take away. F5: I prefer something small. F9: Express delivery is very convenient now. Many stores can deliver goods by express delivery. I bought a screen when I was traveling here last year. When I went back, some friends saw it and liked it. I contacted my boss and received it less than a week later. | Portable |
| F1: I saw a tourist carrying it in a rugged paper bag on the road. M2: The design and quality of the outer packaging should match the lacquerware. M4: My outer packaging and lacquerware products are equally important. M6: Many people want to bring gifts to their leaders or friends when they travel, which will look more dignified if they are beautifully packaged. | Packing |
| F1: I saw that most lacquerware was made of square jewelry boxes. I visited many stores and didn't see anything else. F3: The types of lacquerware in the market are small, and a few shops also have lacquerware tea sets. F8: I visited Pingyao 10 years ago, but lacquerware has mostly stayed the same. F9: The most common lacquerware in every store are jewelry boxes, which could be more attractive to me. F10: There are a few kinds of products in the lacquerware market. I have seen several lacquerware, tea sets, and jewelry pieces, and I am very interested in them. | Types | Practicability |
| F2: I hope it won't come off. M3: The boss said I can contact him if I have any questions as long as it is within the warranty period. M6: The quality of lacquerware is essential to me. After all, I spent a lot of money. F6: I once bought lacquerware in other places, but it cracked and peeled off soon after I used it. I hope merchants can provide more reliable and lasting products. | Quality |
| F4: The jewelry box can store many of my rings, earrings, and necklaces well, and it looks good there. F5: I'd like to buy it if it is valuable and beautiful. M4: I saw a small pendant of lacquerware before, which was very beautiful. Later, I learned that it was still a USB flash drive. I bought two for my friends. | Function |
| F3: Series lacquerware allows me to choose suitable gifts for different friends and family members, and everyone can get different designs. M3: A series of lacquerware shows rich cultural depth, and each piece seems to tell a different story, which attracts me very much. | Series |
| F3: Lacquerware is not only a handicraft but also a cultural transmission. M1: Like ceramics, lacquerware has a profound cultural heritage. I like to buy ceramics and lacquerware products, which is my pursuit of life. F4: Lacquerware represents a profound Chinese culture; my foreign friends like it very much. | Culture |
| F3: A good brand represents the quality and credibility of products. M2: I like lacquerware with brand stories. They are unique. F8: I feel more secure buying lacquerware in places like "Tang Dou" and "Yong Long" and will not be cheated. M3: Famous brands are more reliable, and foreigners who don't understand will not be cheated. | Brand | Uniqueness | **Emotional Demands** |
| F4: I like unique and creative souvenirs. It feels novel. M3: The creativity of lacquerware should not be limited to shapes and patterns but also be innovative in functions and experience. F7: Lacquerware in the market often needs more originality, many of which are of the same design. F8: I came to Pingyao 10 years ago, but lacquerware has remained the same since then, and there have been a few innovations. M7: They are all exquisite, but they are all similar in shape and have no features. | Interesting idea |
| M2: I bought a lacquer pendant shaped like a copper coin, reminding me of Shanxi merchants' story. F8: I bought lacquerware as a gift for my mother in the past two years. Every time I see it, I think I have been here. M4: I listened to the tour guide explaining the development story of Pingyao lacquerware. Every time I saw lacquerware on the road, I could think of the story she told us, and I thought lacquerware with prominent regional characteristics would be more unique. M5: Regional lacquerware has more collection value and commemorative significance. I always like to look for lacquerware representing regional characteristics as a souvenir. | Regional |
| F6: lacquerware is quite memorable. I want to buy some for my friends. F7: For me, lacquerware is an object and a carrier of my feelings during my travel. I will recall my wonderful travel time in Pingyao every time I see it. F8: I bought lacquerware as a gift for my mother in the past two years. Every time I see it, I think I have been here. | Commemorative significance | Sociality |
| F9: I bought a lacquered tea set for my leader. M6: I planted a lacquer art bag at a glance. This bag is also included in the CCTV program. Next month is my birthday. I bought it as a birthday present for myself. F8: I bought lacquerware as a gift for my mother in the past two years. Every time I see it, I think I have been here. F10: Jewelry box was one of women's dowry in ancient times. My friend married in October, so I bought a red jewelry box with dragon and phoenix patterns as a wedding gift. | Gift |
| F1: Many people are willing to spend a lot of money to collect the works of masters. M3: I have a painted bowl by master craftsman Zhang Jin. It is particularly exquisite. Although it is a little expensive, it is worth it. F3: Yesterday, I listened to a tour guide at the Tang Dou Lacquerware Museum, and many of Master Xue Shengjin's works were collected here. M6: I know some people collect lacquerware because they like the culture here very much, while others think it will be appreciated. | Collection |
| F10: To save the production time of lacquerware, many craftsmen choose chemical lacquerware. M3: I heard that it will take many years for lacquer trees to start cutting, and if they are not cut in time, it will affect the growth of the trees. M7: A student in our school offers a lacquer course. Lacquer is a material that is harmless to the body. | Environmentally friendly | Sustainability | **Extra  Demands** |
| M1: For lacquerware products, safety is my great concern. Especially when using these lacquerware as food containers, they must ensure they do not contain harmful substances. F3: I'm worried that it would be unsafe for my children to touch it without the big paint. M2: I hope all lacquerware products can clearly inform consumers of their materials and paint composition. F6: As a parent of a child, I need to pay special attention to whether lacquerware is safe and nontoxic when I buy it. M7: A student in our school offers a lacquer course. Nature lacquer is a material that is harmless to the body. F10: To save the production time of lacquerware, many craftsmen choose chemical lacquerware. If some unscrupulous merchants use it to make food containers, I will worry about my body poisoning. | Safe |

