HAPPINESS INDEX
THE CONSTRUCTION AND ANALYSIS

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ABSTRACT

This study aims to investigate the important indicators that contribute to happiness among Beijing residents. The residents of Beijing were taken as the target population for the survey. A questionnaire was used as the main statistical instrument to collect the data from the residents in Beijing. In doing the investigation employs Factor analyses and chi-square analyses as the main statistical tools used for the analyses in this research. The study found that Beijing residents gained greater happiness in the family, interpersonal relationships, and health status. The analysis also shows that generally, the residence of Beijing feels happier and also in terms of gender basis, females in Beijing feel happier as compared to their male counterpart. It will find that gender, age and education are statistically significant when dealing with happiness.

Key words: Happiness Index, Factor Analysis, Chi-Square Analysis, KMO and Bartlett's Test.
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1 INTRODUCTION

1.1 Research Background

Happiness Index has attracted people's attention for a long time and the research on this theory has just started. Many academic institutions and civil society organizations on the investigation of happiness has achieved varying degrees of response, and there are a lot of departments involved in the study of this topic, but for now most of the planning and preparation is at an early stage. So building a set of scientific indicators of happiness index will become an area worth studying in China, which is also the purpose of this study.

The government has put forward people-centered scientific development concepts, and building a harmonious socialist society has been the consent in people's minds. So happiness becomes the main theme. The indicators used to measure the well-being of individuals are the happiness index. Therefore, the study of Happiness Index has very important significance.

The reason why these statistical indicators were extensively studied is that they can reflect the degree of satisfaction of people towards society and economic development. They are also soft indicators reflecting the quality of life. Their main attraction lies in reflecting the subjective experience which provides the basis for the Government to formulate policies for building a socialist harmonious society.

1.1.1 The Survey of Beijing Residents Happiness Index

Happiness index is one of the Beijing residents social cost of living index. The social cost of living index of Beijing residents includes the Independent Commission against Corruption Index, Safety Index, Resource Conservation Index, Social Harmony Index, Public Service Satisfaction Index, Social Credit Index and The Living Environment and Happiness Index. The Beijing residents’ social cost of living index investigation until now has been carried out for three consecutive years, and survey results are released to the public.
1.1.2 Income and Happiness

Happiness studies – which define happiness as the degree to which an individual judges the overall quality of his life. Many social and economic researches are now trying to uncover the relationship between happiness and high income. As we all know, with higher income means higher spending and enjoyment which we think must have a great influence on happiness. But there are more to discuss on this issue. According to Jorg Schimmel (2009) “Increased income, better objective health and higher levels of education do not automatically lead to greater happiness”. Also according to Becchetti and Rossetti (2009), “money does not buy happiness and the debate on the relationship between income and happiness tends to be polarized around two opposite stances”.

1.1.3 Happiness and Healthy

There are some believe that there is a link between happiness and an individual’s health. Throughout the centuries, human happiness and its causes have been a central concern to clerics, philosophers, psychologists, and therapists of various kinds. Health and happiness appear to be related to each other, but not always in the ways economists might think (Graham, C. 2008). According to Peter Allmark (Allmark, P. 2005) health promotion is best practiced in the light of an Aristotelian conception of the good life for humans and of the place of health within it.

1.2 Research Objective

The main objective of this study is to examine the important indicators that contribute to happiness. The specific objectives of the study are as follows:

1. To determine the distribution of Happiness among Beijing residence
2. To determine the distribution of Happiness Index among males and females
3. To determine whether there is a relationship between Age and Happiness Index
4. To determine whether one gender feels happier than the other
5. To determine whether Happiness depends on educational level attained
6. To determine whether Happiness depends on Income level
1.3 Hypotheses

The null hypotheses formulated for the study were as follows:

1. There is no relationship between Gender and Happiness
2. Happiness is independent of Age
3. Happiness is independent of Educational level
4. Happiness is independent of Income level

1.4 The Importance of the Research

The significance of this study is to extend previous studies on Happiness Index conducted in different parts of the world. Happiness index is seen as a comprehensive consideration of the degree of social harmony, the "indicator" to reflect the degree of realization of reform objectives and the "barometer" to understand swings and changes of the public’s mood. Thus, at present, the study in China for the happiness index has a very positive meaning. Also, by its calculations, as well as various factors affecting its research, you can understand what people most want to solve. Through economic growth and improve revenue? Or improve income inequality and social security, improve education and health care? Or establish the correct values and well-being concept. Happiness index and its impact factors through the analysis allow us to identify the principal contradictions and to address them in accordance with priorities.

