CHAPTER NO.2
# CHAPTER NO.2

## RESEARCH METHODOLOGY

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2.1) INTRODUCTION:

A number of authors (e.g., Brownell, 1995, p. 2) describe financing researchers as parasites who prey on the work of others to generate their findings. The term may be an overstatement, but as with most rash generalizations it contains more than a germ of truth: accounting researchers have little theory of their own (they rely on economics, finance, psychology, sociology and organizational behaviour as their major sources); they have no methods of their own (they are all adapted from the natural and social sciences); and they have few instruments of their own (with many of these originating in or adapted from the organizational behavior literature). Merchant (quoted in Brownell, 1995, p. 140) even suggests that organizational behaviorists are much better at developing survey instruments than their accounting counterparts. Kothari (2004) defines that the research is an original contribution to the existing stock of knowledge making for its development. The systematic approach concerning generalizations and formulation of a theory is also research. As such the term 'research' refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned problem or in certain generation for some theoretical formulation.

Research in financing is concerned with solving problems, investigating relationships and building a body of knowledge. Because we rely to such a great extent on prior research in the natural and social sciences to do so, this volume will take a similar approach in leaning on work in other disciplines where it helps to inform accounting research. Good research generates the sound evidence needed to overturn or revise existing theories. These assertions will, in turn, yield to revised theories based on better evidence, so
that healthy competition between rival ideas will lead to better explanations and more reliable predictions. Two major processes of reasoning, deductive (theory to observation) and inductive (observation to theory), are important for theory construction and observation testing. Inductive reasoning starts with specific observations (data) from which theories can be generated; a generalisable pattern may emerge from further observations and repeated testing for compliance. The natural sciences, for example astronomy, provide numerous examples of inductive reasoning, thus Hawking (1998) provides a number of fascinating examples of theories revised, or still in question, with implications for the progress of accounting research.

2.2) VALIDITY:

It can be stated that a research has highly validity if the study only contains what one wants to study and nothing else. Validity refers to how well the data collection and data analysis of the research captures the reality being studied. In other words the researcher must obtain the reality of responses of those people who are under the test through comparing their responses with such truth that in deed is truth.

2.3) RELIABILITY:

Supposes that of other person were to repeat a specific research study; he should be able to capture the same result. Reliability demonstrates that the operation of a study, such as the data collection procedures, can be repeated with same outcome. The objective is to ensure that if a later researcher followed exactly the same procedures as described by an earlier research and conducted the same case study all over again; the later researcher should arrive at the same.
2.4) OBJECTIVES:

1) To study the structure and regulations of banking system of Iran and India.

2) To study the working of private sectors banks of Iran and India.

3) To study the services provided by private banks of Iran and India.

4) To study the financial position of Iranian and Indian private banks.

5) To study the relationship between banking services and customer satisfaction.

6) To study the efficiency and financial performance at private banks of the two countries.

7) To study the organization and management of private banks.

8) To understand the private sector banks position in money market of two countries.

9) To compare between financial ratios of private banks and word bank index.

2.5) HYPOTHESES PREPARATION:

Hypotheses must be testable. Their content must be measurable in some way even if they are not directly observable. For these purposes, ratio (multiplicative) and interval (continuous) scales of measurement are preferred because they make possible a wider number of analytic alternatives, but ordinal (i.e., involving ranks) and nominal (in particular dichotomous, yes/no) scales are common in the accounting literature, and methods exist for their analysis. Once a research question consistent with theory has been formulated, and the research design specified, we need to develop one or more hypotheses.
for testing. Theory and existing literature should drive the formation of hypotheses so that what we postulate is eminently feasible based on the existing evidence. This is always something of a jump because we are venturing from the known (existing empirical findings) to the unknown (what we are investigating). It is easy to feel uncomfortable about this jump because even where all relevant literature has been digested, the move to hypotheses may still seem large and vulnerable. Where authors are particularly sensitive about this jump they may opt to establish propositions of what may be anticipated rather than formal hypotheses in the form of testable expectations. The hypotheses will normally be stated in null or alternative forms, and most reviewers prefer the null hypothesis form. The null hypothesis (H0) postulates the existence of no relationship between the variables of interest; we then attempt to assemble sufficient evidence to suggest that, statistically, the null hypothesis is not a reasonable assumption. If we have no prior evidence to suggest a direction of causality, then we have no alternative but to adopt a null hypothesis format. The alternative hypothesis (H1) postulates the existence of a directed (often causal) relationship, and our assembled evidence must show that findings are inconsistent with no significant relationship (the null position). In conducting tests of hypotheses we are faced with the possibility of making two errors:

Type 1 error – the rejection of a true null hypothesis
Type 2 error – the acceptance of a false null hypothesis

In a legal scenario, the conviction of an innocent man would constitute a Type 1 error, while freeing a guilty man would provide a Type 2 error. In a bankruptcy prediction environment, the misclassification of a failed company as healthy would constitute a Type 1 error, while the classification of a healthy company as a failed one would constitute a Type 2 error. It is generally more
important to reduce the probability of Type 1 errors (since they are seen as more serious or more expensive) so that hypothesis testing places more emphasis on Type 1 rather than Type 2 errors. Reducing the level of Type 2 errors would normally involve a trade-off for more Type 1 errors – a trade-off which may be unacceptable. Thus, in the bankruptcy prediction environment, Type 1 errors are virtually unknown, but Type 2 errors are plentiful. It remains a challenge to accounting researchers to reduce the level of Type 2 errors while maintaining current levels of Type 1 error. If a hypothesis is not supported, we must consider the possibility of competing explanations for the findings. We must also be special of our own findings, question where inconsistencies may have arisen, and be prepared to collect more data or replicate the study.

There are so many questions in this research such as; Do Private sector banks working in Iran and India provide good banking services? Is financial position of private banks working in Iran and India suitable? Is Efficiency and performance of private banks working in Iran and India suitable?

**Hypotheses:**

1) Private sector banks working in Iran and India provide good banking services.

2) Financial position of private banks working in Iran and India is sound.

   2.1) capital adequacy ratio of private banks working in Iran and India is better than World Bank index.

   2.2) debt to equity ratio of private banks working in Iran and India is better than World Bank index.
2.3) Debt to equity capital of private banks working in Iran and India is better than World Bank index.

2.4) Equity capital to total assets of private banks working in Iran and India is better than World Bank index.

3) Efficiency and performance of private banks working in Iran and India is sound.

3.1) Return on assets of private banks working in Iran and India is better than World Bank index.

3.2) Return on equity capital of private banks working in Iran and India is better than World Bank index.

3.3) Net spread of private banks working in Iran and India is better than World Bank index.

3.4) Net interest margin of private banks working in Iran and India is better than World Bank index.

2.6) SCOPE OF THE STUDY:

2.6.1) SAMPLE SELECTION:

This study is primarily based on the data area of which is confined to the whole jurisdiction of two countries private banks. 6 Private Banks are working in Iran and 35 private banks are working in Indian money market. The researcher has selected 5 private banks in Iran (Eghtesad-e novin bank, Karafarin bank, Saman bank, Parsian bank and Pasargad bank) and 5 private banks in India (Axis bank, Federal bank, Icici bank, Hdfc bank and Idbi bank)
for the purpose of collection of primary data because of operational convenience and from the point of time and cost factor.

The main data collection instrument for first hypothesis is questionnaire. The questionnaire consisted of twenty questions for private banks costumers working in India and Iran, which were carefully designed to collect relevant data. So, the researcher distributed questionnaires between 250 Iranian private banks costumers and 250 Indian private banks costumer. During the questionnaire launching, 134 questionnaires were completed and returned for Iran and 117 questionnaires were completed and returned for India.

For the second main hypothesis the researcher created 4 sub hypotheses and collected information about 4 selected financial ratios (capital adequacy ratio, debt to equity ratio, debt to equity capital ratio and equity capital to total assets ratio) from annual reports and compared with word bank index.

For the third main hypothesis the researcher created 4 sub hypotheses and collected information about 4 selected financial ratios (return on assets, return on equity capital, net spread and net interest margin) from annual reports and compared with word bank index.