Supporting Information B – KANO Questionnaire

（1）Reliability and validity test

a）Reliability analysis

Reliability is an evaluation of how reliable the results of an assessment are. In this study, Cronbach's α was used to test the reliability of the questionnaire. Cronbach's α>0.7 is acceptable. Cronbach's α between 0.7-0.8 indicates that the reliability is reliable. Cronbach's α between 0.8 and 0.9 indicates that the reliability is quite reliable. Cronbach's α >0.9 indicates that the reliability is very reliable. Cronbach's α >0.9 indicates that the reliability is very reliable. Cronbach's α > 0.9 indicates that the reliability is very reliable. In this study, the reliability test was mainly conducted using SPSS, and the reliability test results for each scale are shown in the tables below. The results show that Cronbach's α for both positive and negative questions is more significant than 0.7, which means the reliability is relatively reliable.

**Table 7 KANO Questionnaire Reliability result**

|  |  |  |
| --- | --- | --- |
| Question | Cronbach’s α | Number |
| Positive question | 0.781 | 21 |
| Negative question | 0.755 | 21 |

Table7.1 Positive Questions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | Scale average after deleting items | Scale variance after deleting items | Correlation between corrected items and total score | Cronbach coefficient after item deletion | Cronbach’s α |
| T7\_1 | 85.255 | 70.626 | .569 | .755 | 0.781 |
| T8\_1 | 85.076 | 73.994 | .494 | .763 |
| T9\_1 | 85.370 | 70.435 | .635 | .752 |
| T10\_1 | 84.900 | 80.665 | .191 | .779 |
| T11\_1 | 85.072 | 75.421 | .309 | .774 |
| T12\_1 | 85.162 | 77.155 | .202 | .783 |
| T13\_1 | 85.117 | 70.702 | .568 | .755 |
| T14\_1 | 84.928 | 81.803 | .092 | .782 |
| T15\_1 | 84.845 | 68.691 | .672 | .747 |
| T16\_1 | 84.795 | 78.130 | .245 | .777 |
| T17\_1 | 84.838 | 70.921 | .628 | .753 |
| T18\_1 | 85.031 | 80.781 | .120 | .783 |
| T19\_1 | 85.239 | 77.728 | .158 | .787 |
| T20\_1 | 84.888 | 78.018 | .238 | .778 |
| T21\_1 | 84.893 | 77.785 | .223 | .779 |
| T22\_1 | 85.031 | 69.442 | .570 | .754 |
| T23\_1 | 84.993 | 71.964 | .465 | .763 |
| T24\_1 | 84.969 | 81.150 | .037 | .791 |
| T25\_1 | 84.974 | 80.887 | .138 | .781 |
| T26\_1 | 84.945 | 80.660 | .169 | .780 |
| T27\_1 | 84.979 | 81.959 | .079 | .783 |

Table7.2 Negative Questions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | Scale average after deleting items | Scale variance after deleting items | Correlation between corrected items and total score | Cronbach coefficient after item deletion | Cronbach’s α |
| T7\_2 | 31.582 | 36.124 | .471 | .732 | 0.755 |
| T8\_2 | 31.654 | 38.753 | .374 | .742 |
| T9\_2 | 31.697 | 37.719 | .441 | .737 |
| T10\_2 | 31.437 | 40.428 | .221 | .752 |
| T11\_2 | 31.573 | 38.642 | .326 | .745 |
| T12\_2 | 31.508 | 37.786 | .330 | .745 |
| T13\_2 | 31.504 | 35.265 | .552 | .725 |
| T14\_2 | 31.759 | 40.963 | .100 | .759 |
| T15\_2 | 31.406 | 36.553 | .598 | .726 |
| T16\_2 | 31.465 | 39.824 | .152 | .759 |
| T17\_2 | 31.661 | 36.354 | .646 | .723 |
| T18\_2 | 31.547 | 41.196 | .091 | .759 |
| T19\_2 | 31.463 | 39.369 | .263 | .749 |
| T20\_2 | 31.356 | 39.522 | .155 | .760 |
| T21\_2 | 31.315 | 39.159 | .247 | .751 |
| T22\_2 | 31.446 | 35.822 | .525 | .728 |
| T23\_2 | 31.516 | 36.346 | .517 | .730 |
| T24\_2 | 31.353 | 40.870 | .063 | .765 |
| T25\_2 | 31.439 | 40.630 | .205 | .752 |
| T26\_2 | 31.461 | 40.838 | .170 | .754 |
| T27\_2 | 31.768 | 41.599 | .023 | .763 |