1.5 Data Collection

The target population for this research comprised the residents of all urban areas of Beijing. A sample of size 970 was drawn from the study area which involves respondents over 18 years old to 65 years old. The main instrument of data collection was questionnaire. The questionnaire contains 27 questions which enabled us to measure the variables of interest. The questions are presented in the Table 1 in Appendix A.

The main statistical tools used to analyse the data, gathered from this research were Factor Analysis and Chi-square analysis. Also some descriptive statistical tools such as bar chart and frequency tables were also used. Software’s such as SPSS, Minitab and Ms Office were used during data processing, and others.
2 REVIEW OF METHODS

Various statistical analysis tools have been used during the analysis of the data. Some of the statistical tools were used in preliminary analysis as well as in further analysis. The main statistical tools used are the chi-square analysis and factor analysis.

2.1 Factor Analysis

Factor Analysis is a statistical tool used to reduce the number of factors needed to explain the variability in data. The major aim of factor analysis is the orderly simplification of a large number of intercorrelated measures to a few representative factors which can then be used for subsequent analysis. Factor analysis in mathematical model is as follows:

Suppose there is a system described by \( x_1, x_2, \ldots, x_p \) variables. We can use a linear combination constitute by common factors \( f_1, f_2, \ldots, f_m \) and special factors to stand for this system. That is:

\[
\begin{bmatrix}
  x_1 \\
  x_2 \\
  \vdots \\
  x_p
\end{bmatrix} =
\begin{bmatrix}
  a_{11} & a_{12} & \cdots & a_{1m} \\
  a_{21} & a_{22} & \cdots & a_{2m} \\
  \vdots & \vdots & \ddots & \vdots \\
  a_{p1} & a_{p2} & \cdots & a_{pm}
\end{bmatrix}
\begin{bmatrix}
  f_1 \\
  f_2 \\
  \vdots \\
  f_m
\end{bmatrix} +
\begin{bmatrix}
  e_1 \\
  e_2 \\
  \vdots \\
  e_p
\end{bmatrix}
\]

(1)

where \( x_1, x_2, \ldots, x_p \) is the measured variable, and \( a_{ij} (i=1,2,\ldots,p; j=1,2,\ldots,m) \) is the factor loading and \( e_i, e_2, \ldots, e_p \) are the residuals of \( x_i \) on the factors. Factor loading can be interpreted as the importance coefficients of common factor to variables. We can obtain the unrelated common factors (orthogonal), when we use principal component extraction method to extract factors. Usually, we set Eigenvalue greater than 1 as the standard.

2.1.1 Determination of weights

There are many usual ways to determine the weights, The most two common ways are subjective determination of weight method and mathematical analysis method. The subjective determination of weight mainly depends on the experts, and mathematical analysis method uses mathematical analysis methods to determine weight which can take the strict logical analysis, as far as possible to eliminate the subjective factors in order to conform to objective reality. This article advocates the use of an objective method of setting the weight based on
the sample using.

We use principal factor analysis to abstract the factors and then take factor loadings after using the rotational strategies as the weights.

### 2.2 Chi–Square Analysis

The chi-squared test which is denoted by the Greek symbol $\chi^2$, is probably the most commonly used test of statistical significance.

#### 2.2.1 Assumptions of Chi-square Analysis

One underlying assumption the chi-square has is that, observations are randomly selected from some large population. If the observations are not randomly selected, then a researcher must be very cautious about generalizing from the data set’s results back to the larger population. A second assumption is that the number of expected observations within a given category should be reasonably large, and more importantly, for a better

Chi – square approximation, no more than 20% of the expected frequencies should be less than 5. The distribution depends on a number of degrees of freedom denoted by $\nu$. It has a mean $\nu$ and variance $2\nu$.

#### 2.2.2 Tests for Independence/Association/Relationship

This application of the chi-squared test in testing of independence between two variables in which one of the variable is classified into $r$ classes and the other into $c$ classes, gives a $r \times c$ contingency table. A $r \times c$ contingency table format is a test of association between mutually exclusive categories of one variable (given in the rows of the table) and mutually exclusive categories of another variable (given in the columns of the table). It is a table of frequencies showing how the total frequency is distributed among the $r \times c$ cells in the table.