After tested sub hypotheses in private banks and compared with world bank index, the researcher, for authenticate to the hypotheses test, selected all 6 public banks working in "A" group from Mumbai stock exchange and also all 6 public banks working in Iran and compared financial ratios of private banks working in India with all 6 public banks in India and financial ratios of private banks working in Iran with all 6 public banks in Iran.
Table 2.1: sample descriptive for hypotheses test.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>all hypotheses test in Iran</td>
<td>5 private banks (Eghtesad-e novin bank, Karafarin bank, Saman bank, Parsian bank and Pasargad bank)</td>
</tr>
<tr>
<td>all hypotheses test in India</td>
<td>5 private banks(Axis bank, Federal bank, ICICI bank, HDFC bank and IDBI bank)</td>
</tr>
</tbody>
</table>

Continue of Table 2.1: selected sample descriptive from public banks for authenticate to the sub hypotheses test in private banks.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>all sub hypotheses test in Iran</td>
<td>6 public banks (tejarat bank, mellat bank, saderat bank, sepah bank, refah bank, melli bank)</td>
</tr>
<tr>
<td>all sub hypotheses test in India</td>
<td>6 public banks(corporation bank, bank of india, union bank, uco bank, syndicate bank, andhra bank)</td>
</tr>
</tbody>
</table>

2.6.2) PERIOD OF THE STUDY:
The researcher has selected a period of 7 years: from 2002-2003 to 2009-2010.
2.7) DATA PRESENTATION:

2.7.1) METHODS OF DATA COLLECTION:

What counts as data and what to do with, is considered to be an extremely important step in research design. No research can be undertaken without data. All researchers look for data which help them to answer their research questions and achieve their research objectives. Often the quality, quantity, adequacy and appropriateness of the data determine the quality of research. To a great extent the data collecting methods affect the quality, quantity, adequacy and appropriateness of data. Also since there are several data collection and presentation methods, generally researchers attempt to employ the most appropriate data collection methods in their research projects, though they are not free to choose a method which they like. Researchers’ selection of data collection and presentation methods are often dictated by practical considerations such as the nature of the research problem, cost in terms of time and availability of data as well as access to them. However, sometimes researchers do choose a method because they like it and have worked with it earlier, irrespective of whether or not such chosen methods are the most appropriate to the research problem. This is a practice that must always be avoided.

The collection, organization, and presentation of data are basic background material for learning descriptive and inferential statistics and their application. After identifying a research problem and selecting the appropriate statistical methodology, researchers must collect the data that they will then go to analyze. There are two sources of data: primary data and secondary data. “Primary data are the data collected specifically for the study in question and may be collected from methods such as personal investigation or mail
questionnaires. In contrast secondary data are not originally collected for the specific purpose of study at hand, but rather for a different purpose.” (Lee et al., 1998:14). Examples of secondary sources used in finance and accounting include the Wall Street Journal, Barron’s, Value line Investment Survey, Financial Times, and company annual reports. Although the data provided in these publications can be used in statistical analysis, they were not specifically collected for that use in any particular study (Lee et al., 1998:15).

The main advantage of primary data is that the investor directly controls how the data are collected; therefore he or she can ensure that the information is relevant to the problem at hand. This makes the data collected, using primary methods, as best suited for answering the research process as part of the consultancy dissertation or project. The disadvantage of the method is that developing appropriate surveys or questionnaires requires considerable time, money and experience. In addition, mail questionnaires are usually plagued by a low response rate (Lee et al., 1998:15).

Secondary data, on the other hand, already exists in some forms or other which was not primarily collected, at least initially for the purpose of the consultancy exercise at hand. In fact, secondary data is often the start point of data collection. In as much as it is the first type of data to be collected in answering the research question or help in making a decision, they may be useful in developing the collection process for the primary data. Secondary data are sometimes the only data that are available to address a particular research question that are even moderately suited to that question. Also, secondary data are almost always less expensive than primary data in terms of money, time, and effort. Even when secondary data cannot help in answering the research question or help in making a decision, they may be useful in
developing the collection process for the primary data. Hence, a shrewd researcher always makes a thorough check up of all available secondary data sources before undertaking primary data collection (Lancaster, 2005:65-66).