b）Validity analysis

In this study, SPSS was mainly used to conduct exploratory factor analysis. The validity of the data was examined according to the methods of the KMO sampling appropriateness test and Bartlett's sphere test. A KMO value >0.7 indicates good validity, a KMO value between 0.6 and 0.7 indicates fair validity in empirical research, and the significance of Bartlett's sphere test is required to be less than 0.05.

The results show that the KANO positive questions questionnaire has a KMO value >0.7, and the results are shown in the tables below. Bartlett's Spherical test results are significant (p<0.001), which indicates that the validity of the data collected from the questionnaire is good.

**Table 8 Positive Question KMO and Bartlett Test**

|  |  |  |
| --- | --- | --- |
| **Sampling suitability quantity** | | 0.733 |
| **Bartlett's sphericity test** | Last chi-square read | 7109.799 |
| freedom | 210 |
| significance | 0.000 |

Table8.1 KANO positive item common factor variance

|  |  |  |
| --- | --- | --- |
|  | Initial value | Extract |
| T7\_1 | 1.000 | .729 |
| T8\_1 | 1.000 | .538 |
| T9\_1 | 1.000 | .768 |
| T10\_1 | 1.000 | .792 |
| T11\_1 | 1.000 | .790 |
| T12\_1 | 1.000 | .868 |
| T13\_1 | 1.000 | .755 |
| T14\_1 | 1.000 | .891 |
| T15\_1 | 1.000 | .914 |
| T16\_1 | 1.000 | .791 |
| T17\_1 | 1.000 | .824 |
| T18\_1 | 1.000 | .711 |
| T19\_1 | 1.000 | .805 |
| T20\_1 | 1.000 | .859 |
| T21\_1 | 1.000 | .588 |
| T22\_1 | 1.000 | .790 |
| T23\_1 | 1.000 | .482 |
| T24\_1 | 1.000 | .629 |
| T25\_1 | 1.000 | .880 |
| T26\_1 | 1.000 | .904 |
| T27\_1 | 1.000 | .912 |
| Extraction method: Principal component analysis | | |

Factors with eigenvalues greater than one were extracted using principal component analysis, and the maximum variance method was used to derive the rotated values; if the resulting cumulative variance contribution of the public factors reached 60% or more, it indicated that the public factors had a high degree of reliability.

The principal component analysis method was adopted for further analysis, and the factor analysis was carried out using variance-maximizing orthogonal rotation for factor rotation. The eigenroot value of each factor was greater than 1, and the cumulative contribution rate of variance was 77.243%, which was more than 60%. The data indexes of exploratory factor analysis were well-characterized.

Table 8.2 KANO positive item total variance explanation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| item | Initial eigenvalue | | | Extracting sum of squares of loads | | | Sum of squares of rotating load | | |
| Amount | Variance percentage | Cumulative% | Amount | Variance percentage | Cumulative% | Amount | Variance percentage | Cumulative% |
| 1 | 5.772 | 27.486 | 27.486 | 5.772 | 27.486 | 27.486 | 5.597 | 26.653 | 26.653 |
| 2 | 3.130 | 14.903 | 42.389 | 3.130 | 14.903 | 42.389 | 2.772 | 13.198 | 39.851 |
| 3 | 2.927 | 13.939 | 56.329 | 2.927 | 13.939 | 56.329 | 2.479 | 11.806 | 51.657 |
| 4 | 1.877 | 8.938 | 65.266 | 1.877 | 8.938 | 65.266 | 2.170 | 10.336 | 61.992 |
| 5 | 1.443 | 6.871 | 72.137 | 1.443 | 6.871 | 72.137 | 2.061 | 9.813 | 71.806 |
| 6 | 1.072 | 5.105 | 77.243 | 1.072 | 5.105 | 77.243 | 1.142 | 5.437 | 77.243 |
| 7 | .821 | 3.912 | 81.154 |  |  |  |  |  |  |
| 8 | .745 | 3.546 | 84.700 |  |  |  |  |  |  |
| 9 | .628 | 2.991 | 87.691 |  |  |  |  |  |  |
| 10 | .491 | 2.337 | 90.028 |  |  |  |  |  |  |
| 11 | .411 | 1.957 | 91.985 |  |  |  |  |  |  |
| 12 | .318 | 1.515 | 93.500 |  |  |  |  |  |  |
| 13 | .272 | 1.294 | 94.795 |  |  |  |  |  |  |
| 14 | .251 | 1.196 | 95.991 |  |  |  |  |  |  |
| 15 | .226 | 1.076 | 97.068 |  |  |  |  |  |  |
| 16 | .180 | .855 | 97.922 |  |  |  |  |  |  |
| 17 | .151 | .718 | 98.640 |  |  |  |  |  |  |
| 18 | .119 | .565 | 99.205 |  |  |  |  |  |  |
| 19 | .070 | .334 | 99.540 |  |  |  |  |  |  |
| 20 | .058 | .274 | 99.814 |  |  |  |  |  |  |
| 21 | .039 | .186 | 100.000 |  |  |  |  |  |  |
| Extraction method: Principal component analysis | | | | | | | | | |

