CHAPTER 3
PROBLEM, METHODOLOGY
AND PROCEDURE
3.1 Statement of the Problem

With a population of over 1 billion, India offers a large pool of potential investors. Indian households are by far the largest saver in the economy, constituting nearly 80 per cent of the economy’s aggregate saving. (Fig-3.1):

**Figure-3.1**

**Household sector the largest saver in the economy**

<table>
<thead>
<tr>
<th>% of total savings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
</tr>
<tr>
<td>Private Corporates</td>
</tr>
<tr>
<td>Public Sector</td>
</tr>
</tbody>
</table>

Source: R.B.I.

A joint survey by the Securities and Exchange Board of India and National Council for Applied Economics Research (SEBI-NCAER) in March, 2003 estimated that only 13 million households out of the total 177 million surveyed have investments in the capital markets. This is an equivalent to a mere 7 percent of total Indian households. The robust economic development and expansion since the survey and the resulting increase in per capita GDP may have widened the household investor base, but possibly not enough to considerably increase market volumes. The Fig-3.2 below shows how India’s GDP per capita steadily rising.
The Indian Capital market has been increasing tremendously during the last few years. With the reforms of economy, reforms of industrial policy, reforms of public sector and reforms of financial sector, the economy has been opened up and many developments have been taking place in the Indian money market and capital market. In order to help the small investors, mutual fund industry has come up to occupy an important place. It is a Rs 4,00,000 Crore industry.

Investors place money with a mutual fund. The fund invests the money in the stock market. That way, mutual funds channelises people’s savings into investments. Mutual Funds are manned by professionals who are trained in the science and art of security analysis. An investor is a part owner of the mutual fund. He is not a lender. This has two implications. One, as a part owner he participates in the gains and losses of the fund. Two, he is not entitled to any interest on his investment since he is an owner and not a lender. When the fund takes money, it issues units to the investor. The investor owns units in proportion to the amount invested. An investor who has bought a certain percentage of the mutual fund units owns that percentage of every asset and every liability of the fund. The Net Asset Value (NAV) of a mutual fund is the amount which a unit

Source: Institute of International Finance, Reserve Bank of India.

Figure-3.2 India’s GDP per capita

USD

0 1 2 3 4 5 6 7

900 800 700 600 500 400 300 200 100

0 1 2 3 4 5 6 7

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holder would receive if the mutual fund were wound up to-day. The income of a mutual fund registered with SEBI is exempt from tax under section 10(23D) of Income Tax Act, 1961. For the unit holder, the dividends received from mutual funds are free from tax. Sale of mutual fund investment will attract capital gains tax. Investments in mutual funds are exempt from wealth tax.

Mutual funds have really moved into retail attention in the last few years. We are at the third stage of investing in funds. The first was the age of Unit Trust of India (UTI) as a monopoly. The second was when both the investor and the industry tentatively experimented with products – one in creation and the other in consumption. Now, at stage three, both the regular users of the mutual funds bus and the industry are gaining confidence in each other. Investors understand that the risk of fraud is minimal in a mutual fund, and the industry is competitive enough to punish non-performance.

India is abounding with literates, but when it comes to understanding investment, we are still financial illiterates. ‘Business Today’ (Vol. 15, No.3, Jan 30 – Feb 12, 2006) conducted a survey on the saving, spending and investing habits of people across six major cities of Bangalore, Chennai, Delhi, Hyderabad, Mumbai and Kolkata. The Survey was conducted across 725 respondents from various professions and educational backgrounds. The target audience was 25-54 year olds who belonged to socio-economic classifications (SEC) A and B (that roughly translates into households with incomes ranging from Rs.20,000 per month to above Rs.100,000 per month). The picture that emerges from the survey consistent with other indicators is of an average Indian who is still conservative when it comes to money matters.
Fig-3.3 on Investment Preferences indicates that bank accounts remain the most favored investment avenue, beating equity, mutual funds.