Finally the amount of data available by secondary analysis is immense hence it provides an opportunity for a greater dept of research by the analyst which primary data cannot provide (Wren, Stevens, Loudon, 2002:65). A major disadvantage of secondary data is that the data may not be as recent as desired. In addition, since the data is meant for some other purpose, the relevance may also be less than ideal for the questions proposed by the researcher. The accuracy of the data is always in question. The quality of data is similarly a moot point and the researcher must be extremely careful about the reputation and capability of the collection agency, or at least the credentials of the past researcher. Sometimes it may be possible that the secondary data cannot be subjected to further manipulation or may be at the right level of aggregation. Hence, the selection of secondary data must take into account the degree of manipulation possible, if it is required for the purpose of analysis. In case multiple sources of secondary data are being used, it might be possible that combining different sources could lead to errors of collection and introduce bias. In these cases, an analyst must always check the conflicting aspects of a data source before using a particular data source (Wegner, 2007:27).

2.7.2) QUANTITATIVE DATA:

Quantitative methods allow the researcher to cover the wide area of scope to enhance the richness of the results; quantitative research is generally defined as the interpretation of the statistical and numerical data. It is perceived as the scientific approach of research employing ‘experimental’ and quasi-
experimental' strategies. Content analysis has traditionally been applied to the analysis of archival data, but is becoming increasingly popular in the analysis of interview transcripts. Typically, quantitative methods have been applied to archival data and qualitative methods to interview transcripts. Where quantitative methods have been employed, they have usually been limited to the manifest characteristics of text (e.g., the number of occurrences of words, or the number of words relating to particular themes). The quantitative results in the form of variables referring to particular words and themes are then available for statistical analysis. More recently, the techniques have been applied to the qualitative analysis of open-ended survey responses with the aim of corroborating survey data. In these applications, content analyses may examine latent characteristics of the data such as the underlying meaning of the phrases used (Holsti, 1969). A further issue relates to the connection between the manifest and latent content of a narrative. Content analysis rests on the belief that it is possible to go behind the text as presented and infers valid hidden or underlying meanings of interest to the investigator (Weber, 1990, pp. 72–6). Content analytic procedures that restrict themselves to manifest content alone would thus be of very limited value. Salancik and Meindl (1984, p. 243, footnote 2), however, argue that whether or not the attributions expressed are the true beliefs of the authors is irrelevant.

Two alternative generic approaches to content analysis are usually taken where quantitative analysis is contemplated: form orientated (objective) analysis, which involves routine counting of words or concrete references; and meaning orientated (subjective) analysis, which focuses on analysis of the underlying themes in the texts under investigation. At a high level, quantitative research is particularly good at three things as follow:
• **Testing Hypothesis:** Quantitative research is a perfect tool, when the researcher wishes to validate something, because it gives statistically significant evidence to prove or disprove the hypothesis.

• **Looking for patterns:** Quantitative research can also be effective at refining hypotheses, because it provides a large sample size of data for the researcher to look for patterns using techniques such as cluster analysis. The researcher can generate persona segmentation out of the quantitative data itself, even when he has only the most basic understanding of what drives the segmentation.

• **Gaining new insight:** Because quantitative data is numeric, it enables the researcher to build upon his validated hypothesis to gain new insight into the research area. Some analysis that was not previously thought of can be possible and certain inferences can be gathered without planning for it in the first place. (Mulder & Yaar, 2006:81).

### 2.7.3) SOURCES OF DATA COLLECTION:

In the present study, the researcher collected data from:

1) **Primary source:**

   . **Interview.**

   . **Questionnaires:** The main data collection instrument for first hypothesis is questionnaire. The questionnaire consisted of twenty questions for private banks costumers working in India and Iran, which were carefully designed to collect relevant data. So, the researcher distributed questionnaires between 250 Iranian private banks costumers and 250 Indian private banks costumer. During the questionnaire launching, 134 questionnaires were completed and
returned for Iran and 117 questionnaires were completed and returned for India.

- **Cronbach’s Alpha Coefficient**: the most widely used measure, especially for newly developed instruments, and overcomes the splitting problem, though its value is still wholly dependent on the number of items (n) in the instrument. Thus sensitivity to the number of items should be evaluated to demonstrate reliability. Thus for a four-item construct, there would be six correlation coefficients to average to generate. An alpha of 0.8 is normally deemed to be satisfactory, though figures slightly lower than this may be acceptable. Since the Cronbach alpha depends on the number of items included, the more items the higher the Cronbach coefficient. Very high coefficients, resulting from too many similar questions, may therefore reflect redundancy in the instrument. A sensitivity analysis of the alpha to deletion of successive items will reveal whether we have a parsimonious set which is consistent with reliability. The researcher for reliability to questionnaire used Cronbach’s Alpha test. The result of Cranach’s alpha test is as follow:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private sector banks working in Iran and India provide good banking services.</td>
<td>.870</td>
<td>20</td>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private sector banks working in Iran and India provide good banking services.</td>
<td>.830</td>
<td>20</td>
<td>35</td>
</tr>
</tbody>
</table>
2) Secondary source:

The researcher collected secondary data from following source:

1. Financial and economic publications.
2. Economic data based.
3. Newspapers and journals.
4. Internet.
5. World Bank based.

This data has used for second and third hypotheses and all sub hypotheses.

2.8) VARIABLE DEFINATION:

1) Return on assets: This ratio is considered by many to be the best single ratio for evaluating the performance of management. This ratio relates operating profits to total resources under management. This ratio is most important measure of bank profitability. This ratio measures the net income generated from the employment of the total assets of the bank.

\[
\text{Return on assets} \ (\%) = \frac{\text{net income after tax}}{\text{Average total assets}} \times 100
\]

2) Return on equity: This ratio measures the return on shareholders equity. This ratio measures the rate of return to investors and the potential for internal capital formation. This ratio represents basic measurements of the bank’s ability to generate the equity needed to support growth and fend off economic adversity.

\[
\text{Return on equity} \ (\%) = \frac{\text{net income after tax}}{\text{average equity capital}} \times 100
\]
3) **Net Spread**: This ratio covers only those assets and liabilities that have an interest rate attached to them. Thus, it excludes the impact of non-interest bearing demand deposits, capital, and non-remunerated reserve requirements on net interest earned and thus on bank profits. This is helpful in that it isolates the effect of interest rates on bank profits and thereby enables a better understanding of the sources of bank profitability and consequently of vulnerability of bank earnings.

\[
\text{Net Spread (\%)} = \frac{\text{Interest earned}}{\text{Loans}} \times 100 - \frac{\text{Interest paid}}{\text{Interest bearing deposits}} \times 100
\]

4) **Net Interest Margin**: This ratio identifies the core earnings capacity of the bank—it’s interest differential income as a percentage of average total assets. The principal source of most banks ‘earning is interest differential income, defined as interest income less interest expense. Interest differential income usually accounts for at least 70 percent of a bank’s income. The net interest margin is driven by the composition of the balance sheet and by the interest rates applicable to the individual asset and liability accounts.

\[
\text{Net Interest Margin (\%)} = \frac{\text{Interest income} - \text{Interest expense}}{\text{Average total assets}} \times 100
\]

5) **Capital Adequacy ratio**: this ratio expresses the “real” capital as a percentage or total risk weighted assets. Both capital and assets should be fairly stated with the appropriate loan loss provisions and intangibles’ having been deducted. This ratio indicates the margin of protection available to both depositors and creditors against unanticipated losses that may be experienced by the bank. Thus it indicates the bank’s resilience to economic difficulties.
This ratio is viewed by bank regulators and credit analysts as one of the key indicators of a bank’s financial condition.

**Capital Adequacy ratio = Risk-weighted Assets/Adjusted Capital**

*100

6) **Debt-Equity Ratio (D/E ratio):** the relationship between borrowed funds and owner’s capital is a popular measure of the long-term financial solvency of a firm. This relationship is shown by the debt-equity ratio. This ratio reflects the relative claims of creditors and shareholders against the assets of the firm. It is the ratio of the amount invested by outsiders to the amount invested by the owners of business.

**Debt-Equity Ratio (D/E ratio) = Total debt/ Shareholders’ equity**

7) **Debt to Total Assets Ratio:** the total debt of the firm comprises long-term debt plus current liabilities. The total assets consist of permanent capital plus current liabilities. Thus:

**Debt to Total Assets Ratio = Total Debt / Total Assets**

8) **Proprietary Ratio:** Indicates the extent to which assets are financed by owners' funds. This ratio is to relate the owner’s / proprietor’s funds with total assets. The ratio indicates the proportion of total assets financed by owners.