After rotation, the composition matrix is as follows.

Table 8.3 KANO positive item rotated component matrix

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Component | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| T7\_1 | .821 |  |  |  |  |  |
| T8\_1 | .721 |  |  |  |  |  |
| T9\_1 | .863 |  |  |  |  |  |
| T10\_1 |  |  | .646 | .536 |  |  |
| T11\_1 |  | .630 |  |  |  | .470 |
| T12\_1 |  | .916 |  |  |  |  |
| T13\_1 | .832 |  |  |  |  |  |
| T14\_1 |  |  |  | .926 |  |  |
| T15\_1 | .948 |  |  |  |  |  |
| T16\_1 |  |  |  |  | .870 |  |
| T17\_1 | .900 |  |  |  |  |  |
| T18\_1 |  |  | .439 |  |  | .715 |
| T19\_1 |  | .881 |  |  |  |  |
| T20\_1 |  |  |  |  | .915 |  |
| T21\_1 |  | .515 |  |  | .523 |  |
| T22\_1 | .876 |  |  |  |  |  |
| T23\_1 | .650 |  |  |  |  |  |
| T24\_1 |  | .625 |  |  |  | -.457 |
| T25\_1 |  |  | .914 |  |  |  |
| T26\_1 |  |  | .923 |  |  |  |
| T27\_1 |  |  |  | .935 |  |  |
| Extraction method: Principal component analysis  Rotation method: Kaiser standardized maximum variance method | | | | | | |
| a. The rotation has converged after 6 iterations. | | | | | | |

The results show that the KANO negative questions questionnaire has a KMO value >0.7, and the results are shown in the tables below. The Bartlett's sphere test result is significant (p<0.001), which indicates that the validity of the data collected from the questionnaire is good.

**Table 9 Negative Question KMO and Bartlett Test**

|  |  |  |
| --- | --- | --- |
| **Sampling suitability quantity** | | 0.714 |
| **Bartlett's sphericity test** | Last chi-square read | 6163.418 |
| freedom | 210 |
| significance | 0.000 |

Table9.1 KANO Negative item common factor variance

|  |  |  |
| --- | --- | --- |
|  | Initial value | Extract |
| T7\_2 | 1.000 | .691 |
| T8\_2 | 1.000 | .611 |
| T9\_2 | 1.000 | .633 |
| T10\_2 | 1.000 | .742 |
| T11\_2 | 1.000 | .706 |
| T12\_2 | 1.000 | .802 |
| T13\_2 | 1.000 | .762 |
| T14\_2 | 1.000 | .891 |
| T15\_2 | 1.000 | .853 |
| T16\_2 | 1.000 | .845 |
| T17\_2 | 1.000 | .708 |
| T18\_2 | 1.000 | .514 |
| T19\_2 | 1.000 | .707 |
| T20\_2 | 1.000 | .886 |
| T21\_2 | 1.000 | .674 |
| T22\_2 | 1.000 | .671 |
| T23\_2 | 1.000 | .560 |
| T24\_2 | 1.000 | .721 |
| T25\_2 | 1.000 | .854 |
| T26\_2 | 1.000 | .889 |
| T27\_2 | 1.000 | .887 |
| Extraction method: Principal component analysis | | |

The principal component analysis method was adopted for further analysis, and the factor analysis was carried out with variance-maximizing orthogonal rotation for factor rotation. The eigenroot value of each factor was greater than 1. The cumulative contribution rate of variance was 77.324%, which was more than 60%, and the data indexes of exploratory factor analysis were well-characterized.