A study of the Table – 3.1 and Table – 3.2 below makes it clear that the common man is still happily salting away his hard earned money in the good old savings account though returns are paltry. Even in commercially savvy Mumbai 27 per cent of respondents prefer savings accounts and 13 per cent chose Bank Fixed Deposits. But the 7 per cent looking at Equity in Mumbai is still higher than the 1-4 per cent from other cities. Over all only 6 per cent choose PPF and 5 per cent Post Office Savings. In this scenario, it is hardly surprising that mutual funds be almost ignored. Overall a piffling 2 per cent of respondents choose mutual fund investments. Here Kolkata scores better, with 4 per cent of investors, against only 3 per cent in Mumbai, 2 per cent in Delhi and zero per cent in Bangalore. However, the problems of mutual fund in India lie within its functional parameters at one hand and operational procedure at the other.
Table 3.1: MUTUAL FUND PREFERENCE

<table>
<thead>
<tr>
<th>All respondents who invest in mutual funds</th>
<th>Delhi</th>
<th>Mumbai</th>
<th>Chennai</th>
<th>Kolkata</th>
<th>Hyderabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector Funds</td>
<td>15</td>
<td>9</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Balanced funds</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Debts Funds</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>MIP</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Diversified Equity Fund</td>
<td>33</td>
<td>4</td>
<td>4</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Not Specified</td>
<td>41</td>
<td>73</td>
<td>82</td>
<td>64</td>
<td>82</td>
</tr>
</tbody>
</table>

Figures in Percent

(Source: Business Today, Feb 12, 2006)

Table 3.2: WHERE PEOPLE DO INVEST

<table>
<thead>
<tr>
<th>Where they invest</th>
<th>Delhi</th>
<th>Mumbai</th>
<th>Chennai</th>
<th>Bangalore</th>
<th>Kolkata</th>
<th>Hyderabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings Bank A/c.</td>
<td>35</td>
<td>27</td>
<td>35</td>
<td>24</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>P.O. Accounts</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>PPF</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Home Locker</td>
<td>16</td>
<td>7</td>
<td>3</td>
<td>23</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Equity Shares</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Mutual Funds</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Gold</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Bank F.D.</td>
<td>9</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>NSC, KVP etc.</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>LIC Premium</td>
<td>6</td>
<td>11</td>
<td>15</td>
<td>11</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Other Ins Premium</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Figures in Percent

(Source: Business Today, Feb 12, 2006)
The distribution of investment in Indian mutual funds by unit-holding households in India indicates that investment in mutual funds remains very small. In India the number of UTI and mutual funds units held by low-income households is insignificant and increases with a rise in income, particularly from the income group of Rs.5,100 onwards. In fact, households with an income of over Rs.15,000 have the highest percentage of holding (Table-3.3).

**Table-3.3 Income-wise Distribution of Investors-Mutual Funds and Others in India**

(In percentage, Source: SEBI – NCAER, Mumbai, 2006)

<table>
<thead>
<tr>
<th>Household Income particulars (Rs.)</th>
<th>UTI Schemes</th>
<th>Mutual Funds</th>
<th>Fixed Deposits</th>
<th>Bonds</th>
<th>EPF/PPF</th>
<th>LIC</th>
<th>RD's post office</th>
<th>IVP/NSS</th>
<th>NSC</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 2,500</td>
<td>2.41</td>
<td>1.79</td>
<td>65.01</td>
<td>3.37</td>
<td>6.16</td>
<td>18.37</td>
<td>42.89</td>
<td>15.30</td>
<td>6.09</td>
<td></td>
</tr>
<tr>
<td>2,501-5000</td>
<td>6.43</td>
<td>4.34</td>
<td>81.33</td>
<td>5.25</td>
<td>26.45</td>
<td>43.32</td>
<td>48.11</td>
<td>30.80</td>
<td>8.52</td>
<td></td>
</tr>
<tr>
<td>5001-10000</td>
<td>19.04</td>
<td>11.98</td>
<td>88.28</td>
<td>11.10</td>
<td>40.21</td>
<td>68.22</td>
<td>43.47</td>
<td>41.91</td>
<td>13.78</td>
<td></td>
</tr>
<tr>
<td>10001-15000</td>
<td>31.90</td>
<td>17.94</td>
<td>90.16</td>
<td>16.01</td>
<td>37.93</td>
<td>80.00</td>
<td>41.04</td>
<td>52.22</td>
<td>15.35</td>
<td></td>
</tr>
<tr>
<td>Above 15000</td>
<td>33.89</td>
<td>20.69</td>
<td>93.80</td>
<td>21.50</td>
<td>33.26</td>
<td>74.47</td>
<td>45.36</td>
<td>54.69</td>
<td>11.15</td>
<td></td>
</tr>
</tbody>
</table>