The table below is an example of $r \times c$ contingency table with the number of degrees of freedom $DF = (r-1)(c-1)$. 

Table 1: A \( r \times c \) Contingency Table

<table>
<thead>
<tr>
<th>Variable ( y )</th>
<th>( y_1 )</th>
<th>( y_2 )</th>
<th>\ldots</th>
<th>( y_j )</th>
<th>\ldots</th>
<th>( y_c )</th>
<th>Row marginal totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x_1 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( R_1 )</td>
<td></td>
</tr>
<tr>
<td>( x_2 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( R_2 )</td>
<td></td>
</tr>
<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>( x_j )</td>
<td>\ldots</td>
<td>\ldots</td>
<td>\ldots</td>
<td>\ldots</td>
<td>\ldots</td>
<td>( R_j )</td>
<td>( R' )</td>
</tr>
<tr>
<td>( \vdots )</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>( x_r )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( R_r )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column marginal totals</th>
<th>( C_1 )</th>
<th>( C_2 )</th>
<th>\ldots</th>
<th>( C_j )</th>
<th>\ldots</th>
<th>( C_c )</th>
<th>( N )</th>
</tr>
</thead>
</table>

\( O_{ij} \) is the frequency for the \( ith \) row and \( jth \) column.

\( R_i = \sum_{j=1}^{c} O_{ij} \) is the row marginal frequency for the \( ith \) row.

\( C_j = \sum_{i=1}^{r} O_{ij} \) is the row marginal frequency for the \( jth \) column.

\( N = \sum_{i=1}^{r} \sum_{j=1}^{c} O_{ij} \) is the total of the frequency

The expected frequency for the cell in the \( i^{th} \) row and \( j^{th} \) column is \( \frac{(R_i \times C_j)}{N} \). The \( \chi^2 \) statistic is the sum of all \( \frac{(O - E)^2}{E} \) values for all the \( r \times c \) cells.

The hypothesis which is tested is

\( H_0: \) No relationship or association exists between the two variable classifications.

against

\( H_1: \) Relationship or association exists between the two variable classifications.

The test statistic is given by

\[
\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}
\]

(2)

Where

\( O_{ij} \) is the observed cell frequency for the \((ij)^{th}\) cell.

\( E_{ij} \) is the expected cell frequency for the \((ij)^{th}\) cell.

The statistic under the null hypothesis has an approximately chi-square distribution with the degrees of freedom given by \( (r-1)(c-1) \). The critical region for the test at \( \alpha \% \) significance
level is therefore, $\chi^2 \geq \chi^2_{\alpha} [(r-1)(e-1)]$.

To choose between $H_0$ and $H_1$ we determine the critical region of the test. The critical region is the set of values of the test statistic that will enable us to reject $H_0$. The region is determined using a pre-set level of significance. The level of significance, denoted by $\alpha$, is the probability of committing Type I error (that is, the probability of rejecting $H_0$ when in fact, it is true. Also, from computer output, the decision to reject or fail to reject $H_0$ is based on the $p-value$ of the test. The $p-value$ is the probability of observing a value of the test statistic at least as extreme as that observed under the null hypothesis. Generally, we reject $H_0$ at level of significance $\alpha$, if the $p-value$ is less than $\alpha$ and fail to reject $H_0$ if the $p-value$ is greater than $\alpha$. 
3 DATA ANALYSIS AND RESULTS

This section of the report presents how the data gathered from this research was analyzed. The chapter also describes how the stated hypotheses in this research were tested.

3.1 Distribution of Happiness Indicators

The fig below displays the most preferred Happiness Indicators in Beijing. The description of the numbers on Happiness Indicators corresponds with the numbering system of the indicators presented in table 1 in appendix A.

![Figure 1 Distribution of Happiness Indicators among Beijing Residents](image)

In Figure 1, the result reveals that indicator B01 (Health is in good condition), B06 (Strong ability to adapt society), B07 (harmonious relationship with colleagues), B08 (friends for good karma), B11 (can get enough respect from others), B13 (happy family life), B14 (the relationship among family members is very harmonious) and B15 (The family's material life is very satisfactory) has higher frequencies among all. This shows that Beijing residents gained greater happiness in the family, interpersonal relationships, and health status.
3.2 Factor Model Tests

The table below describes the results generated from KMO and Bartlett’s test.