Table 9.2 KANO Negative item total variance explanation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| item | Initial eigenvalue | | | Extracting sum of squares of loads | | | Sum of squares of rotating load | | |
| Amount | Variance percentage | Cumulative% | Amount | Variance percentage | Cumulative% | Amount | Variance percentage | Cumulative% |
| 1 | 5.412 | 25.773 | 25.773 | 5.412 | 25.773 | 25.773 | 5.085 | 24.216 | 24.216 |
| 2 | 3.367 | 16.034 | 41.807 | 3.367 | 16.034 | 41.807 | 2.939 | 13.998 | 38.213 |
| 3 | 2.306 | 10.980 | 52.787 | 2.306 | 10.980 | 52.787 | 2.141 | 10.194 | 48.407 |
| 4 | 1.785 | 8.498 | 61.285 | 1.785 | 8.498 | 61.285 | 2.075 | 9.882 | 58.288 |
| 5 | 1.544 | 7.350 | 68.635 | 1.544 | 7.350 | 68.635 | 2.063 | 9.823 | 68.112 |
| 6 | 1.195 | 5.689 | 74.324 | 1.195 | 5.689 | 74.324 | 1.305 | 6.212 | 74.324 |
| 7 | .913 | 4.350 | 78.674 |  |  |  |  |  |  |
| 8 | .719 | 3.426 | 82.100 |  |  |  |  |  |  |
| 9 | .662 | 3.152 | 85.252 |  |  |  |  |  |  |
| 10 | .589 | 2.802 | 88.054 |  |  |  |  |  |  |
| 11 | .436 | 2.077 | 90.132 |  |  |  |  |  |  |
| 12 | .419 | 1.994 | 92.126 |  |  |  |  |  |  |
| 13 | .349 | 1.663 | 93.789 |  |  |  |  |  |  |
| 14 | .305 | 1.454 | 95.243 |  |  |  |  |  |  |
| 15 | .247 | 1.178 | 96.421 |  |  |  |  |  |  |
| 16 | .229 | 1.089 | 97.510 |  |  |  |  |  |  |
| 17 | .153 | .729 | 98.239 |  |  |  |  |  |  |
| 18 | .130 | .620 | 98.859 |  |  |  |  |  |  |
| 19 | .120 | .572 | 99.430 |  |  |  |  |  |  |
| 20 | .080 | .379 | 99.809 |  |  |  |  |  |  |
| 21 | .040 | .191 | 100.000 |  |  |  |  |  |  |
| Extraction method: Principal component analysis | | | | | | | | | |

Table 9.3 KANO negative item rotated component matrix

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Component | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| T7\_2 | .782 |  |  |  |  |  |
| T8\_2 | .670 |  |  |  |  |  |
| T9\_2 | .751 |  |  |  |  |  |
| T10\_2 |  | .733 |  | .435 |  |  |
| T11\_2 |  |  | .736 |  |  |  |
| T12\_2 |  |  | .881 |  |  |  |
| T13\_2 | .850 |  |  |  |  |  |
| T14\_2 |  |  |  | .911 |  |  |
| T15\_2 | .914 |  |  |  |  |  |
| T16\_2 |  |  |  |  | .913 |  |
| T17\_2 | .822 |  |  |  |  |  |
| T18\_2 |  | .701 |  |  |  |  |
| T19\_2 |  |  | .768 |  |  |  |
| T20\_2 |  |  |  |  | .933 |  |
| T21\_2 |  |  | .419 |  | .409 | .573 |
| T22\_2 | .817 |  |  |  |  |  |
| T23\_2 | .701 |  |  |  |  |  |
| T24\_2 |  |  |  |  |  | .847 |
| T25\_2 |  | .885 |  |  |  |  |
| T26\_2 |  | .927 |  |  |  |  |
| T27\_2 |  |  |  | .926 |  |  |
| Extraction method: Principal component analysis  Rotation method: Kaiser standardized maximum variance method | | | | | | |
| a. The rotation has converged after 5 iterations. | | | | | | |

（2）Kano Analysis

**Table Sample Description**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** |  | **Number** | **Frequency (%)** |
| **Gender** | Male | 184 | 43.9% |
| Female | 235 | 56.1% |
| **Age** | 18-29 | 118 | 28.2% |
| 30-45 | 166 | 39.6% |
| 46-60 | 87 | 20.8% |
| 60 above | 48 | 11.5% |
| **Educational** | High school and below | 45 | 10.7% |
| Junior college | 79 | 18.9% |
| Undergraduate | 223 | 53.2% |
| Postgraduate and above | 59 | 14.1% |
| **Occupation** | Enterprise staff | 161 | 38.4% |
| Staff of state units (civil servants/teachers/doctors, etc.) | 79 | 18.9% |
| Designer | 42 | 10.0% |
| Student | 67 | 16.0% |
| Freelancer | 51 | 12.2% |
| Retired | 19 | 4.5% |
| **Annual Income (RMB)** | 50,000 or less | 123 | 29.4% |
| 50,000-100,000 | 159 | 37.9% |
| 100,000-150,000 | 71 | 16.9% |
| 150,000-200,000 | 43 | 10.3% |
| 200,000 or more | 23 | 5.5% |

In the Table, 184 respondents (43.9%) were male, and 235 (56.1%) were female. In addition, 28.2% are aged between 18 and 29, 39.6% are aged between 30 and 45, 20.8% are aged between 46 and 60, and 11.5% are over 60. 67.3% of the respondents received a good education (bachelor's degree or above), and 4.5% have retired. 69.6% of the respondents' income level is above average, 67.3% have an annual income below 100,000, and only 5.5% have an annual income above 200,000.