The Society for Capital Market Research and Development estimates that 15 per cent of urban households and only 0.5-1.0 per cent of semi-urban and rural households own financial assets.
Given the rapid growth of the industry in the past three years, can the Indian mutual fund industry be characterized as having come of age? Not seen when in the light of the low share of mutual funds in the household sector’s total investment pie (Figure-3.4). The figure below shows still very low penetration of mutual funds in Indian.

**Households’ investment by type, percentage (Source: SEBI)**

Figure-3.4

The SEBI-NCAER survey’s findings regarding the occupational background of mutual fund investors indicate that ‘nearly 14 million or 93 percent of the unit-owning households fall in the category of salaried or self-employed or wage owners’ class. In the salaried class, 42 percent unit-owning households are retired. (Source: SEBI-NCAER, Survey of Indian Investors, Mumbai, 2006). Table below shows the Distribution of Households by Type of Instruments – Survey of Investors: made by SEBI-NCAER, Survey of Indian Investors, SEBI, Mumbai, 2006. Since one household may invest in more than one instrument, percentage distribution of household will add up to more than 100 (Table-3.4).
Distribution of Households by Type of Instruments – Survey of Investors (Source: SEBI-NCAER Survey of Indian Investors, SEBI, Mumbai, 2006).

<table>
<thead>
<tr>
<th>Household particulars</th>
<th>UTI Schemes</th>
<th>Mutual Funds</th>
<th>Fixed Deposits</th>
<th>Bonds</th>
<th>EPF/PPF</th>
<th>LIC</th>
<th>RD's post office</th>
<th>IVP/ NSS</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>All India</td>
<td>8.45</td>
<td>5.45</td>
<td>76.23</td>
<td>6.21</td>
<td>20.92</td>
<td>39.21</td>
<td>44.73</td>
<td>27.46</td>
<td>8.7</td>
</tr>
<tr>
<td>Urban</td>
<td>19.52</td>
<td>12.02</td>
<td>83.89</td>
<td>11.56</td>
<td>40.24</td>
<td>57.31</td>
<td>40.77</td>
<td>35.98</td>
<td>11.8</td>
</tr>
<tr>
<td>Rural</td>
<td>4.05</td>
<td>2.84</td>
<td>73.18</td>
<td>4.08</td>
<td>13.24</td>
<td>32.01</td>
<td>46.30</td>
<td>24.07</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Table-3.4

In May 2007, 30 fund houses were managing Rs.3,53,000 Crore of investor money. Of this, about 80 per cent was being managed by private funds. In fact, by comparison with the US experience, mutual fund acceptance among retail investors in India is still low. According to a SEBI-NCAER survey, in 2005 – 06, 3.6 per cent of domestic savings went to mutual funds. But this is changing fast, which is up from 0.4 per cent the previous year. The changing face of the capital market means that the small investors find themselves left out of many investment opportunities. If an investor is to participate in the sweep of investment opportunities and earn returns that top inflation by a fair margin, mutual funds are the most accessible and convenient way to do so. It is a good retail option. “The mutual fund industry has grown 25 per cent in the first six months of 2007, accumulating assets worth over Rs.4 trillion on the back of bullish sentiments in the stock market and robust economic growth in India” (Source: ‘Financial Express’, Tuesday, Aug. 21, 2007, Kolkata Vol. XVI No.248). The following figure (Fig-3.5) is showing the
The mutual fund industry of India has just entered the growth phase and has immense potential to grow but is not achieving its optimum growth rate because of some marketing problems plaguing the industry.