<table>
<thead>
<tr>
<th>Table 2: KMO and Bartlett's Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</td>
</tr>
<tr>
<td>Bartlett's Test of Sphericity</td>
</tr>
<tr>
<td>df</td>
</tr>
<tr>
<td>Sig.</td>
</tr>
</tbody>
</table>

From table 2, the Bartlett’s test of Sphericity yield a value of 9370.668 and an associated level of significance \( (p-value) \) of 0.000 which is smaller than alpha (\( \alpha \)) value of 0.01. Thus, the hypothesis that the correlation matrix is an identity matrix is rejected, that is, the correlation matrix has significant correlation among at least some of the variables and thus supports the use of factor analysis. Also the KMO value (0.903) indicates that the degree of common variance among the twenty-seven variables is “marvelous”. Thus if a factor analysis is conducted, the factors extracted will account for a substantial amount, which in all supports the use of factor model.

3.3 Happiness Index Calculation

The synthesis of happiness index is more objective than a comprehensive one. Its idea is to make the happiness indicator quantify. And then determine weights in the entire system by a more objective method. And at last, combine the happiness index by the importance of indicators, which is calculated as follows:

\[
H = \sum_{i=1}^{n} \beta_i x_i
\]  

(3)

Where H represent happiness index, \( \beta_1, \beta_2, \ldots, \beta_n \) represent the weight of the indicators of the happiness index and \( x_1, x_2, \ldots, x_n \) represent the index of each indicators.

Here we have under the above methods of analysis with survey data obtained synthesis of well-being index, the first factor analysis with demand, according to the weight level, we are mainly based on factor analysis of the concept of the common variance(communalities), to
seek the weight of each index, weight proceeds in accordance with the following formula:

\[ \beta_i = \frac{C_i^2}{\sum_{i=1}^{n} C_i^2} \]  

(4)

Where \( \beta_i \) represent weights and \( C_i \) represents the Common variance (communalities) among the indicators.

Based on the formula above we can calculate the weight of every indicator. The results are presented in the Table 1 in Appendix A.

According to the weight of individual indicators and the formula above, we can synthesize happiness index. At first, a single happiness index can be synthesized, with individual index multiplied by the weight. And finally get the sum indicators index. According to individual happiness, we can calculate happiness index of the overall residents of Beijing, which is 0.6532 (65.32%).

### 3.4 Distribution of Happiness

The table below displays the distribution of Happiness among the residence in Beijing

<table>
<thead>
<tr>
<th>General Happiness</th>
<th>Frequency</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very happy</td>
<td>191</td>
<td>19.65</td>
</tr>
<tr>
<td>Happy</td>
<td>385</td>
<td>39.61</td>
</tr>
<tr>
<td>Ordinary happy</td>
<td>318</td>
<td>32.72</td>
</tr>
<tr>
<td>Not very happy</td>
<td>58</td>
<td>5.97</td>
</tr>
<tr>
<td>Not happy</td>
<td>12</td>
<td>1.23</td>
</tr>
<tr>
<td>Missing data</td>
<td>8</td>
<td>0.82</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>972</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

From Table 3, it can be seen that most of the residence in Beijing feel happy with approximately 40% of the total respondents whiles only few people among the residents representing 1.23% of the total respondents feel unhappy. This shows that most of the residence in Beijing feels happy. Also about 0.82% of the total respondents don’t know their status as concern to happiness.
3.5 Hypothesis Testing Between Gender and Happiness

Statement of Hypothesis – 1

H₀: There is no relationship between gender and happiness  
H₁: There is a relationship between gender and happiness

Table 4: Chi-Square Test of Relationship between Gender and Happiness

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>23.529</td>
<td>8</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Decision and Conclusion

At 5% level of significance we reject the null hypothesis, since the \(p-value\) of 0.003 is less than \(\alpha-value\) of 0.05. We therefore conclude that, there is a relationship between gender and happiness. Thus, either a person is a male or female also has influence on his/her happiness. But which gender feels happy easier.