The questionnaire data were organized and analyzed using the KANO model. By calculating Better and Worse coefficients, each tourist's attributes were determined. If the absolute values of Better and Worse are greater than 0.5, it represents a One-dimensional quality (O). If the absolute values of Better and Worse are less than 0.5, it indicates an Indifferent quality (I). When Better is greater than 0.5, and the absolute value of Worse is less than 0.5, it signifies an Attractive quality (A). Conversely, when Better is less than 0.5, and the absolute value of Worse is greater than 0.5, it represents a Must-be quality (M). The statistical results are presented in Table 10.

**Table 10 Analysis result of tourist's demand**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Dimension | A( %) | O(% ) | M(% ) | I(% ) | Better | Worse | Attribute |
| T7 | Appearance  Demands | 19.81 | 26.01 | 44.39 | 8.83 | 0.4627 | -0.7108 | M |
| T8 | 26.01 | 17.42 | 44.39 | 10.50 | 0.4417 | -0.6286 | M |
| T9 | 9.31 | 22.20 | 46.78 | 19.09 | 0.3235 | -0.7083 | M |
| T10 | 26.25 | 14.08 | 22.91 | 36.75 | 0.4033 | -0.3699 | I |
| T11 | 29.59 | 30.79 | 27.68 | 10.98 | 0.6096 | -0.5904 | O |
| T12 | Production  Demands | 25.06 | 32.46 | 26.01 | 13.84 | 0.5907 | -0.6005 | O |
| T13 | 28.40 | 26.49 | 36.75 | 7.40 | 0.5542 | -0.6386 | O |
| T14 | 13.13 | 23.63 | 50.84 | 12.41 | 0.3675 | -0.7446 | M |
| T15 | 53.46 | 24.58 | 16.95 | 2.39 | 0.8015 | -0.4265 | A |
| T16 | 41.53 | 29.12 | 24.11 | 3.10 | 0.7220 | -0.5439 | O |
| T17 | 33.41 | 37.47 | 26.49 | 1.67 | 0.7157 | -0.6458 | O |
| T18 | 17.18 | 22.20 | 25.06 | 34.84 | 0.3966 | -0.4760 | I |
| T19 | 39.62 | 19.81 | 24.58 | 14.08 | 0.6058 | -0.4526 | A |
| T20 | Emotional Demands | 44.39 | 18.85 | 29.12 | 5.49 | 0.6463 | -0.4902 | A |
| T21 | 52.27 | 15.51 | 22.20 | 8.59 | 0.6877 | -0.3826 | A |
| T22 | 34.84 | 34.61 | 21.00 | 6.92 | 0.7132 | -0.5711 | O |
| T23 | 33.89 | 35.08 | 22.91 | 5.97 | 0.7049 | -0.5927 | O |
| T24 | 45.35 | 16.95 | 24.82 | 11.46 | 0.6320 | -0.4237 | A |
| T25 | 26.01 | 13.84 | 21.96 | 38.19 | 0.3986 | -0.3580 | I |
| T26 | Extra Demands | 25.78 | 14.08 | 23.87 | 36.28 | 0.3986 | -0.3795 | I |
| T27 | 10.26 | 21.96 | 54.18 | 13.60 | 0.3222 | -0.7613 | M |

By calculating the Better-Worse values, researchers can construct a quadrant chart, providing a more intuitive observation of the impact of meeting a specific demand on increasing tourist satisfaction or eliminating dissatisfaction. In Kano model theory, better values are typically positive, indicating that user satisfaction will increase if a product offers a particular feature or service. A more considerable value suggests a more substantial effect on enhancing satisfaction and a faster increase in user satisfaction. Conversely, Worse values are usually negative, signifying that user satisfaction will decrease if a product does not provide a specific feature or service. A more significant value represents a more pronounced effect on reducing satisfaction and a faster decline in user satisfaction. Based on the Better-Worse values of the 21 tourist demands, Figure 1 illustrates the quadrant chart.

 **Figure 1 The quadrant distribution map of tourist's demands**

1）Demands in the first quadrant belong to One-dimensional quality, with relatively high absolute values for both Better and Worse. Tourist satisfaction varies significantly, meaning that if the lacquerware tourism souvenirs offer or improve services or features falling into this quadrant, tourist satisfaction will increase. Conversely, if they do not, tourist satisfaction will decrease.

2）Demands in the second quadrant belong to Attractive quality: Better has a high absolute value, while Worse has a low absolute value. If lacquerware tourism souvenirs do not provide services falling into this quadrant, tourist satisfaction will not decrease. However, tourist satisfaction will significantly increase if they do provide these services.

3）Demands in the third quadrant are considered Indifferent quality: both Better and Worse have low absolute values. Tourist satisfaction remains unchanged, as tourists are indifferent to whether these services or features are provided or not by lacquerware tourism souvenirs.