3.2 Specific Objectives

Though the importance and objectives of Mutual Funds were clearly spelt, a need was felt to know the problems plaguing the marketing of mutual funds. Thus the specific objectives of research, which would address the broad objectives, are to study:

(a) The psyche of the investors to determine the preferred investing instrument.

(b) The structural changes in the product market.

(c) Branding policy undertaken and its influence on customer mind.

(d) Need and application methodology of awareness programmes to educate the investors.
3.3 Hypotheses

A null hypothesis is a statement about a status quo. It is a conservative statement that communicates the notion that any change from what has been thought to be true or observed in the past will be entirely due to random error. The true purpose of setting up a null hypothesis is to provide an opportunity to nullify it. An Alternative Hypothesis is that there is a difference between high and low dogmatic.

In pursuit of the above objectives, the following null hypotheses were examined comprehensively in the present study.

**Null Hypothesis related to the age of an investor and factors of investment decision making**

There exists no relationship between the age of a general investor and factors of investment decision making (Hy-1).

**Null Hypothesis related to the age of an investor and seeking professional advice**

There exists no relationship between the age of an investor and seeking professional advice before investing in schemes involving risk (Hy-2).

**Null Hypothesis related to the schemes of investment and factors of investment decision making**

There is no relationship between the schemes of investment chosen by a general investor and the factors of investment decision making (Hy-3).

**Null Hypothesis related to the income of an investor and investment**

There is no relationship between the income of an investor and the way he invests (Hy-4).

**Null Hypothesis related to monthly income and age of investor**

There is no relationship between the monthly income of an investor and his age (Hy-5).
Null Hypothesis related to the monthly income and factors of investment decision making of an investor
There is no relationship between the monthly income of an investor and factors of investment decision making of an investor (Hy-6).

Null Hypothesis related to the monthly income and investment in mutual funds by investor
There is no relationship between the monthly income of an investor and investment in mutual funds (Hy-7).

Null Hypothesis related to the monthly income and percentage of income invested by investor
There is no relationship between the monthly income of an investor and the percentage of income invested (Hy-8).

Null Hypothesis related to the monthly income and the purpose of investment in mutual funds of an investor
There is no relationship between the monthly income of an investor and the purpose of investment in mutual funds (Hy-9).

Null Hypothesis related to the way of investment and investment in mutual funds
There is no relationship between the way an investor invests and investment in mutual funds (Hy-10).

Null Hypothesis related to the age and investment in mutual funds by investor
There is no relationship between the age of an investor and investment in mutual funds (Hy-11).

Null Hypothesis related to the age and percentage of income invested by investor
There is no relationship between the age of an investor and percentage of income invested (Hy-12).
Null Hypothesis related to the age of an investor and reason for not investing in mutual funds
There is no relationship between the age of an investor and reason for not investing in mutual funds (Hy-13).

Null Hypothesis related to the occupation of an investor and seeking of professional advice
There is no relationship between the occupation of an investor and seeking professional advice before investing in schemes involving risk (Hy-14).

Null Hypothesis related to the factors of investment decision making and purpose of investment in mutual funds of an investor
There is no relationship between the factors of investment decision making of an investor and purpose of investment in mutual funds (Hy-15).

Null Hypothesis related to the factors of investment decision making of an investor and investment in mutual funds
There is no relationship between the factors of investment decision making of an investor and investors in mutual funds (Hy-16).

The alternate hypotheses in the above cases are the opposite of null hypotheses.