3.6 Happiness Distribution between Males and Females

The table below displays the distribution of Happiness among the males and females residence in Beijing

Table 5: Cross-Tabulation of Gender and Happiness

<table>
<thead>
<tr>
<th>Happiness Index</th>
<th>Gender</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Very Happy</td>
<td>37.2%</td>
<td>62.8%</td>
<td></td>
</tr>
<tr>
<td>Happy</td>
<td>42%</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>Ordinary Happy</td>
<td>43%</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Not Very Happy</td>
<td>70.7%</td>
<td>29.3%</td>
<td></td>
</tr>
<tr>
<td>Not Happy</td>
<td>58.3%</td>
<td>41.7%</td>
<td></td>
</tr>
</tbody>
</table>

From the table above, it can be seen that more females than males feels very happy with a percentage of 62.8 against 37.2 respectively. More females than males feel happy with a percentage of 58 against 42 respectively. The vice versa which is more males than females feels unhappy is true. The overall output shows that more males in Beijing feel unhappy as
compare to their female counterpart. Also from Table 3.2, it is confirmed that there is a significant relationship between males and females in the concern of their happiness. This also tells us that females feel happier as compare to their male counterpart in Beijing.

### 3.7 Hypothesis Testing Between Age and Happiness

**Statement of Hypothesis – 2**

$H_0$: Happiness is independent of Age  
$H_1$: Happiness is not independent of Age

<table>
<thead>
<tr>
<th>Table 6 Chi-Square Test of Independence between Age and Happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
</tr>
</tbody>
</table>

**Decision and Conclusion**

At 5% level of significance we reject the null hypothesis, since the $p-value$ of 0.012 is less than $\alpha-value$ of 0.05. We therefore conclude that, happiness and age are not independent of each other. Thus, the age of a person has influence on his/her happiness.

### 3.8 Hypothesis Testing Between Educational Level and Happiness

**Statement of Hypothesis – 3**

$H_0$: Happiness is independent of Educational level  
$H_1$: Happiness is not independent of Educational level

<table>
<thead>
<tr>
<th>Table 7 Chi-Square Test of Independence between Educational level and Happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
</tr>
</tbody>
</table>
Decision and Conclusion

At 5% level of significance we reject the null hypothesis, since the \( p-value \) of 0.005 is less than \( \alpha-value \) of 0.05. We therefore conclude that, happiness is not independent of educational level. Thus, the level of education attained by an individual has influence on his/her happiness.

3.9 Distribution of Happiness Index by Different Educational Levels

The fig below displays the distribution of Happiness Index among different levels of education.

![Distribution of Happiness Index by Different Educational Levels](image)

From Figure 2, the most educational level with higher happiness index is fourth cycle (Masters/PhD) which represents 23% of all the educational level by the residents in Beijing. Second and Third cycles are the next highest with 21% for each level. Also those with no school represent the least percentage of 16. This shows that the higher the persons education the higher his happiness.
3.10 Hypothesis Testing Between Income Level and Happiness

Statement of Hypothesis – 4

\( H_0 \): Happiness is independent of Income level

\( H_1 \): Happiness is not independent of Income level

Table 8 Chi-Square Test of Independence between Income level and Happiness

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>64.495</td>
<td>64</td>
<td>0.459</td>
</tr>
</tbody>
</table>

Decision and Conclusion

At 5% level of significance we fail to reject the null hypothesis, since the \( p-value \) of 0.456 is greater than \( \alpha-value \) of 0.05. We therefore conclude that, happiness is independent of income level. Thus, the level of an individual income (high or low) does not have influence on his/her happiness.
4 SUMMARY, DISCUSSION AND CONCLUSION

This section of the report presents a general discussion on the results on the analysis of the preceding section. The section also assesses how far the objectives of the research have been achieved. Comparison and contrasting of the findings in relation to the previous findings are also presented.

4.1 Summary

The analysis of the data revealed that Beijing residents gained greater happiness in the family, interpersonal relationships, and health status. It was also found that 91.89% of the respondents in Beijing feels between very happy and ordinary happy and only 7.2% of them are in the opposite direction. Also in terms of gender, females in Beijing feel much happier as compare to their males’ counterpart.

From the hypothesis testing, the results also reveal that gender, age and educational level attainment are statistically significant when dealing with happiness of an individual but income level has no significant in the issue of happiness. Hence it shows that gender, age and educational level are not independent happiness.

4.2 Discussion

It was found that income is independent of happiness. Thus high or low income has no influence on a person’s happiness. The result is in agreement with the survey carried out by Becchetti and Rossetti (2009), which stated that money, does not buy happiness and the debate on the relationship between income and happiness tends to be polarized around two opposite stances.