4）Demands in the fourth quadrant fall under Must-be quality: Better has a low absolute value, while Worse has a high absolute value. When lacquerware tourism souvenirs offer this feature, tourist satisfaction will not increase. However, tourist satisfaction will significantly decrease when this feature is not provided.

（3）AHP Analysis

Tourists have varying sensitivities to different demands within the same dimension. To assess tourist sensitivity to each demand, researchers use AHP for pairwise comparisons, constructing comparison matrices to calculate the weight values for each demand. This process achieves a hierarchical ranking of lacquerware tourism souvenir demands.

Initially, an indicator evaluation system is built based on the KANO results (Table 11). In this system, Indifferent quality imply that respondents have a neutral attitude toward the demand. Therefore, T10, T18, T25, and T26 are not analyzed. Using the evaluation system (Table 11), researchers construct judgment matrices to compare each demand indicator, ranking the various demands.

In this study, the geometric mean method was chosen, with the following steps:

1）Multiply the elements in each row of the judgment matrix, and represents the importance scale of i to j, that is

2）Calculate the geometric average of , that is

3）Calculate in a standardized way, that is

4）Consistent test, find the maximum characteristic root , where B is the known judgment matrix, n is the order, and W represents the weight column vector, that is

5）Consistency index, that is

6）Consistency ratio Cr; RI represents the proportional coefficient, and its value is related to the order n of the judgment matrix, that is

If Cr < 0.1, the consistency test is satisfied. Otherwise, the judgment matrix is modified.

According to the calculation formula, the results are as follows (Table13-17):

**Table 11 Evaluation system for KANO demands indexes of lacquerware tourist souvenirs.**

|  |  |
| --- | --- |
| Dimension | Index |
| Must-be  quality | T7 |
| T8 |
| T9 |
| T14 |
| T27 |
| One-dimensional  quality | T11 |
| T12 |
| T13 |
| T16 |
| T17 |
| T22 |
| T23 |
| Attractive  quality | T15 |
| T19 |
| T20 |
| T21 |
| T24 |

Simultaneously, 12 experts were invited to evaluate the importance of the indicators (Table 12). Due to variations in the knowledge and experiences of each expert, assessments of the same two indicators could yield different results. The mode (most frequent value) was used to process the judgment matrix data to ensure data objectivity and fairness.

**Table 12** **Random consistency index**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| RI | 0 | 0 | 0.52 | 0.89 | 1.12 | 1.24 | 1.32 | 1.41 | 1.46 | 1.49 | 1.52 | 1.54 |

The weight values for all second-level demand indicators under the must-be quality indicators, one-dimensional quality indicators, and attractive quality indicators for Pingyao lacquerware tourism souvenirs were calculated by constructing comparison matrices. Their compliance with consistency testing standards was checked, where a smaller CR indicates better consistency of the judgment matrices. When CR < 0.1, the consistency of pairwise judgment matrices is within an acceptable range. However, when CR> 0.1, the judgment matrices demand to be reconstructed until the consistency ratio CR meets the demands. The test results are shown in Table 13, Table 14, Table 15, and Table 16.

**Table 13 Weight of first-level demand index**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Must-be quality | One-dimensional quality | Attractive quality | Weight |
| Must-be quality | 1 | 2 | 3 | 0.5278 |
| One-dimensional quality | 1/2 | 1 | 3 | 0.3325 |
| Attractive quality | 1/3 | 1/3 | 1 | 0.1396 |

According to the formula, the weight result is: W1=0.527； W2=0.3325； W3=0.1396；Then the consistency test is carried out, and the maximum eigenvalue is obtained as follows =3.0536, CI= (3.0536-3)/(3-1)= 0.0268， RI=0.52, So, CR== 0.0516＜0.1， satisfying the consistency test.

**Table 14 Weight of secondary indicators of Must-be demand**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | T7 | T8 | T9 | T14 | T27 | Weight |
| T7 | 1 | 2 | 3 | 1/2 | 1/3 | 0.1693 |
| T8 | 1/2 | 1 | 2 | 1/2 | 1/3 | 0.1183 |
| T9 | 1/3 | 1/2 | 1 | 1/3 | 1/4 | 0.0720 |
| T14 | 2 | 2 | 3 | 1 | 1/2 | 0.2422 |
| T17 | 3 | 3 | 4 | 2 | 1 | 0.3982 |

According to the formula, the weight result is:（0.1693,0.1183,0.0720,0.2422, 0.3982）；The maximum eigenvalue is = 5.1111， CI= 0.0278， CR= 0.0248<0.1，satisfying the consistency test.