3.4 Methodology
3.4.1 Study Locations
The study is empirical in nature in the sense that the information has been gathered across the study locations and has been analysed and a number of hypothesis has been tested to understand the psyche of the investors, brokers and fund managers. Qualitative and quantitative research information and data regarding the investors, brokers and fund managers located at Kolkata have been solicited, being the most happening place in West Bengal.
Profile of Study Area: State of West Bengal

West Bengal is a state in eastern India. With Bangladesh, which lies on its eastern border, the state forms the ethno-linguistic region of Bengal. To its northeast lie the states of Assam and Sikkim and the country Bhutan, and to its southwest, the state of Orissa. To the west it borders the state of Jharkhand and Bihar, and to the northwest, Nepal. The state has a total area of 88,752 square kilometres. The Darjeeling Himalayan hill region in the northern extreme of the state belongs to the eastern Himalaya. The narrow terai region separates this region from the plains, which in turn transits into the Gangetic delta in the east and the western plateau and high lands. A small coastal region is on the extreme south, while the Suderbans mangrove forests form a remarkable geographical landmark. The literacy rate is 69.22%. There are 19 districts in West Bengal — Bankura, Bardhaman, Birbhum, Cooch Behar, Darjeeling, East Midnapore, Hooghly, Howrah, Jalpaiguri, Kolkata, Malda, Murshidabad, Nadia, North 24 Parganas, North Dinajpur, Purulia, South 24 Parganas, Dakshin Dinajpur and West Midnapore. The capital and largest city of the state is Kolkata — the third-largest urban agglomeration and the fourth-largest city in India. The state has a population density of 904 people per square km. About 72% of people live in rural areas. Owing to the boom in Kolkata’s and the overall state’s economy, the state has now become the third fastest growing economy in the country(www.wikipedia.org).
Figure 3.6 Map of West Bengal (Source: maps of India.com)

Brief Profile of Study Location: Kolkata

Kolkata formerly Calcutta, is the capital of the Indian state of West Bengal. It is located in eastern India on the east bank of the River Hooghly. When referred to as "Kolkata", it usually includes the suburbs, and thus its population exceeds 15 million, making it India's third-largest city and urban agglomeration. Kolkata is located in eastern India in the Ganges Delta. It is spread linearly along the banks of the River Hooghly in a north-south direction. Kolkata city, under the jurisdiction of the Kolkata Municipal Corporation (KMC), has an area of 185 km² (71 sq. mi). The Kolkata urban agglomeration, however, has continuously expanded and as of 2006, the urban agglomeration (Kolkata Metropolitan
Area) is spread over 1,750 km$^2$ (676 sq mi), and comprises 157 postal areas. The urban agglomeration is formally administered by several local governments including 38 local municipalities. The urban agglomeration comprises 72 cities and 527 towns and villages. Several companies have set up their offices around the area south of Park Street which has become a secondary central business district. Kolkata is the main business, commercial and financial hub of eastern India and the northeastern states. It is home to the Calcutta Stock Exchange — India's second-largest bourse. Until recently, flexible production had always been the norm in Kolkata, and the informal sector has comprised more than 40% of the labour force. As of 2001, Kolkata city had a population of 4,580,544, while the urban agglomeration had a population of 13,216,546.

### 3.4.2 Method of Sampling and Sample Size

The study is based on primary data collected through extensive field study on investors, Senior Managers in the Treasury Divisions of the leading banks like Axis Bank (UTI), State Bank of India, United Commercial Bank, United Bank of India etc., Brokers and Distributors, Fund House Managers of Public and Private Sector mutual funds and Asset Management Companies etc. through structured and semi-structured questionnaire(s) by personal administration. Lists of Brokers and Distributors were obtained from AMFI from which 100 such brokers and distributors were selected at random. Lists of their clients were taken and 10 per cent of investors were selected at random as respondents. Out of this 10 percent of investors hardly 2 – 3 per cent is in rural areas and most of them are businessmen and their co-operations in this regard have not been properly received. Therefore, the present study had concentrated on urban investors only. Total number of clients as obtained from brokers = 2062. Of 2062, 10% clients were selected at
random and so total number of clients selected from both urban and rural areas was 206. Excluding the 3% investors total clients questioned numbered 200. List of Fund houses operating in urban area of West Bengal were similarly obtained from AMFI and a total of 25 Fund Managers were selected on a random basis and questioned.