Contrary to the perception that better level of education does not influence happiness, it was found out that, that perception is not entirely true since the test for relationship confirmed this. In fact, it was found out different educational level has influence on happiness. This is in sharp contrast to the report by Jorg Schimmel (2009) that is higher levels of education do not automatically lead to greater happiness.
4.3 Conclusion

The objective of this research was to investigate the important indicators that contribute to happiness. The study found that Beijing residents gained greater happiness in the family, interpersonal relationships, and health status.

The study also found that more populace of Beijing feels much happier and also in terms of gender more females than males are in happiness. This shows that more males in Beijing are unhappy and the cause of this unhappiness needs to be uncovered by future studies. Also in the issue of happiness, level of income is found to be independent of happiness.

The theoretical part of the study outlined two hypotheses that were supported by the empirical studies. Hypothesis 1 argued that gender has influence happiness. This was verified in the descriptive analysis in which we showed that specifically females as compare to males feel much happy.

Hypothesis 4 claimed that educational level attainment influences happiness. This hypothesis got strong support in the studies.

From a theoretical viewpoint, this study contributed to the economic decision concerning education. Thus, the educational level of an individual needs to be improved so us to improve happiness and also there is a need to find a way of making males to feel happy.
5 REFERENCES


## Appendix A

### Table 1. Beijing’s Happiness Index and their Weights

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weight</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health is in good condition</td>
<td>0.399</td>
<td>0.023</td>
</tr>
<tr>
<td>Worry about the future yourself</td>
<td>0.574</td>
<td>0.033</td>
</tr>
<tr>
<td>Competition bring great pressure on yourself</td>
<td>0.617</td>
<td>0.036</td>
</tr>
<tr>
<td>Colorful entertainments</td>
<td>0.621</td>
<td>0.036</td>
</tr>
<tr>
<td>Much spare time to control</td>
<td>0.627</td>
<td>0.036</td>
</tr>
<tr>
<td>Strong ability to adapt society</td>
<td>0.564</td>
<td>0.033</td>
</tr>
<tr>
<td>Good relationship with colleagues</td>
<td>0.774</td>
<td>0.045</td>
</tr>
<tr>
<td>Friends for good karma</td>
<td>0.766</td>
<td>0.043</td>
</tr>
<tr>
<td>Have larger pressure than friends and colleague</td>
<td>0.552</td>
<td>0.032</td>
</tr>
<tr>
<td>Equal status in society</td>
<td>0.511</td>
<td>0.030</td>
</tr>
<tr>
<td>Respect by others</td>
<td>0.693</td>
<td>0.040</td>
</tr>
<tr>
<td>Satisfy with social democracy and freedom</td>
<td>0.474</td>
<td>0.027</td>
</tr>
<tr>
<td>Very happy family life</td>
<td>0.855</td>
<td>0.049</td>
</tr>
<tr>
<td>The relationship between family members is harmonious</td>
<td>0.839</td>
<td>0.048</td>
</tr>
<tr>
<td>Be satisfied with the material life of the family</td>
<td>0.764</td>
<td>0.044</td>
</tr>
<tr>
<td>Are you satisfied with current work?</td>
<td>0.579</td>
<td>0.033</td>
</tr>
<tr>
<td>How do you think of your ability to work</td>
<td>0.622</td>
<td>0.036</td>
</tr>
<tr>
<td>What do you think of the pressure of work</td>
<td>0.542</td>
<td>0.031</td>
</tr>
<tr>
<td>Your own work performance</td>
<td>0.586</td>
<td>0.034</td>
</tr>
<tr>
<td>Your current degree of realization of your self-worth</td>
<td>0.654</td>
<td>0.038</td>
</tr>
<tr>
<td>Whether satisfy with the current economic income</td>
<td>0.714</td>
<td>0.041</td>
</tr>
<tr>
<td>Consistent with their pay and rewards</td>
<td>0.702</td>
<td>0.041</td>
</tr>
<tr>
<td>Confident of our future</td>
<td>0.652</td>
<td>0.038</td>
</tr>
<tr>
<td>Fun to work</td>
<td>0.667</td>
<td>0.039</td>
</tr>
<tr>
<td>Income distribution is fair</td>
<td>0.709</td>
<td>0.041</td>
</tr>
<tr>
<td>Very satisfied with the social security system</td>
<td>0.621</td>
<td>0.036</td>
</tr>
<tr>
<td>What do you think of current price level in this region</td>
<td>0.639</td>
<td>0.037</td>
</tr>
</tbody>
</table>