**Table 15 Weight of secondary indicators of One-dimensional quality**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | T11 | T12 | T13 | T16 | T17 | T22 | T23 | Weight |
| T11 | 1 | 2 | 2 | 1/5 | 1/3 | 1/2 | 1/2 | 0.0797 |
| T12 | 1/2 | 1 | 1 | 1/4 | 1/3 | 1/2 | 1/3 | 0.0577 |
| T13 | 1/2 | 1 | 1 | 1/5 | 1/4 | 1/2 | 1/2 | 0.0568 |
| T16 | 5 | 4 | 5 | 1 | 2 | 2 | 3 | 0.3230 |
| T17 | 3 | 3 | 4 | 1/2 | 1 | 2 | 3 | 0.2290 |
| T22 | 2 | 2 | 2 | 1/2 | 1/2 | 1 | 2 | 0.1430 |
| T23 | 2 | 3 | 2 | 1/3 | 1/3 | 1/2 | 1 | 0.1107 |

According to the formula, the weight result is:（0.0797,0.0577,0.0568,0.3230, 0.2290,0.1430,0.1107）；The maximum eigenvalue is = 7.2133， CI= 0.0356， CR= 0.0269<0.1，satisfying the consistency test.

**Table 16** **Weight of secondary indicators of Attractive quality**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | T15 | T19 | T20 | T21 | T24 | Weight |
| T15 | 1 | 4 | 3 | 2 | 3 | 0.3893 |
| T19 | 1/4 | 1 | 1/3 | 1/4 | 1/2 | 0.0664 |
| T20 | 1/3 | 3 | 1 | 1/2 | 2 | 0.1655 |
| T21 | 1/2 | 4 | 2 | 1 | 3 | 0.2721 |
| T24 | 1/3 | 2 | 1/2 | 1/3 | 1 | 0.1067 |

According to the formula, the weight result is:（0.3893,0.0664,0.1655, 0.2721,0.1067）；The maximum eigenvalue is = 5.1144,CI= 0.0286,CR= 0.0255<0.1，satisfying the consistency test.

**Table 17 Weight result of index system**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Dimension | Weight | Index | Weight | Comprehensive weight | Sequence |
| Must-be  quality | 0.5278 | T27 | 0.3982 | 0.2102 | 1 |
| 0.5278 | T14 | 0.2422 | 0.1279 | 2 |
| 0.5278 | T7 | 0.1693 | 0.0894 | 4 |
| 0.5278 | T8 | 0.1183 | 0.0624 | 6 |
| 0.5278 | T9 | 0.0720 | 0.0380 | 10 |
| One-dimensional  quality | 0.3325 | T16 | 0.3230 | 0.1074 | 3 |
| 0.3325 | T17 | 0.2290 | 0.0762 | 5 |
| 0.3325 | T22 | 0.1430 | 0.0476 | 8 |
| 0.3325 | T23 | 0.1107 | 0.0368 | 11 |
| 0.3325 | T11 | 0.0797 | 0.0265 | 12 |
| 0.3325 | T12 | 0.0577 | 0.0192 | 14 |
| 0.3325 | T13 | 0.0568 | 0.0189 | 15 |
| Attractive  quality | 0.1396 | T15 | 0.3893 | 0.0544 | 7 |
| 0.1396 | T21 | 0.2721 | 0.0380 | 9 |
| 0.1396 | T20 | 0.1655 | 0.0231 | 13 |
| 0.1396 | T24 | 0.1067 | 0.0149 | 16 |
| 0.1396 | T19 | 0.0664 | 0.0093 | 17 |

In this study, the researchers classified and ranked the tourists' demands through Kano model and AHP and got the following results:

1）Must-be quality：include Beautiful shape (T7), Nice pattern (T8), Nice color matching (T9), Quality can be guaranteed (T14), Environmentally friendly (T27).

2）One-dimensional quality： include Exquisite craft (T11), Reasonable price (T12), Rich types of products (T13), With multiple functions (T16), cultural taste (T17), Great commemorative significance (T22), Obvious regional characteristics (T23).

3）Attractive quality： include Lightweight and easy to carry (T15), Good packing (T19), Good brand (T20), Interesting idea (T21), Suitable as a gift (T24).

4）Indifferent quality consist of Many types of materials (T10), Have series (T18), Suitable for collection (T25), and High security (T26).

**Table 18**

|  |  |
| --- | --- |
| **Classification item** | **Sequence** |
|  | Must-be quality＞One-dimensional quality＞Attractive quality＞Indifferent quality |
| Must-be quality | T27＞ T14 ＞ T7 ＞ T8 ＞ T9 |
| One-dimensional quality | T16 ＞ T17 ＞ T22 ＞ T23 ＞ T11 ＞ T12 ＞ T13 |
| Attractive quality | T15 ＞ T20 ＞ T21 ＞ T24 ＞ T19 |
| Appearance Quality  Production Quality  Emotional Quality  Extra Quality | T7 ＞ T8 ＞ T9 ＞ T11 ＞ T10  T14 ＞ T16＞ T17＞T15＞T12＞T13 ＞ T19＞ T18  T22 ＞ T21 ＞ T23 ＞T20 ＞ T24 ＞ T25  T27 ＞ T26 |