3.5 Tools Used

The research has been conducted using different questionnaires for investors, brokers and fund managers.

(1) Questionnaire for Investors (Annexure I)
(2) Questionnaire for Brokers (Annexure II)
(3) Questionnaire for Fund Managers (Annexure III).

Relevant secondary data has also been used from different published records of different government and semi-government departments and autonomous institutes dealing with mutual funds to highlight the growth, structural changes, the alternative plans and programmes of marketing of mutual funds. Different articles published in books and journals were also consulted. For getting updated insight of the problem, subject experts and academicians were also discussed with.

3.6 Statistical Measures

For the analysis of the data obtained from different sources (Primary and Secondary), arithmetic, graphical and statistical (both parametric and non-parametric) tools were used.

Pearson's chi-square test

Pearson's chi-square ($\chi^2$) test is the best-known of several chi-square tests- statistical procedures whose results are evaluated by reference to the chi-square distribution. Its properties were first investigated by Karl Pearson. In contexts where it is important to make a distinction between
the test statistic and its distribution, names similar to Pearson X-squared test or statistic are used.

It tests a null hypothesis that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive and have total probability 1. A common case for this is where the events each cover an outcome of a categorical variable. Pearson's chi-square is the original and most widely-used chi-square test.

The first step in the chi-square test is to calculate the chi-square statistic. The chi-square statistic is calculated by finding the difference between each observed and theoretical frequency for each possible outcome, squaring them, dividing each by the theoretical frequency, and taking the sum of the results.

\[ X^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i} \]

where

- \( X^2 \) = the test statistic that asymptotically approaches a \( \chi^2 \) distribution.
- \( O_i \) = an observed frequency;
- \( E_i \) = an expected (theoretical) frequency, asserted by the null hypothesis;
- \( n \) = the number of possible outcomes of each event.

The chi-square statistic can then be used to calculate a p-value by comparing the value of the statistic to a chi-square distribution. The
The number of degrees of freedom is equal to the number of possible outcomes, minus 1.

Pearson's chi-square is used to assess two types of comparison: tests of goodness of fit and tests of independence. A test of goodness of fit establishes whether or not an observed frequency distribution differs from a theoretical distribution. A test of independence assesses whether paired observations on two variables, expressed in a contingency table, are independent of each other. For the test of independence, a chi-square probability of less than or equal to 0.05 (or the chi-square statistic being at or larger than the 0.05 critical point) is commonly interpreted by applied workers as justification for rejecting the null hypothesis that the row variable is unrelated (that is, only randomly related) to the column variable. The alternative hypothesis corresponds to the variables having an association or relationship where the structure of this relationship is not specified (www.wikipedia.org).

**Thurstone scale**

In psychology, the Thurstone scale was the first formal technique for measuring an attitude. It was developed by Louis Leon Thurstone in 1928, as a means of measuring attitudes towards religion. It is made up of statements about a particular issue, and each statement has a numerical value indicating how favorable or unfavorable it is judged to be. People check each of the statements to which they agree, and a mean score is computed, indicating their attitude. Thurstone's method of pair comparisons can be considered a prototype of a normal distribution-based method for scaling-dominance matrices. Even though the theory behind this method is quite complex, the algorithm itself is straightforward. For the basic Case V, the frequency dominance matrix is translated into...
proportions and interfaced with the standard scores. The scale is then obtained as a left-adjusted column marginal average of this standard score matrix. The underlying rationale for the method and basis for the measurement of the "psychological scale separation between any two stimuli" derives from Thurstone's Law of comparative judgment (Thurstone, 1928) (www.wikipedia.org).