**Proprietary Ratio = Proprietor’s Equity/ Total Assets**
2.9) STATISTICS IN RESEARCH:

2.9.1) AVERAGE METHOD:

Mean or average is the sum of the score of all the individual parameters in the sample divided by the number of such score. The formula for mean is as given below:

\[
\text{Mean (average) } = \frac{\sum x}{N}
\]

\(\Sigma\) (called sigma) is the statistical symbol for sum, \(x\) stands for scores and \(N\) stands for the number of scores. Mean is probably the most used statistic and is simply the arithmetic average of a distribution of score. Researchers tend to like it because it provides a single, simple number that gives a rough summary of the distribution. It must however be remembered that while mean provides a useful piece of information, it does not tell anything about how spread out the scores are i.e. variance or how many scores in distribution are close to mean. It is possible for a distribution to have very few scores at or near the score. Also mean is not useful when the distributions are open-ended. If scores representing infinity in either direction are possible, the mean cannot really be defined. Also it is tedious to compute mean by hand (Denscombe, 2007:260-261).

2.9.2) CHI-SQUARE:

In probability theory and statistics, the chi-square distribution (also chi-squared or \(\chi^2\)-distribution) with \(k\) degrees of freedom is the distribution of a sum of the squares of \(k\) independent standard normal random variables. It is one of the most widely used probability distributions in inferential statistics, e.g. in hypothesis testing or in construction of confidence intervals. When
there is a need to contrast it with the noncentral chi-square distribution, this
distribution is sometimes called common chi-square tests for goodness of fit
of an observed distribution to a theoretical one, the independence of two
criteria of classification of qualitative data, and in confidence interval
estimation for a population standard deviation of a normal distribution from a
sample standard deviation. Many other statistical tests also use this
distribution, like Friedman's analysis of variance by ranks.

**Definition**

If $Z_1, ..., Z_k$ are independent, standard normal random variables, then the sum
of their squares

$$Q = \sum_{i=1}^{k} Z_i^2$$

is distributed according to the chi-square distribution with $k$ degrees of
freedom. This is usually denoted as

$$Q \sim \chi^2(k) \text{ or } Q \sim \chi_{k}^2$$

The chi-square distribution has one parameter: $k$ — a positive integer that
specifies the number of degrees of freedom (i.e. the number of $Z_i$’s).

If calculated $\chi^2 < \text{table value}$ then H0 is accepted.
If calculated $\chi^2 > \text{table value}$ then H1 is accepted.

**2.9.3) T-TEST:**

A *t-test* is any statistical hypothesis test in which the test statistic follows
a Student's $t$ distribution, if the null hypothesis is supported. It is most
commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. The t-statistic was introduced in 1908 by William Sealy Gosset, a chemist working for the Guinness brewery in Dublin, Ireland ("Student" was his pen name). Gosset devised the t-test as a way to cheaply monitor the quality of stout. He published the test in *Biometrika* in 1908, but was forced to use a pen name by his employer, who regarded the fact that they were using statistics as a trade secret. In fact, Gosset's identity was unknown to fellow statisticians.

Calculation: Explicit expressions that can be used to carry out various t-tests are given below. In each case, the formula for a test statistic that either exactly follows or closely approximates a t-distribution under the null hypothesis is given. Also, the appropriate degrees of freedom are given in each case. Each of these statistics can be used to carry out either a one-tailed test or a two-tailed test. Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favor of the alternative hypothesis. In testing the null hypothesis that the population means is equal to a specified value $\mu_0$, one uses the statistic

$$
 t = \frac{\bar{x} - \mu_0}{s} \sqrt{n},
$$

where $s$ is the sample standard deviation of the sample and $n$ is the sample size. The degrees of freedom used in this test is $n - 1$. 

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2.9.4) SPSS PROGRAM:

SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses. SPSS is available from several platforms; Windows, Macintosh, and the UNIX systems. SPSS (originally, Statistical Package for the Social Sciences) was released in its first version in 1968 after being developed by Norman H. Nie and C. Hadlai Hull. Norman Nie was then a political science postgraduate at Stanford University, and now Research Professor in the Department of Political Science at Stanford and Professor Emeritus of Political Science at the University of Chicago. SPSS is among the most widely used programs for statistical analysis in social science. It is used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations and others. The original SPSS manual (Nie, Bent & Hull, 1970) has been described as one of "sociology's most influential books". In addition to statistical analysis, data management (case selection, file reshaping, creating derived data) and data documentation (a metadata dictionary is stored in the data file) are features of the base software. Statistics included in the base software:

- Descriptive statistics: Cross tabulation, Frequencies, Descriptive, Explore, descriptive Ratio Statistics
- Bivariate statistics: Means, t-test, ANOVA, Correlation (bivariate, partial, distances), nonparametric tests
- Prediction for numerical outcomes: Linear regression
- Prediction for identifying groups: Factor analysis, cluster analysis (two-step, K-means, hierarchical), and discriminate
The many features of SPSS are accessible via pull-down menus or can be programmed with a proprietary 4GL command syntax language. Command syntax programming has the benefits of reproducibility; simplifying repetitive tasks; and handling complex data manipulations and analyses. Additionally, some complex applications can only be programmed in syntax and are not accessible through the menu structure. The pull-down menu interface also generates command syntax, this can be displayed in the output though the default settings have to be changed to make the syntax visible to the user; or can be pasted into a syntax file using the "paste" button present in each menu.

Programs can be run interactively or unattended using the supplied Production Job Facility. Additionally a "macro" language can be used to write command language subroutines and a Python programmability extension can access the information in the data dictionary and data and dynamically build command syntax programs. The Python programmability extension, introduced in SPSS 14, replaced the less functional SAX Basic "scripts" for most purposes, although Sax Basic remains available. In addition, the Python extension allows SPSS to run any of the statistics in the free software package R. From version 14 onwards SPSS can be driven externally by a Python or a VB.NET program using supplied "plug-ins". SPSS places constraints on internal file structure, data types, data processing and matching files, which together considerably simplify programming.

SPSS datasets have a 2-dimensional table structure where the rows typically represent cases (such as individuals or households) and the columns represent measurements (such as age, sex or household income). Only 2 data types are defined: numeric and text (or "string"). All data processing occurs sequentially case-by-case through the file. Files can be matched one-to-one and one-to-
many, but not many-to-many. The graphical user interface has two views which can be toggled by clicking on one of the two tabs in the bottom left of the SPSS window. The 'Data View' shows a spreadsheet view of the cases (rows) and variables (columns). Unlike spreadsheets, the data cells can only contain numbers or text and formulas cannot be stored in these cells. The 'Variable View' displays the metadata dictionary where each row represents a variable and shows the variable name, variable label, value label(s), print width, measurement type and a variety of other characteristics.

Cells in both views can be manually edited, defining the file structure and allowing data entry without using command syntax. This may be sufficient for small datasets. Larger datasets such as statistical surveys are more often created in data entry software, or entered during computer-assisted personal interviewing, by scanning and using optical character recognition and optical mark recognition software, or by direct capture from online questionnaires. These datasets are then read into SPSS. SPSS can read and write data from ASCII text files (including hierarchical files), other statistics packages, spreadsheets and databases. SPSS can read and write to external relational database tables via ODBC and SQL.

Statistical output is to a proprietary file format (*.spv file, supporting pivot tables) for which, in addition to the in-package viewer, a stand-alone reader can be downloaded. The proprietary output can be exported to text or Microsoft Word. Alternatively, output can be captured as data (using the OMS command), as text, tab-delimited text, PDF, XLS, HTML, XML, SPSS dataset or a variety of graphic image formats (JPEG, PNG, BMP and EMF).
2.10) LIMITATION OF THE STUDY:

Any research and study has its own specific difficulties and limitation. In every research, the researcher will be confronting with some limitation. This is nature of research and cannot be avoided. The role of the researcher is to decline these limitations. He has to adopt such a methods and ways to achieve the results of the research with the least of time and expenses and also overcome to the limitations. Most of the limitation is caused of the methodology of research which is adopted by the researcher, and other limitation particularly related to the problem under the study, hence before starting the research, the researcher has to know them and determine its dimensions to decrease their effects on the result of the research.

The following limitation is expected to be while doing it:

1) The study period is only 7 years and it is not suitable for generalization of statement.
2) Sample banking will be select from Tehran and Pune City, for generalizing statement study area is limited
3) The findings are based on the ability of response given by the respondent by was of questionnaires.
REFERENCE:

1) Research Methodology Methods & Techniques, C.R. kothari, New Delhi, 2007


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